



ICP Test Report Certification Packet

Company name: Littelfuse, Inc.

Product Series: Silicon Protection Array

Product #: SP3012-04UTG

Issue Date: May 21, 2012

It is hereby certified by Littelfuse, Inc. that there is neither RoHS (EU Directive_2002/95/EC & RoHS 2_Eu Directive_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:

A handwritten signature in black ink, appearing to read "Kristeen Bacila".

KRISTEEN BACILA

Global EHS Engineer

(31) Parts, sub-materials and unit parts

This document covers the Silicon Protection Array RoHS-Compliant series products manufactured by Littelfuse, Inc.

< Raw Materials Used

Please see Table 1

(31) The ICP data on all measurable substances

Please see appropriate pages as identified in Table 1

Remarks : .

Table 1: List of Raw Materials covered by this report

Total Parts	Raw Material Part Number	Raw Material Description	Page(s)
1	N/A	A194 Leadframe and Plating	3-71
2	8006NS	Adhesive – RoHS & Halogen	72-77
3	8006NS	Adhesive – RoHS 2	78-82
4	N/A	Au Bonding Wire	83-95
5	CEL-9220	Epoxy Molding Compound ROHS& Halogen	96-103
6	CEL-9220	Epoxy Molding Compound RoHS 2	104-108
7	N/A	IC Wafer	109-112
8	N/A	Finished product – RoHS 2	113-117

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ASM HK & ASM TECHNOLOGY SINGAPORE

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SINGAPORE (ASM TECHNOLOGY SINGAPORE)

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)	: A194 ALLOY
收件日期(Sample Receiving Date)	: 2011/12/23
測試期間(Testing Period)	: 2011/12/23 TO 2012/01/05
送樣廠商(Sample Submitted By)	: 香港商先進太平洋股份有限公司 (ASM HK & ASM TECHNOLOGY SINGAPORE)

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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測試結果(Test Results)

測試部位(PART NAME) NO.1 : 銅紅色 A194 ALLOY (COPPER RED A194 ALLOY)

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: 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.
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	23.5
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.
六價鉻 / Hexavalent Chromium Cr(VI) by boiling water extraction#	**	參考IEC 62321: 2008方法, 用 boiling water extraction方法檢測. / With reference to IEC 62321: 2008 and performed by boiling water extraction Method.	0.02mg/kg with 50 cm ² surface area	Negative
銻 / Antimony (Sb)	mg/kg	參考US EPA 3052方法, 用感應耦合電漿原子發射光譜儀檢測銻含量. / With reference to US EPA Method 3052 for Antimony Content. Analysis was performed by ICP-AES.	2	n.d.
鈹 / Beryllium (Be)	mg/kg	參考US EPA 3052方法, 用感應耦合電漿原子發射光譜儀檢測鈹含量. / With reference to US EPA Method 3052 for Beryllium Content. Analysis was performed by ICP-AES.	2	n.d.

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測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)
				NO.1
多氯聯苯 / Polychlorinated Biphenyls (PCBs) (CAS No.: 001336-36-3)	mg/kg	參考US EPA 3540C方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 3540C method. Analysis was performed by GC/MS.	0.5	n.d.
多氯奈 / Polychlorinated Naphthalene (PCNs)	mg/kg	參考US EPA 3540C方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 3540C method. Analysis was performed by GC/MS.	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 (GC/MS)檢測。 / With reference to US EPA 3540C method. Analysis was performed by GC/MS.	0.5	n.d.
氯化石蠟 / Chlorinated Paraffin (C10~C13) (CAS No.: 085535-84-8)	%	參考US EPA 3540C: 1996方法, 以氣相層析 儀/電子捕獲偵測器檢測。 / With reference to US EPA 3540C: 1996 method. Analysis was performed by GC/ECD.	0.01	n.d.
2-(3', 5'-二叔丁基-2'-羥基苯基)苯並三氮 唑 / 2-(3,5-di-tert-butyl-2- hydroxyphenyl)-2H-benzotriazole (CAS No.: 003846-71-7)	mg/kg	參考US EPA 3540C方法, 以氣相層析質譜儀 檢測之。 / 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) 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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SINGAPORE (ASM TECHNOLOGY SINGAPORE)

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
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
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.
石棉 / Asbestos				
陽起石 / Actinolite (CAS No.: 77536-66-4)	%	參考EPA 600/R-93/116 / 立體顯微鏡, 偏光顯微鏡 (PLM)及X光繞射定性分析法 (XRD) / With reference to EPA 600/R-	1	Negative
斜方角閃石 / Anthophyllite (CAS No.: 77536-67-5)	%	參考EPA 600/R-93/116 / 立體顯微鏡, 偏光顯微鏡 (PLM)及X光繞射定性分析法 (XRD) / With reference to EPA 600/R-	1	Negative
棕石棉 / Amosite (CAS No.: 12172-73-5)	%	參考EPA 600/R-93/116 / 立體顯微鏡, 偏光顯微鏡 (PLM)及X光繞射定性分析法 (XRD) / With reference to EPA 600/R-	1	Negative
白石棉 / Chrysotile (CAS No.: 12001-29-5)	%	參考EPA 600/R-93/116 / 立體顯微鏡, 偏光顯微鏡 (PLM)及X光繞射定性分析法 (XRD) / With reference to EPA 600/R-	1	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)
				NO.1
青石棉 / Crocidolite (CAS No.: 12001-28-4)	%	參考EPA 600/R-93/116 / 立體顯微鏡, 偏光顯微鏡 (PLM)及X光繞射定性分析法 (XRD) / With reference to EPA 600/R-	1	Negative
透閃石 / Tremolite (CAS No.: 77536-68-6)	%	參考EPA 600/R-93/116 / 立體顯微鏡, 偏光顯微鏡 (PLM)及X光繞射定性分析法 (XRD) / With reference to EPA 600/R-	1	Negative
有機錫 / Organic-tin compounds				
三丁基錫 / Tributyl Tin (TBT)	mg/kg	本測試參考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	本測試參考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.
三丁基錫氧化物 / Tributyl Tin Oxide (TBTO)*** (CAS No.: 000056-35-9)	mg/kg	本測試參考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.	-	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.
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.

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測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result) NO.1
多溴聯苯醚總和 / Sum of PBDEs	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.
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.
偶氮 (AZO)				
1): 4-氨基二苯 / 4-AMINODIPHENYL (CAS No.: 000092-67-1)	mg/kg	參考LFGB 82.02-2方法, 以氣相層析/質譜 儀檢測. / With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.
2): 聯苯胺 / BENZIDINE (CAS No.: 00092- 87-5)	mg/kg	參考LFGB 82.02-2方法, 以氣相層析/質譜 儀檢測. / With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.
3): 4-氯鄰甲苯胺 / 4-CHLORO-O-TOLUIDINE (CAS No.: 000095-69-2)	mg/kg	參考LFGB 82.02-2方法, 以氣相層析/質譜 儀檢測. / With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.
4): 2-萘胺 / 2-NAPHTHYLAMINE (CAS No.: 000091-59-8)	mg/kg	參考LFGB 82.02-2方法, 以氣相層析/質譜 儀檢測. / With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.
5): 鄰氨基二甲基偶氮 / O- AMINOAZOTOLUENE (CAS No.: 000097-56-3)	mg/kg	參考LFGB 82.02-2方法, 以氣相層析/質譜 儀檢測. / With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.

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測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)
				NO.1
6): 對硝基鄰甲苯胺 / 2-AMINO-4-NITROTOLUENE (CAS No.: 000099-55-8)	mg/kg	參考LFGB 82.02-2方法, 以氣相層析/質譜儀檢測. / With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.
7): 對氯苯胺 / P-CHLOROANILINE (CAS No.: 000106-47-8)	mg/kg	參考LFGB 82.02-2方法, 以氣相層析/質譜儀檢測. / With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.
8): 4-甲氧基-間苯二胺 / 2,4-DIAMINOANISOLE (CAS No.: 000615-05-4)	mg/kg	參考LFGB 82.02-2方法, 以氣相層析/質譜儀檢測. / With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.
9): 4,4'-二氨基二苯甲烷 / 4,4'-DIAMINODIPHENYLMETHANE (CAS No.: 000101-77-9)	mg/kg	參考LFGB 82.02-2方法, 以氣相層析/質譜儀檢測. / With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.
10): 3,3'-二氯聯苯胺 / 3,3'-DICHLOORBENZIDINE (CAS No.: 000091-94-1)	mg/kg	參考LFGB 82.02-2方法, 以氣相層析/質譜儀檢測. / With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.
11): 3,3'-二甲氧基聯苯胺 / 3,3'-DIMETHOXYBENZIDINE (CAS No.: 000119-90-4)	mg/kg	參考LFGB 82.02-2方法, 以氣相層析/質譜儀檢測. / With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.
12): 3,3'-二甲基聯苯胺 / 3,3'-DIMETHYLBENZIDINE (CAS No.: 000119-93-7)	mg/kg	參考LFGB 82.02-2方法, 以氣相層析/質譜儀檢測. / With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.
13): 3,3'-二甲基-4,4'-二氨基二苯甲烷 / 3,3'-DIMETHYL-4,4'-DIAMINODIPHENYLMETHANE (CAS No.: 000838-88-0)	mg/kg	參考LFGB 82.02-2方法, 以氣相層析/質譜儀檢測. / With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.

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測試報告 Test Report

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ASM HK & ASM TECHNOLOGY SINGAPORE

4/F, WATSON CENTRE, 16 KUNG YIP ST., KWAI CHUNG, HONG KONG (ASM HK), 2 YISHUN AVENUE 7, SINGAPORE (ASM TECHNOLOGY SINGAPORE)

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
14): 2-甲氧基-5-甲基聯苯 / P-CRESIDINE (2-METHOXY-5-METHYLANILINE) (CAS No.: 000120-71-8)	mg/kg	參考LFGB 82.02-2方法, 以氣相層析/質譜 儀檢測. / With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.
15): 4,4'-亞甲基雙(氯苯胺) / 4,4'- METHYLENE-BIS- (2-CHLOROANILINE) (CAS No.: 000101-14-4)	mg/kg	參考LFGB 82.02-2方法, 以氣相層析/質譜 儀檢測. / With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.
16): 4,4'-氧化雙苯胺 / 4,4'- OXYDIANILINE (CAS No.: 000101-80-4)	mg/kg	參考LFGB 82.02-2方法, 以氣相層析/質譜 儀檢測. / With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.
17): 4,4'-硫代雙苯胺 / 4,4'- THIODIANILINE (CAS No.: 000139-65-1)	mg/kg	參考LFGB 82.02-2方法, 以氣相層析/質譜 儀檢測. / With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.
18): 鄰甲苯胺 / O-TOLUIDINE (CAS No.: 000095-53-4)	mg/kg	參考LFGB 82.02-2方法, 以氣相層析/質譜 儀檢測. / With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.
19): 2,4-二氨基甲苯 / 2,4- TOLUYLENEDIAMINE (CAS No.: 000095-80-7)	mg/kg	參考LFGB 82.02-2方法, 以氣相層析/質譜 儀檢測. / With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.
20): 2,4,5-三甲基苯胺 / 2,4,5- TRIMETHYLANILINE (CAS No.: 000137-17-7)	mg/kg	參考LFGB 82.02-2方法, 以氣相層析/質譜 儀檢測. / With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.
21): 鄰位甲氧基苯胺 / O-ANISIDINE (CAS No.: 000090-04-0)	mg/kg	參考LFGB 82.02-2方法, 以氣相層析/質譜 儀檢測. / With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.

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ASM HK & ASM TECHNOLOGY SINGAPORE

4/F, WATSON CENTRE, 16 KUNG YIP ST., KWAI CHUNG, HONG KONG (ASM HK), 2 YISHUN AVENUE 7,
SINGAPORE (ASM TECHNOLOGY SINGAPORE)

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
22): 對氨基偶氮苯 / P-AMINOAZOBENZENE (CAS No.: 000060-09-3)	mg/kg	參考LFGB 82.02-2方法, 以氣相層析/質譜 儀檢測. / With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.
23): 2,4-二甲基苯胺 / 2,4-XYLIDINE (CAS No.: 000095-68-1)	mg/kg	參考LFGB 82.02-2方法, 以氣相層析/質譜 儀檢測. / With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.
24): 2,6-二甲基苯胺 / 2,6-XYLIDINE (CAS No.: 000087-62-7)	mg/kg	參考LFGB 82.02-2方法, 以氣相層析/質譜 儀檢測. / With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.
氟氯碳化物 / CFCs (Chlorofluorocarbons)				
Group I				n.d.
氟氯碳化物(Chlorofluorocarbon)-11 (CAS No.: 000075-69-4)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測. / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氟氯碳化物(Chlorofluorocarbon)-12 (CAS No.: 000075-71-8)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測. / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氟氯碳化物(Chlorofluorocarbon)-113 (CAS No.: 000076-13-1)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測. / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氟氯碳化物(Chlorofluorocarbon)-114 (CAS No.: 000076-14-2)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測. / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.

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ASM HK & ASM TECHNOLOGY SINGAPORE

4/F, WATSON CENTRE, 16 KUNG YIP ST., KWAI CHUNG, HONG KONG (ASM HK), 2 YISHUN AVENUE 7,
SINGAPORE (ASM TECHNOLOGY SINGAPORE)

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
氯氣碳化物(Chlorofluorocarbon)-215 (CAS No.: 004259-43-2)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氯氣碳化物(Chlorofluorocarbon)-216 (CAS No.: 000661-97-2)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氯氣碳化物(Chlorofluorocarbon)-217 (CAS No.: 000422-86-6)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
海龍 (Halons)				
海龍(Halon)-1211 (CAS No.: 000353-59-3)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
海龍(Halon)-1301 (CAS No.: 000075-63-8)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
海龍(Halon)-2402 (CAS No.: 000124-73-2)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氫氯氣碳化物 / HCFCs (Hydrochlorofluorocarbons)				
氫氯氣碳化物(HCFC)-21 (CAS No.: 000075-43-4)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氫氯氣碳化物(HCFC)-22 (CAS No.: 000075-45-6)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.

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ASM HK & ASM TECHNOLOGY SINGAPORE

4/F, WATSON CENTRE, 16 KUNG YIP ST., KWAI CHUNG, HONG KONG (ASM HK), 2 YISHUN AVENUE 7, SINGAPORE (ASM TECHNOLOGY SINGAPORE)

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
氟氯氫碳化物(HCFC)-31 (CAS No.: 000593-70-4)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氟氯氫碳化物(HCFC)-121 (CAS No.: 000354-14-3)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氟氯氫碳化物(HCFC)-122 (CAS No.: 000354-21-2)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氟氯氫碳化物(HCFC)-123 (CAS No.: 000306-83-2)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氟氯氫碳化物(HCFC)-124 (CAS No.: 002837-89-0)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氟氯氫碳化物(HCFC)-131 (CAS No.: 000359-28-4)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氟氯氫碳化物(HCFC)-132b (CAS No.: 001649-08-7)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氟氯氫碳化物(HCFC)-133a (CAS No.: 000075-88-7)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.

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測試報告

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ASM HK & ASM TECHNOLOGY SINGAPORE

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測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)
				NO.1
氟氯氫碳化物(HCFC)-141b (CAS No.: 001717-00-6)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氟氯氫碳化物(HCFC)-142b (CAS No.: 000075-68-3)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氟氯氫碳化物(HCFC)-221 (CAS No.: 000422-26-4)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氟氯氫碳化物(HCFC)-222 (CAS No.: 000422-49-1)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氟氯氫碳化物(HCFC)-223 (CAS No.: 000422-52-6)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氟氯氫碳化物(HCFC)-224 (CAS No.: 000422-54-8)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氟氯氫碳化物(HCFC)-225ca (CAS No.: 000422-56-0)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氟氯氫碳化物(HCFC)-225cb (CAS No.: 000507-55-1)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.

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測試報告 Test Report

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ASM HK & ASM TECHNOLOGY SINGAPORE

4/F, WATSON CENTRE, 16 KUNG YIP ST., KWAI CHUNG, HONG KONG (ASM HK), 2 YISHUN AVENUE 7,
SINGAPORE (ASM TECHNOLOGY SINGAPORE)

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
氟氯氫碳化物(HCFC)-226 (CAS No.: 000431-87-8)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氟氯氫碳化物(HCFC)-231 (CAS No.: 000421-94-3)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氟氯氫碳化物(HCFC)-232 (CAS No.: 000460-89-9)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氟氯氫碳化物(HCFC)-233 (CAS No.: 007125-84-0)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氟氯氫碳化物(HCFC)-234 (CAS No.: 000425-94-5)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氟氯氫碳化物(HCFC)-235 (CAS No.: 000460-92-4)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氟氯氫碳化物(HCFC)-241(CAS No.: 000666-27-3)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氟氯氫碳化物(HCFC)-242 (CAS No.: 000460-63-9)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.

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ASM HK & ASM TECHNOLOGY SINGAPORE

4/F, WATSON CENTRE, 16 KUNG YIP ST., KWAI CHUNG, HONG KONG (ASM HK), 2 YISHUN AVENUE 7,
SINGAPORE (ASM TECHNOLOGY SINGAPORE)

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
氟氯氫碳化物(HCFC)-243 (CAS No.: 000460-69-5)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氟氯氫碳化物(HCFC)-244	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氟氯氫碳化物(HCFC)-251 (CAS No.: 000421-41-0)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氟氯氫碳化物(HCFC)-252 (CAS No.: 000819-00-1)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氟氯氫碳化物(HCFC)-253 (CAS No.: 000460-35-5)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氟氯氫碳化物(HCFC)-261 (CAS No.: 000420-97-3)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氟氯氫碳化物(HCFC)-262 (CAS No.: 000421-02-03)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氟氯氫碳化物(HCFC)-271 (CAS No.: 000430-55-7)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.

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測試報告

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ASM HK & ASM TECHNOLOGY SINGAPORE

4/F, WATSON CENTRE, 16 KUNG YIP ST., KWAI CHUNG, HONG KONG (ASM HK), 2 YISHUN AVENUE 7, SINGAPORE (ASM TECHNOLOGY SINGAPORE)

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
不完全鹵化氟溴化物 / HBFCs (Hydrobromofluorocarbons)				
不完全鹵化氟溴化物(HBFC)-21B2 (CHFBr ₂) (CAS No.: 001868-53-7)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
不完全鹵化氟溴化物(HBFC)-22B1 (CHF ₂ Br) (CAS No.: 001511-62-2)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
不完全鹵化氟溴化物(HBFC)-31B1 (CH ₂ FBr) (CAS No.: 000373-52-4)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
不完全鹵化氟溴化物(HBFC)-121B4 (C ₂ HFBr ₄)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
不完全鹵化氟溴化物(HBFC)-122B3 (C ₂ HF ₂ Br ₃)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
不完全鹵化氟溴化物(HBFC)-123B2 (C ₂ HF ₃ Br ₂)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
不完全鹵化氟溴化物(HBFC)-124B1 (C ₂ HF ₄ Br)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
不完全鹵化氟溴化物(HBFC)-131B3 (C ₂ H ₂ FBr ₃)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.

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測試報告

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ASM HK & ASM TECHNOLOGY SINGAPORE

4/F, WATSON CENTRE, 16 KUNG YIP ST., KWAI CHUNG, HONG KONG (ASM HK), 2 YISHUN AVENUE 7, SINGAPORE (ASM TECHNOLOGY SINGAPORE)

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
不完全鹵化氟溴化物(HBFC)-132B2 (C2H2F2Br2)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
不完全鹵化氟溴化物(HBFC)-133B1 (C2H2F3Br)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
不完全鹵化氟溴化物(HBFC)-141B2 (C2H3FBr2)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
不完全鹵化氟溴化物(HBFC)-142B1 (C2H3F2Br)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
不完全鹵化氟溴化物(HBFC)-151B1 (C2H4FBr)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
不完全鹵化氟溴化物(HBFC)-221B6 (C3HFBr6)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
不完全鹵化氟溴化物(HBFC)-222B5 (C3HF2Br5)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
不完全鹵化氟溴化物(HBFC)-223B4 (C3HF3Br4)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.

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ASM HK & ASM TECHNOLOGY SINGAPORE

4/F, WATSON CENTRE, 16 KUNG YIP ST., KWAI CHUNG, HONG KONG (ASM HK), 2 YISHUN AVENUE 7,
SINGAPORE (ASM TECHNOLOGY SINGAPORE)

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
不完全鹵化氟溴化物(HBFC)-224B3 (C3HF4Br3)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
不完全鹵化氟溴化物(HBFC)-225B2 (C3HF5Br2)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
不完全鹵化氟溴化物(HBFC)-226B1 (C3HF6Br)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
不完全鹵化氟溴化物(HBFC)-231B5 (C3H2FBr5)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
不完全鹵化氟溴化物(HBFC)-232B4 (C3H2F2Br4)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
不完全鹵化氟溴化物(HBFC)-233B3 (C3H2F3Br3)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
不完全鹵化氟溴化物(HBFC)-234B2 (C3H2F4Br2)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
不完全鹵化氟溴化物(HBFC)-235B1 (C3H2F5Br)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.

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測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)
				NO.1
不完全鹵化氟溴化物(HBFC)-241B4 (C3H3FBr4)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
不完全鹵化氟溴化物(HBFC)-242B3 (C3H3F2Br3)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
不完全鹵化氟溴化物(HBFC)-243B2 (C3H3F3Br2)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
不完全鹵化氟溴化物(HBFC)-244B1 (C3H3F4Br)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
不完全鹵化氟溴化物(HBFC)-251B3 (C3H4FBr3)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
不完全鹵化氟溴化物(HBFC)-252B2 (C3H4F2Br2)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
不完全鹵化氟溴化物(HBFC)-253B1 (C3H4F3Br)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
不完全鹵化氟溴化物(HBFC)-261B2 (C3H5FBr2)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.

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測試報告

Test Report

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ASM HK & ASM TECHNOLOGY SINGAPORE

4/F, WATSON CENTRE, 16 KUNG YIP ST., KWAI CHUNG, HONG KONG (ASM HK), 2 YISHUN AVENUE 7, SINGAPORE (ASM TECHNOLOGY SINGAPORE)

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
不完全鹵化氯溴化物(HBFC)-262B1 (C3H5F2Br)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
不完全鹵化氯溴化物(HBFC)-271B1 (C3H6FBr)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氫氟碳化物 / HFCs (Hydrofluorocarbon)				
氫氟碳化物(HFC)-23 (CHF3)(CAS No.: 000075-46-7)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氫氟碳化物(HFC)-32 (CH2F2)(CAS No.: 000075-10-5)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氫氟碳化物(HFC)-41 (CH3F)(CAS No.: 000593-53-3)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氫氟碳化物(HFC)-43-10mee (C5H2F10)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氫氟碳化物(HFC)-125 (C2HF5)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氫氟碳化物(HFC)-134 (C2H2F4)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.

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測試報告 Test Report

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ASM HK & ASM TECHNOLOGY SINGAPORE

4/F, WATSON CENTRE, 16 KUNG YIP ST., KWAI CHUNG, HONG KONG (ASM HK), 2 YISHUN AVENUE 7, SINGAPORE (ASM TECHNOLOGY SINGAPORE)

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
氫氟碳化物(HFC)-134a (CH ₂ FCF ₃)(CAS No.: 000811-97-2)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氫氟碳化物(HFC)-143 (CH ₃ F ₃)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氫氟碳化物(HFC)-143a (CH ₃ F ₃)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氫氟碳化物(HFC)-152a (C ₂ H ₄ F ₂)(CAS No.: 000075-37-6)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氫氟碳化物(HFC)-227ea (C ₃ HF ₇)(CAS No.: 000431-89-0)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氫氟碳化物(HFC)-236ea (C ₃ H ₂ F ₆)(CAS No.: 000431-63-0)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氫氟碳化物(HFC)-236fa (C ₃ H ₂ F ₆)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氫氟碳化物(HFC)-245ca (C ₃ H ₃ F ₅)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.

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測試報告 Test Report

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ASM HK & ASM TECHNOLOGY SINGAPORE

4/F, WATSON CENTRE, 16 KUNG YIP ST., KWAI CHUNG, HONG KONG (ASM HK), 2 YISHUN AVENUE 7,
SINGAPORE (ASM TECHNOLOGY SINGAPORE)

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
氫氟碳化物(HFC)-245fa (C3H3F5)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氫氟碳化物(HFC)-365mfc (C4H5F5)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
全氟碳化物 / PFCs (Perfluorocarbon)				
四氟甲烷 / F14 (CAS No.: 000075-73-0)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
六氟乙烷 / Fluorocarbon 116 (CAS No.: 000076-16-4)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
八氟丙烷 / Freon 218 (CAS No.: 000076-19-7)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
十氟丁烷 / Decafluorobutane (CAS No.: 000355-25-9)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
八氟環丁烷 / Freon C318 (CAS No.: 000115-25-3)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
全氟-1-丁烯 / Perfluor-1-butene (CAS No.: 000357-26-6)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.

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測試報告 Test Report

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ASM HK & ASM TECHNOLOGY SINGAPORE

4/F, WATSON CENTRE, 16 KUNG YIP ST., KWAI CHUNG, HONG KONG (ASM HK), 2 YISHUN AVENUE 7,
SINGAPORE (ASM TECHNOLOGY SINGAPORE)

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
全氟異丁烯 / perfluorisobutene (CAS No.: 000382-21-8)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
1,4-二氫八氟丁烷 / 1,4-dihydrooctafluorobutane (CAS No.: 000377-36-6)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
2-全氟甲基丁烷 / nonafluor-2-(trifluoromethyl)butane (CAS No.: 000594-91-2)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
全氟戊烷 / perfluoro-n-pentane (CAS No.: 000678-26-2)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
2-全氟甲基戊烷 / 2-perfluoromethylpentane (CAS No.: 000355-04-4)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
全氟己烷 / perfluorohexane (CAS No.: 000355-42-0)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氯化碳氫化合物 / CHCs (Chlorinate hydrocarbon)				
1,1,1,2-四氯乙烷 / 1,1,1,2-Tetrachloroethane (CAS No.: 000630-20-6)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
1,1,1-三氯乙烷 / 1,1,1-Trichloroethane (CAS No.: 000071-55-6)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.

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測試報告 Test Report

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ASM HK & ASM TECHNOLOGY SINGAPORE

4/F, WATSON CENTRE, 16 KUNG YIP ST., KWAI CHUNG, HONG KONG (ASM HK), 2 YISHUN AVENUE 7, SINGAPORE (ASM TECHNOLOGY SINGAPORE)

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
1,3-二氯丙烷 / 1,3-Dichloropropane (CAS No.: 000142-28-9)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
2,2-二氯丙烷 / 2,2-Dichloropropane (CAS No.: 000594-20-7)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
四氯甲烷(四氯化碳) / Carbon tetrachloride (CAS No.: 000056-23-5)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氯乙烷 / Chloroethane (CAS No.: 000075-00-3)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氯仿 / Chloroform (CAS No.: 000067-66-3)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
氯甲烷 / Chloromethane (CAS No.: 000074-87-3)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
順-1,2-二氯乙烯 / cis-1,2-Dichloroethene (CAS No.: 000156-59-2)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
順-1,3-二氯丙烯 / cis-1,3-Dichloropropene (CAS No.: 010061-01-5)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀(GC/MS)檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.

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測試報告 Test Report

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ASM HK & ASM TECHNOLOGY SINGAPORE

4/F, WATSON CENTRE, 16 KUNG YIP ST., KWAI CHUNG, HONG KONG (ASM HK), 2 YISHUN AVENUE 7, SINGAPORE (ASM TECHNOLOGY SINGAPORE)

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
六氯丁二烯 / Hexachlorobutadiene (CAS No.: 000087-68-3)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS) 檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
二氯甲烷 / Dichloromethane (CAS No.: 000075-09-2)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS) 檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
四氯乙烯 / Tetrachloroethene (CAS No.: 000127-18-4)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS) 檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
反-1,2-二氯乙烯 / trans-1,2-Dichloroethene (CAS No.: 000156-60-5)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS) 檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
反-1,3-二氯丙烯 / trans-1,3-Dichloropropene (CAS No.: 010061-02-6)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS) 檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
三氯乙烯 / Trichloroethylene (CAS No.: 000079-01-6)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS) 檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
溴甲烷 / Bromomethane (CAS No.: 000074-83-9)	mg/kg	參考US EPA 5021方法, 以氣相層析質譜儀 (GC/MS) 檢測。 / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	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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測試報告 Test Report

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4/F, WATSON CENTRE, 16 KUNG YIP ST., KWAI CHUNG, HONG KONG (ASM HK), 2 YISHUN AVENUE 7, SINGAPORE (ASM TECHNOLOGY SINGAPORE)

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. Negative = 陰性 (< 1.0 %), Positive = 陽性 (> 1.0 %)
 8. 聚氯乙稀測試由SGS其他實驗室執行 (The PVC test was subcontracted to other SGS Laboratory.)
 9. 石棉測試由SGS其他實驗室執行 (The Asbestos test was subcontracted to other SGS Laboratory.)
 10. ***: 該物質是由"三丁基錫", 之測試結果計算得知, 其MDL是針對"三丁基錫"之評估.
(The substance was calculated by the test results of Tributyl Tin.
The MDL is evaluated for Tributyl Tin, Triphenyl Tin.)
 11. # = 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 ≥ 0.02 mg/kg with 50 cm² (tested areas)

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1µg/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 1µg/m² of the coated material.)

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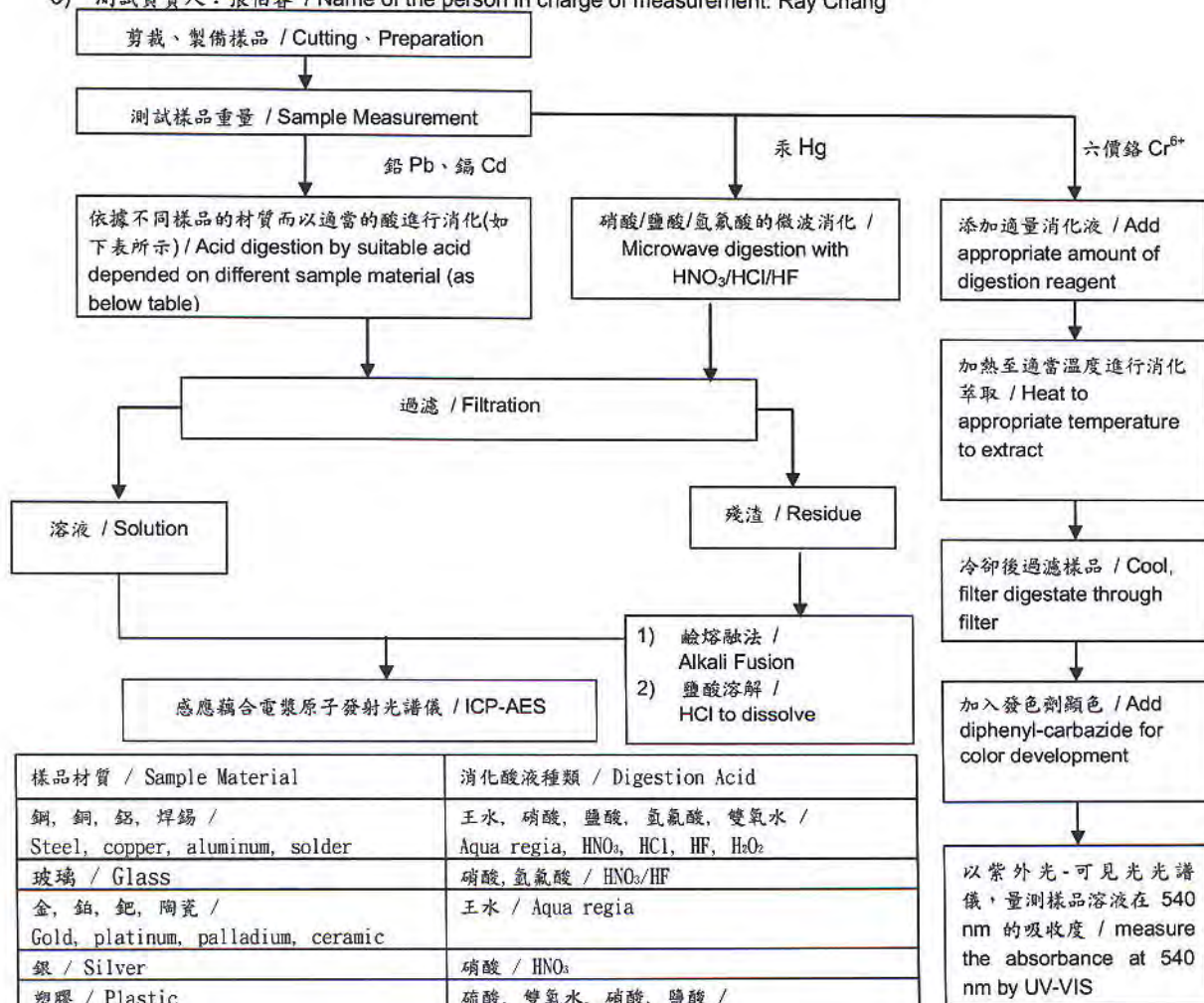
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4/F, WATSON CENTRE, 16 KUNG YIP ST., KWAI CHUNG, HONG KONG (ASM HK), 2 YISHUN AVENUE 7, SINGAPORE (ASM TECHNOLOGY SINGAPORE)

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：張伯容 / Name of the person in charge of measurement: Ray Chang



樣品材質 / Sample Material	消化酸液種類 / Digestion Acid
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	加入任何酸至完全溶解 / Any acid to total digestion

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

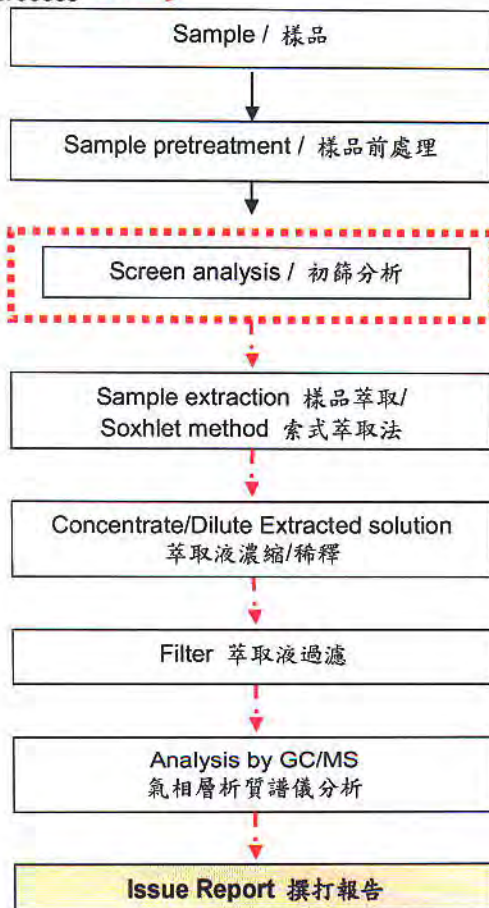
1)測試人員：曹嘉琪 / Name of the person who made measurement: Anson Tsao

2)測試負責人：張伯睿 / 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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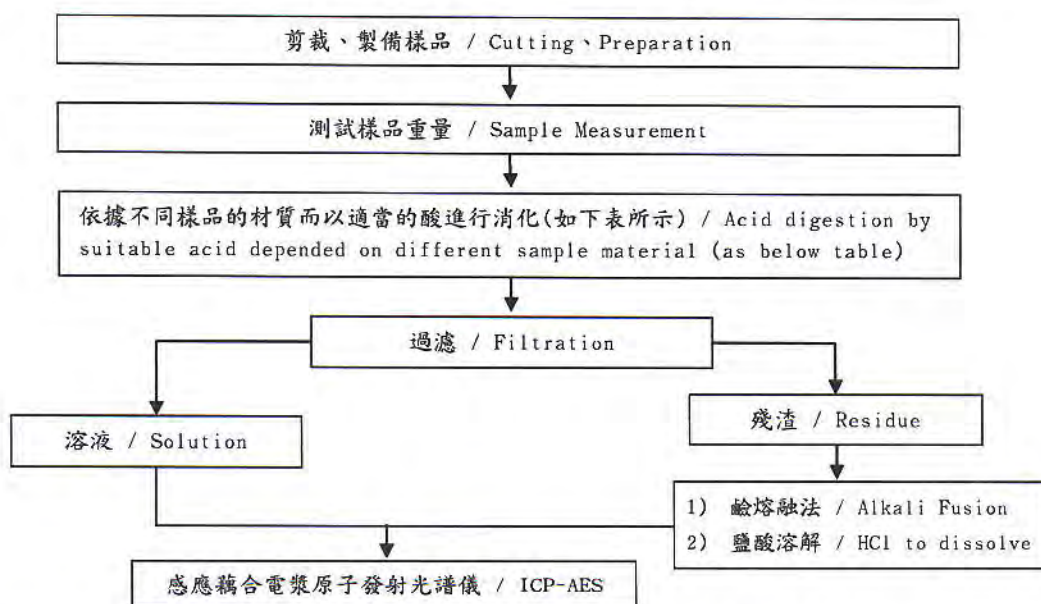
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- 1) 根據以下的流程圖之條件，樣品已完全溶解。 / These samples were dissolved totally by pre-conditioning method according to below flow chart.
- 2) 測試人員：張俊雄 / Name of the person who made measurement: Alex Chang
- 3) 測試負責人：張伯容 / Name of the person in charge of measurement: Ray 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	加入任何酸至完全溶解 / Any acid to total digestion

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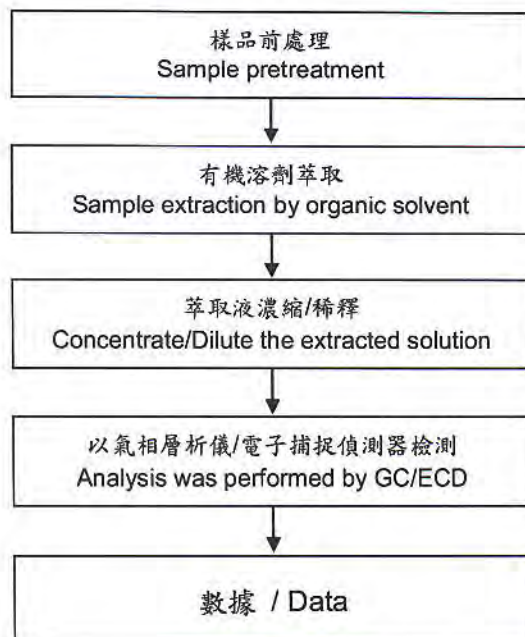
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含氯阻燃劑分析流程 /

Chlorinated Flame retardant analytical flow chart

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

- 參考方法(Reference method): USEPA 3540
- 測試項目(Test Items): PCBs, CP, MCCP / 多氯聯苯, 氯化石蠟, 中鏈氯化石蠟



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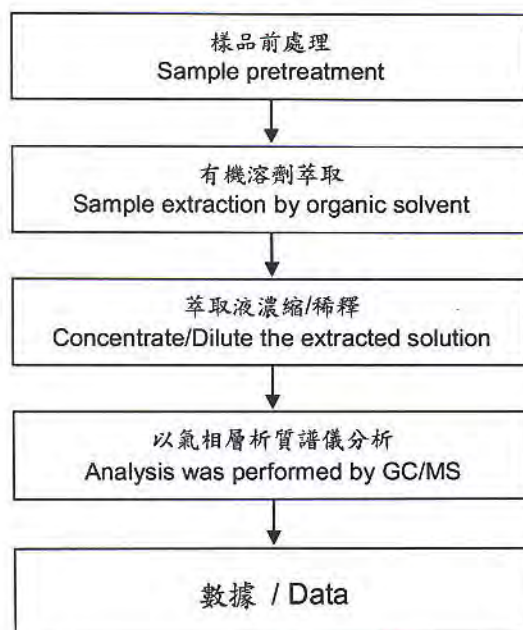
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含氯阻燃劑分析流程 /

Chlorinated Flame retardant analytical flow chart

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

- 參考方法(Reference method): US EPA 8270D, US EPA 3540
- 測試項目(Test Items): PCNs, PCTs, Mirex / 多氯奈, 多氯三聯苯, 滅蟻靈,



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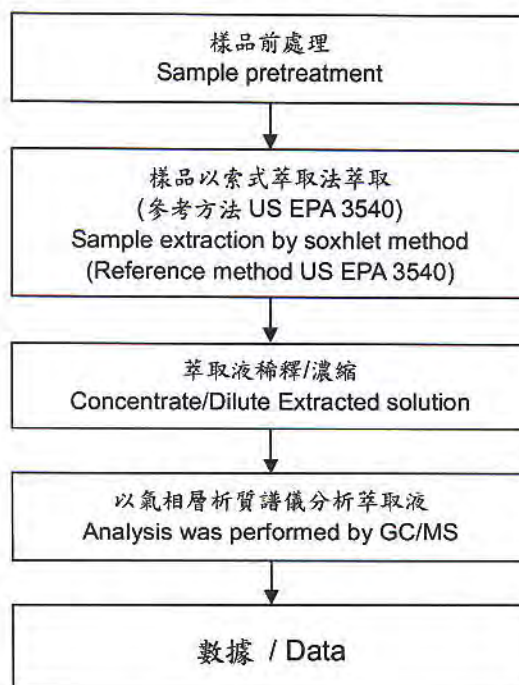
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苯並三唑類化合物分析流程圖 / Analytical flow chart of benzotriazole content

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



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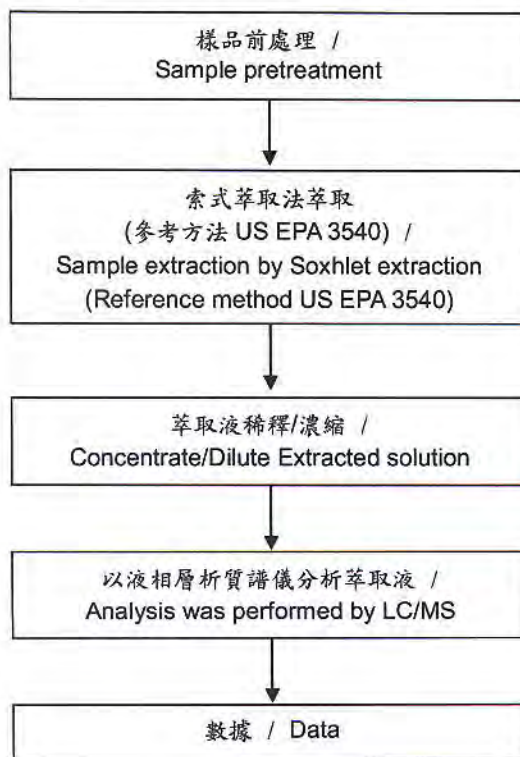
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全氟辛酸(銨)/ 全氟辛烷磺酸分析流程圖 /

Analytical flow chart of PFOA/PFOS content

1)測試人員：曹嘉琪 / Name of the person who made measurement: Anson Tsao

2)測試負責人：張伯睿 / Name of the person in charge of measurement: Ray Chang



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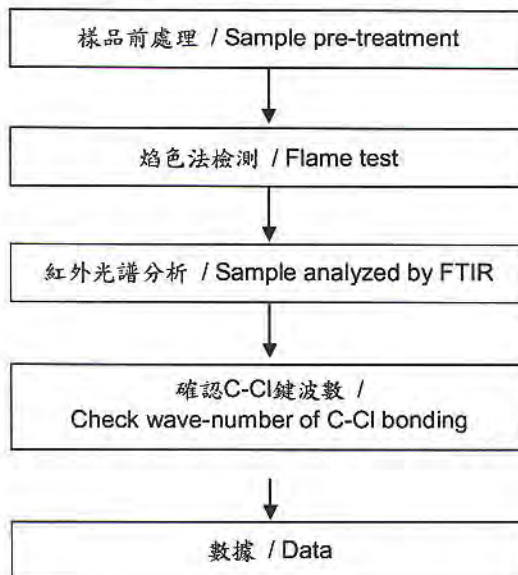
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SINGAPORE (ASM TECHNOLOGY SINGAPORE)

聚氯乙稀物質判定分析流程圖 /

Analysis flow chart for determination of PVC in material

- 1) 測試人員：邱韻如 / Name of the person who made measurement: Joyce Chiu
2) 測試負責人：林立翔 / Name of the person in charge of measurement: Roger Lin



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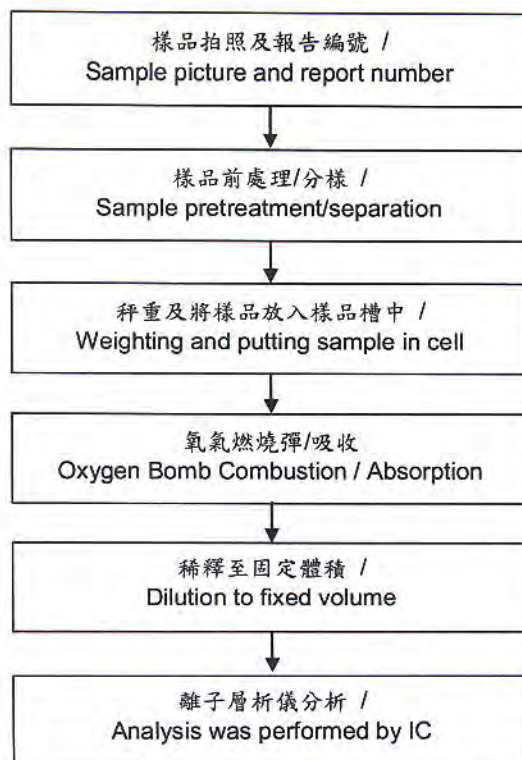
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SINGAPORE (ASM TECHNOLOGY SINGAPORE)

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：張伯容 / Name of the person in charge of measurement: Ray Chang



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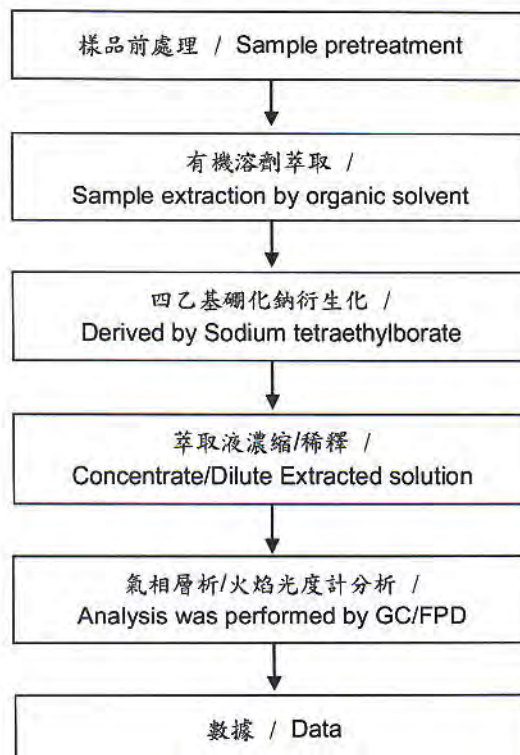
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有機錫分析流程圖 / Analytical flow chart of Organic-Tin content

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



測試報告 Test Report

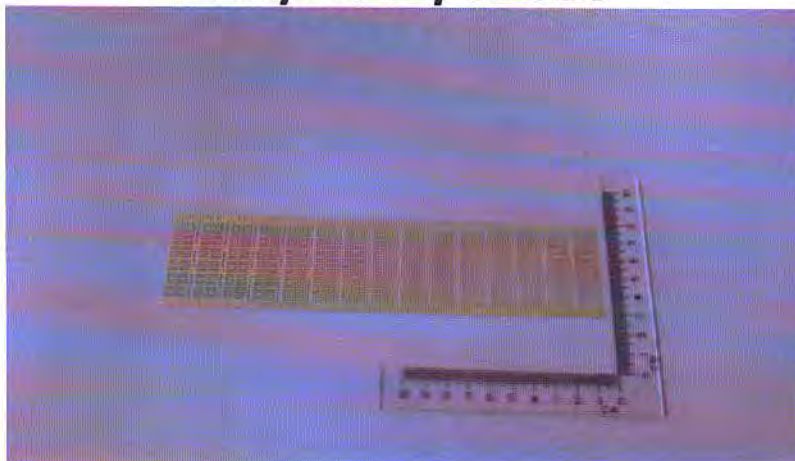
號碼(No.) : KA/2011/C1699 日期(Date) : 2012/01/05 頁數(Page) : 39 of 39

ASM HK & ASM TECHNOLOGY SINGAPORE

4/F, WATSON CENTRE, 16 KUNG YIP ST., KWAI CHUNG, HONG KONG (ASM HK), 2 YISHUN AVENUE 7,
SINGAPORE (ASM TECHNOLOGY SINGAPORE)

* 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/2011/C1699



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測試報告 Test Report

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ASM HK

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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)	: Ni PLATING MATERIAL
收件日期(Sample Receiving Date)	: 2011/12/23
測試期間(Testing Period)	: 2011/12/23 TO 2012/01/05
送樣廠商(Sample Submitted By)	: 香港商先進太平洋股份有限公司 (ASM HK)

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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ASM HK

4/F, WATSON CENTRE, 16 KUNG YIP ST., KWAI CHUNG, HONG KONG (ASM HK)

測試結果(Test Results)

測試部位(PART NAME) NO.1 : 銀色 Ni PLATING MATERIAL (SILVER Ni PLATING MATERIAL)

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: 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.
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	19.7
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.
六價鉻 / Hexavalent Chromium Cr(VI) by boiling water extraction#	**	參考IEC 62321: 2008方法, 用 boiling water extraction方法檢測。 / With reference to IEC 62321: 2008 and performed by boiling water extraction Method.	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.
Antimony (Sb)	mg/kg	With reference to US EPA Method 3052 for Antimony Content. Analysis was performed by ICP-AES.	2	n.d.

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測試報告 Test Report

號碼(No.) : KA/2011/C1701 日期(Date) : 2012/01/05 頁數(Page) : 3 of 10

ASM HK

4/F, WATSON CENTRE, 16 KUNG YIP ST., KWAI CHUNG, HONG KONG (ASM HK)

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.
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	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.
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.
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.

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測試報告 Test Report

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ASM HK

4/F, WATSON CENTRE, 16 KUNG YIP ST., KWAI CHUNG, HONG KONG (ASM HK)

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. # = 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)

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.)

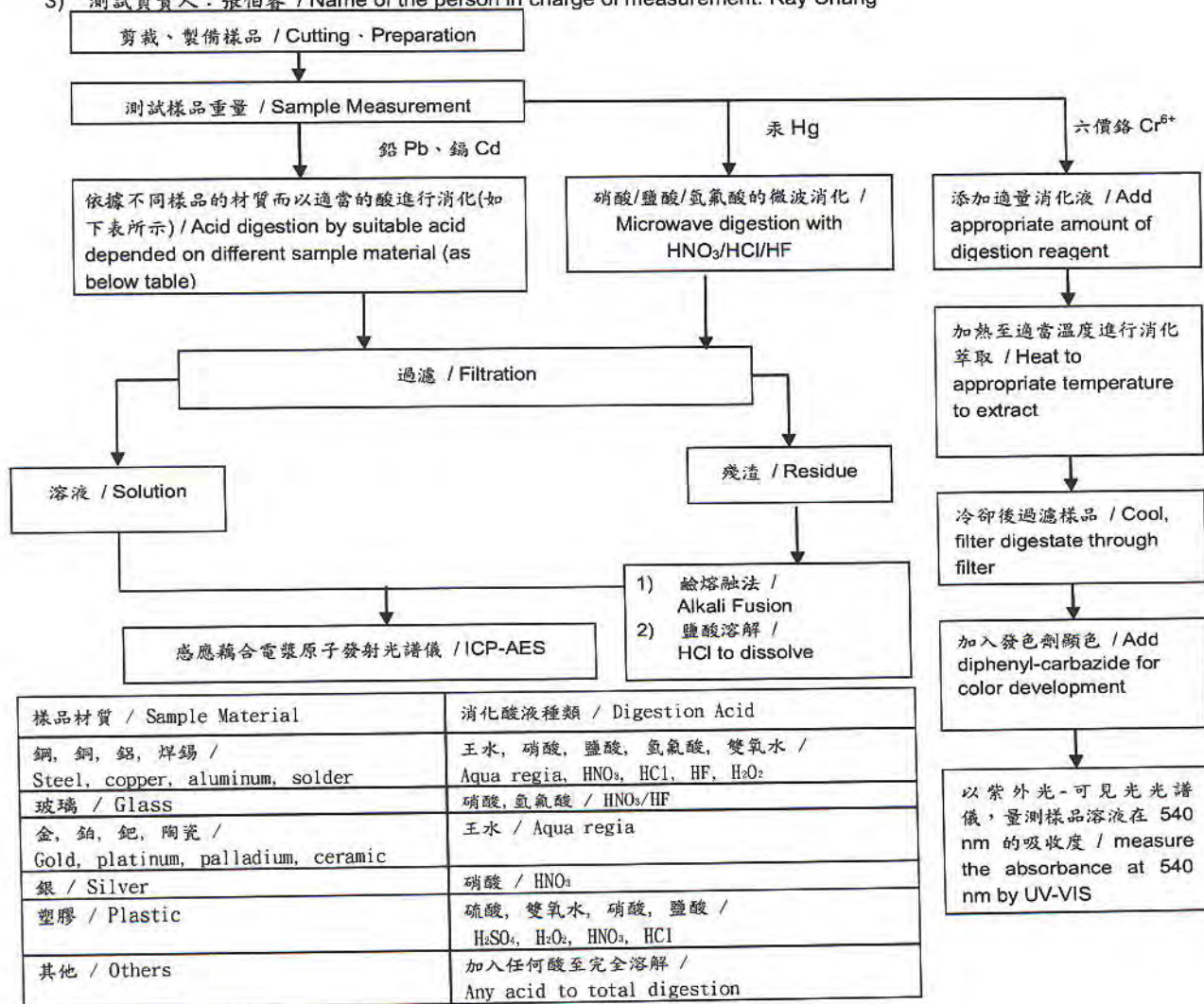
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ASM HK

4/F, WATSON CENTRE, 16 KUNG YIP ST., KWAI CHUNG, HONG KONG (ASM HK)

- 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：張伯容 / Name of the person in charge of measurement: Ray Chang



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ASM HK

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

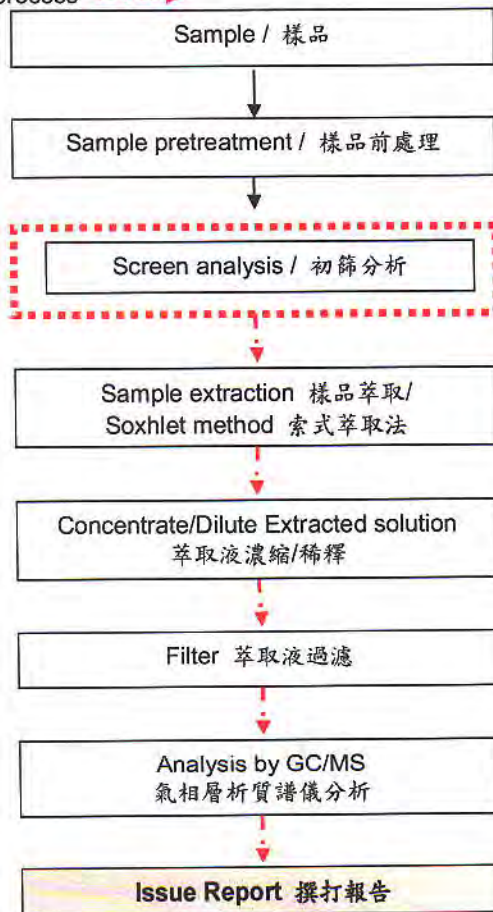
1)測試人員：曹嘉琪 / Name of the person who made measurement: Anson Tsao

2)測試負責人：張伯睿 / 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 - - - - -→



測試報告 Test Report

號碼(No.) : KA/2011/C1701 日期(Date) : 2012/01/05 頁數(Page) : 7 of 10

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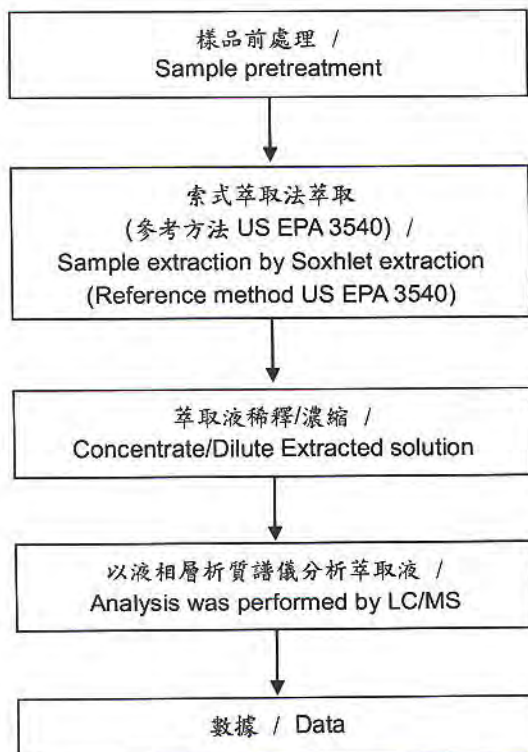
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全氟辛酸(鉍)/ 全氟辛烷磺酸分析流程圖 /

Analytical flow chart of PFOA/PFOS content

1)測試人員：曹嘉琪 / Name of the person who made measurement: Anson Tsao

2)測試負責人：張伯睿 / Name of the person in charge of measurement: Ray Chang



測試報告 Test Report

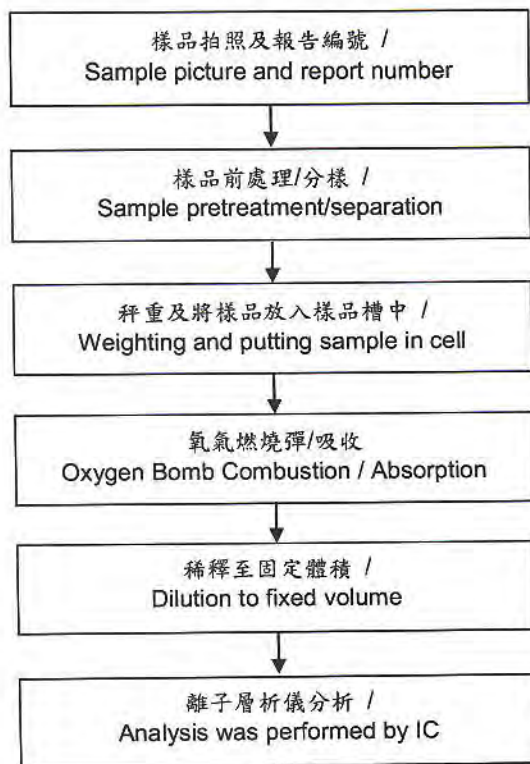
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ASM HK

4/F, WATSON CENTRE, 16 KUNG YIP ST., KWAI CHUNG, HONG KONG (ASM HK)

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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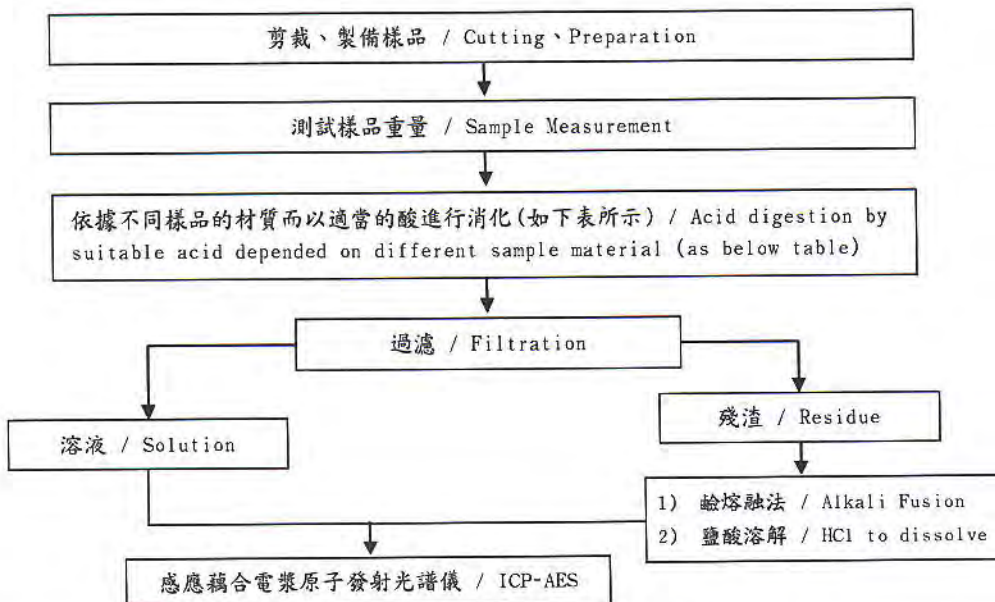
ASM HK

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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：張俊雄 / Name of the person who made measurement: Alex Chang
- 3) 測試負責人：張伯睿 / Name of the person in charge of measurement: Ray 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)



銅, 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, 鈷, 鈦, 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	加入任何酸至完全溶解 / Any acid to total digestion

測試報告 Test Report

號碼(No.) : KA/2011/C1701 日期(Date) : 2012/01/05 頁數(Page) : 10 of 10

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

KA/2011/C1701



** 報告結尾(End of Report) **

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號碼(No.) : KA/2011/C1702 日期(Date) : 2012/01/05 頁數(Page) : 1 of 10

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4/F, WATSON CENTRE, 16 KUNG YIP ST., KWAI CHUNG, HONG KONG (ASM HK)

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)	: Pd PLATING MATERIAL
收件日期(Sample Receiving Date)	: 2011/12/23
測試期間(Testing Period)	: 2011/12/23 TO 2012/01/05
送樣廠商(Sample Submitted By)	: 香港商先進太平洋股份有限公司 (ASM HK)

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/2011/C1702 日期(Date) : 2012/01/05 頁數(Page) : 2 of 10

ASM HK

4/F, WATSON CENTRE, 16 KUNG YIP ST., KWAI CHUNG, HONG KONG (ASM HK)

測試結果(Test Results)

測試部位(PART NAME) NO.1 : 銀色 Pd PLATING MATERIAL (SILVER Pd PLATING MATERIAL)

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: 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.
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	19.6
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.
六價鉻 / Hexavalent Chromium Cr(VI) by boiling water extraction#	**	參考IEC 62321: 2008方法, 用 boiling water extraction方法檢測。 / With reference to IEC 62321: 2008 and performed by boiling water extraction Method.	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.
Antimony (Sb)	mg/kg	With reference to US EPA Method 3052 for Antimony Content. Analysis was performed by ICP-AES.	2	n.d.

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測試報告 Test Report

號碼(No.): KA/2011/C1702 日期(Date): 2012/01/05 頁數(Page): 3 of 10

ASM HK

4/F, WATSON CENTRE, 16 KUNG YIP ST., KWAI CHUNG, HONG KONG (ASM HK)

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.
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	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.
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.
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.

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測試報告 Test Report

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ASM HK

4/F, WATSON CENTRE, 16 KUNG YIP ST., KWAI CHUNG, HONG KONG (ASM HK)

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. # = 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)

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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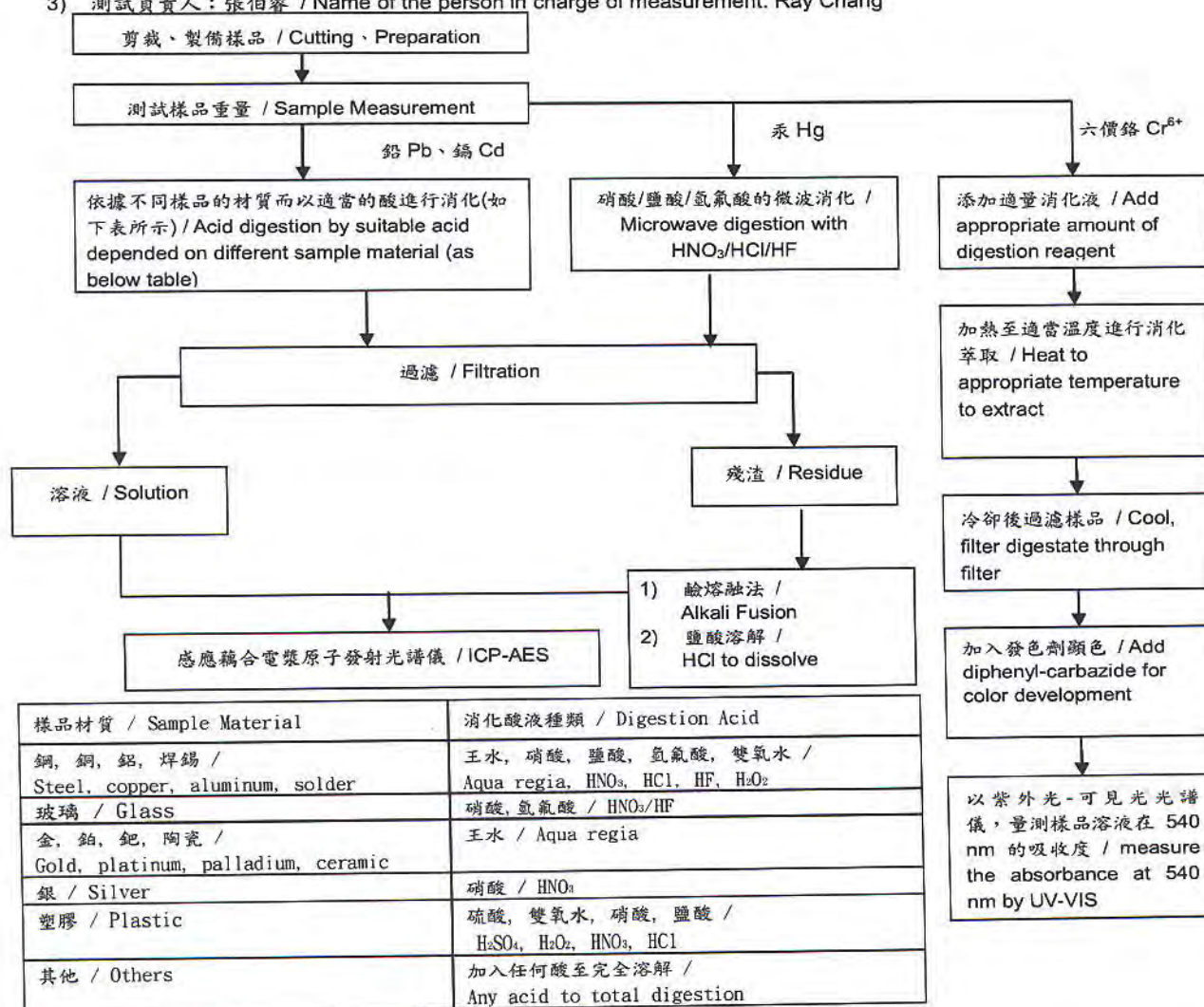
測試報告 Test Report

號碼(No.) : KA/2011/C1702 日期(Date) : 2012/01/05 頁數(Page) : 5 of 10

ASM HK

4/F, WATSON CENTRE, 16 KUNG YIP ST., KWAI CHUNG, HONG KONG (ASM HK)

- 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：張伯容 / Name of the person in charge of measurement: Ray Chang



樣品材質 / Sample Material	消化酸液種類 / Digestion Acid
銅, 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	加入任何酸至完全溶解 / Any acid to total digestion

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測試報告 Test Report

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ASM HK

4/F, WATSON CENTRE, 16 KUNG YIP ST., KWAI CHUNG, HONG KONG (ASM HK)

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

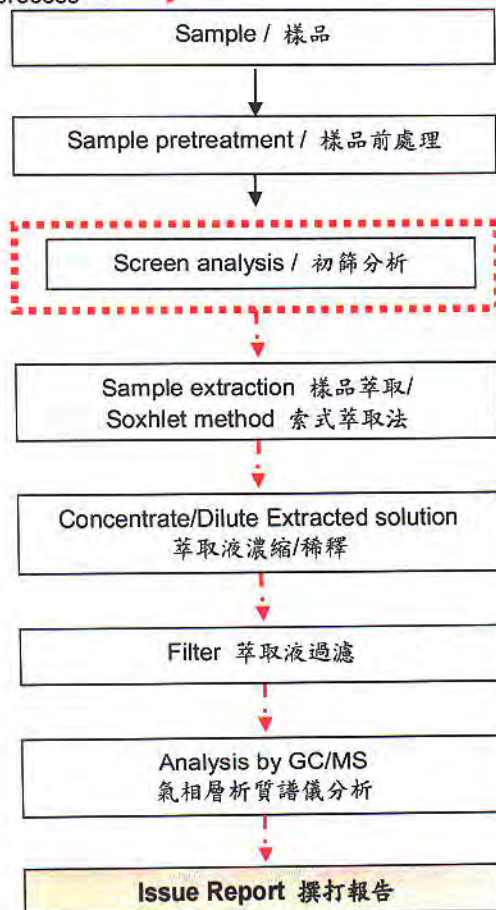
1)測試人員: 曹嘉琪 / Name of the person who made measurement: Anson Tsao

2)測試負責人: 張伯睿 / 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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測試報告 Test Report

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ASM HK

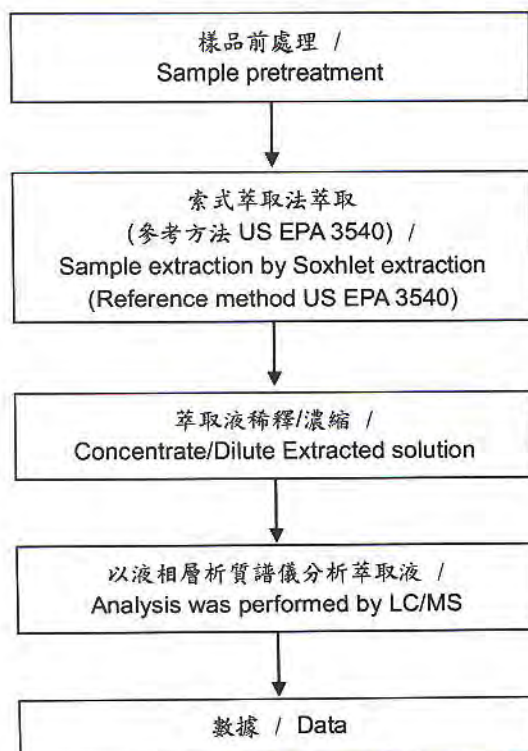
4/F, WATSON CENTRE, 16 KUNG YIP ST., KWAI CHUNG, HONG KONG (ASM HK)

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：曹嘉琪 / Name of the person who made measurement: Anson Tsao

2)測試負責人：張伯睿 / Name of the person in charge of measurement: Ray Chang



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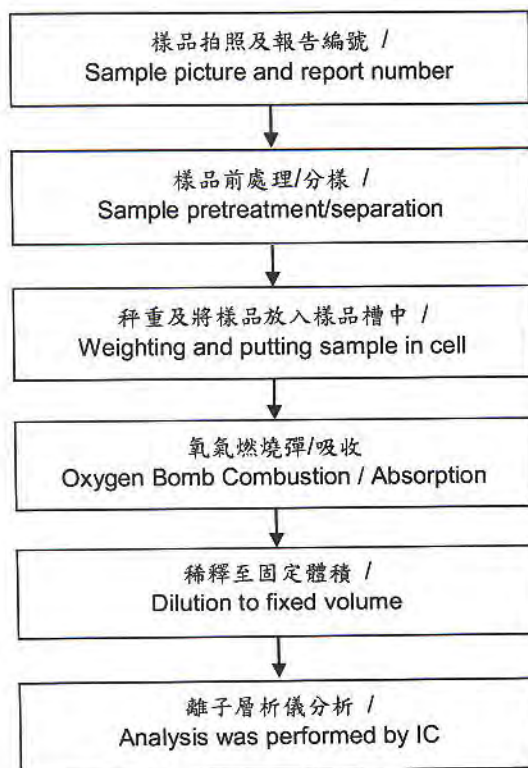
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ASM HK

4/F, WATSON CENTRE, 16 KUNG YIP ST., KWAI CHUNG, HONG KONG (ASM HK)

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



測試報告 Test Report

號碼(No.) : KA/2011/C1702 日期(Date) : 2012/01/05 頁數(Page) : 9 of 10

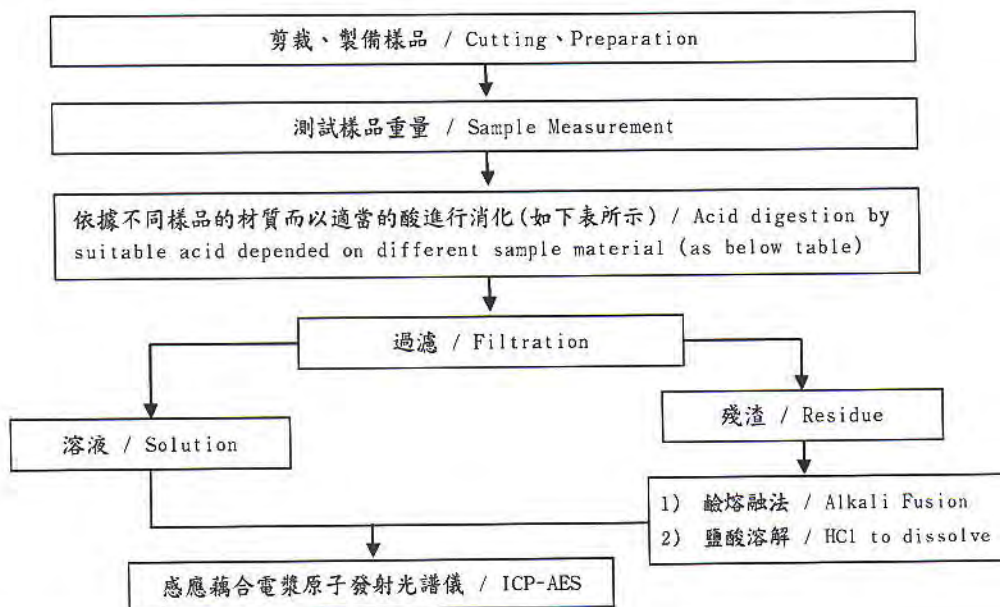
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- 1) 根據以下的流程圖之條件，樣品已完全溶解。 / These samples were dissolved totally by pre-conditioning method according to below flow chart.
- 2) 測試人員：張俊雄 / Name of the person who made measurement: Alex Chang
- 3) 測試負責人：張伯容 / Name of the person in charge of measurement: Ray 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, 鈱, 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	加入任何酸至完全溶解 / Any acid to total digestion

測試報告 Test Report

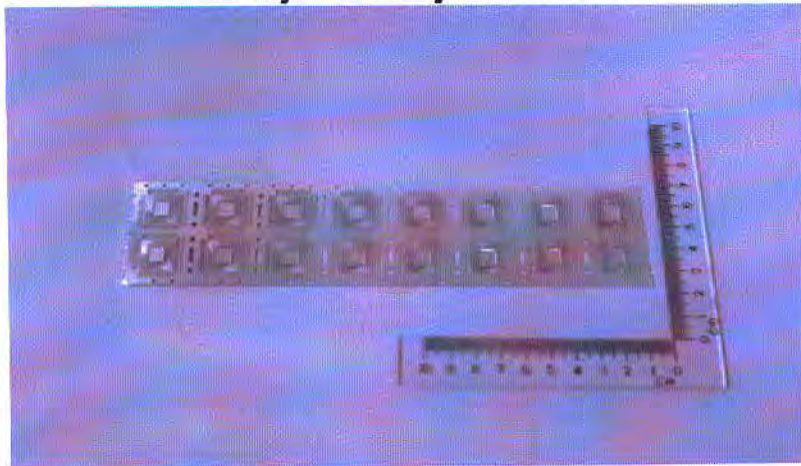
號碼(No.) : KA/2011/C1702 日期(Date) : 2012/01/05 頁數(Page) : 10 of 10

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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/2011/C1702



** 報告結尾(End of Report) **

測試報告
Test Report

號碼(No.) : KA/2011/C1703 日期(Date) : 2012/01/05 頁數(Page) : 1 of 10

ASM HK

4/F, WATSON CENTRE, 16 KUNG YIP ST., KWAI CHUNG, HONG KONG (ASM HK)

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) : Au PLATING MATERIAL
收件日期(Sample Receiving Date) : 2011/12/23
測試期間(Testing Period) : 2011/12/23 TO 2012/01/05
送樣廠商(Sample Submitted By) : 香港商先進太平洋股份有限公司 (ASM HK)

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/2011/C1703 日期(Date) : 2012/01/05 頁數(Page) : 2 of 10

ASM HK

4/F, WATSON CENTRE, 16 KUNG YIP ST., KWAI CHUNG, HONG KONG (ASM HK)

測試結果(Test Results)

測試部位(PART NAME) NO.1 : 銅紅色 Au PLATING MATERIAL (COPPER RED Au PLATING MATERIAL)

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: 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.
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	19.6
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.
六價鉻 / Hexavalent Chromium Cr(VI) by boiling water extraction#	**	參考IEC 62321: 2008方法, 用 boiling water extraction方法檢測。 / With reference to IEC 62321: 2008 and performed by boiling water extraction Method.	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.
Antimony (Sb)	mg/kg	With reference to US EPA Method 3052 for Antimony Content. Analysis was performed by ICP-AES.	2	n.d.

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測試報告

Test Report

號碼(No.) : KA/2011/C1703 日期(Date) : 2012/01/05 頁數(Page) : 3 of 10

ASM HK

4/F, WATSON CENTRE, 16 KUNG YIP ST., KWAI CHUNG, HONG KONG (ASM HK)

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.
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	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.
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.
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.

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測試報告 Test Report

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ASM HK

4/F, WATSON CENTRE, 16 KUNG YIP ST., KWAI CHUNG, HONG KONG (ASM HK)

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. # = 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)

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.)

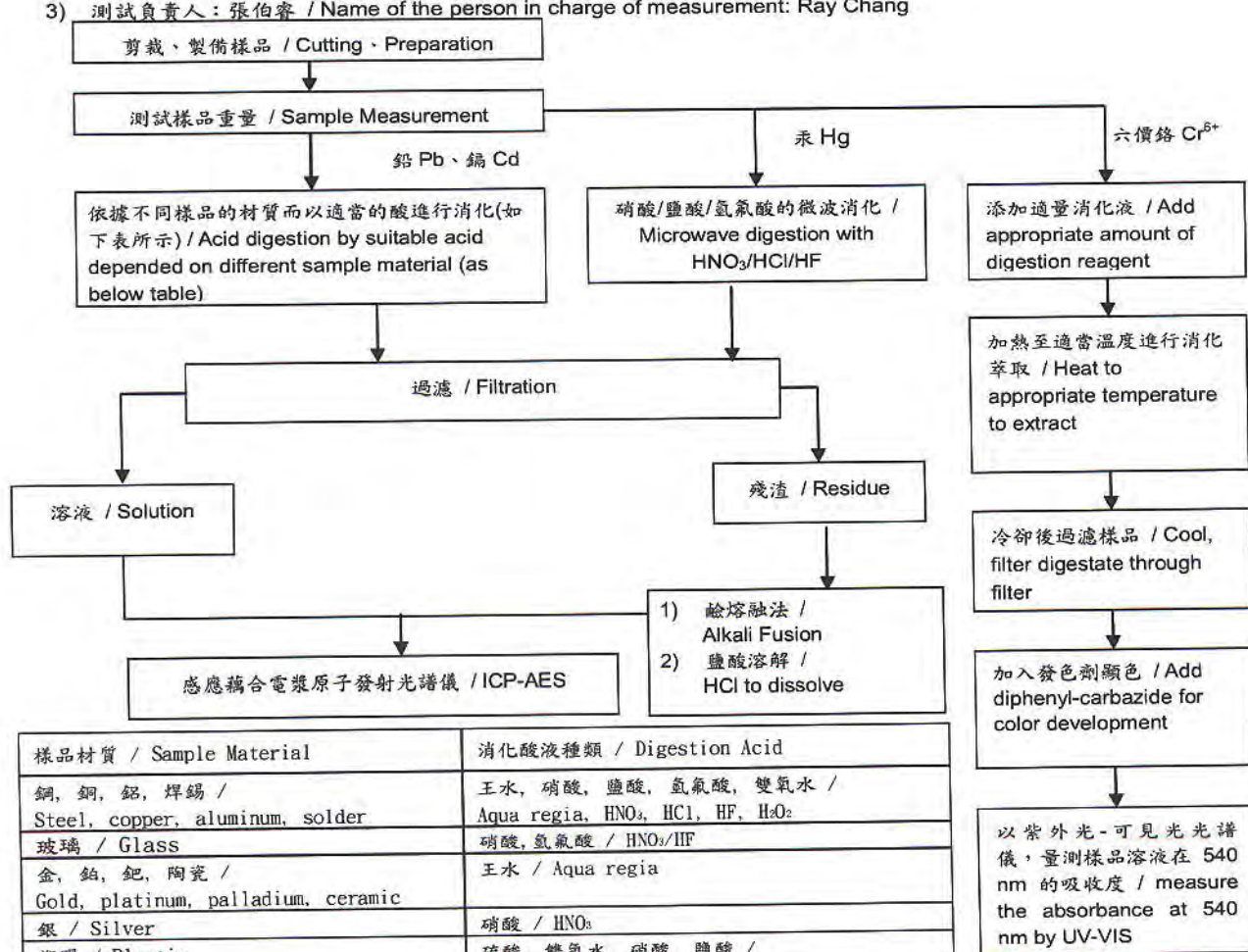
測試報告 Test Report

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ASM HK

4/F, WATSON CENTRE, 16 KUNG YIP ST., KWAI CHUNG, HONG KONG (ASM HK)

- 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：張伯容 / Name of the person in charge of measurement: Ray Chang



樣品材質 / Sample Material	消化酸液種類 / Digestion Acid
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, 鈷, 鈦, 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	加入任何酸至完全溶解 / Any acid to total digestion

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測試報告 Test Report

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ASM HK

4/F, WATSON CENTRE, 16 KUNG YIP ST., KWAI CHUNG, HONG KONG (ASM HK)

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

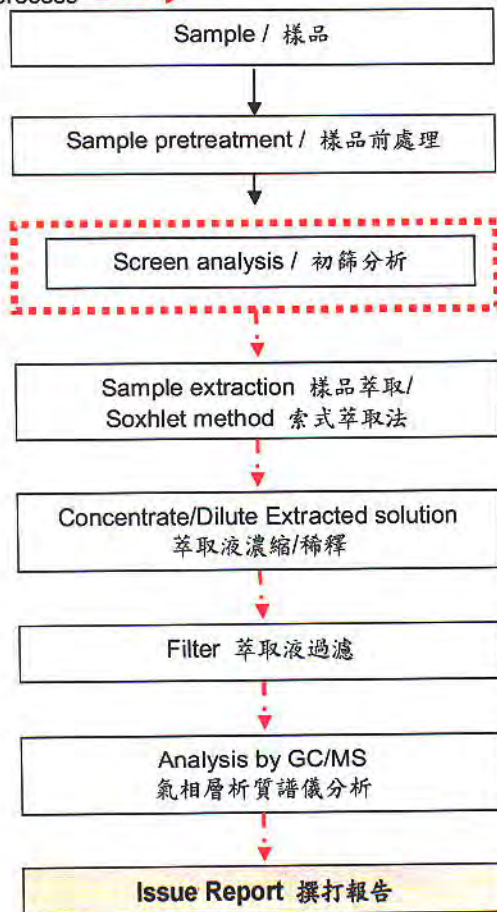
1)測試人員：曹嘉琪 / Name of the person who made measurement: Anson Tsao

2)測試負責人：張伯睿 / 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 - - - ->



測試報告 Test Report

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ASM HK

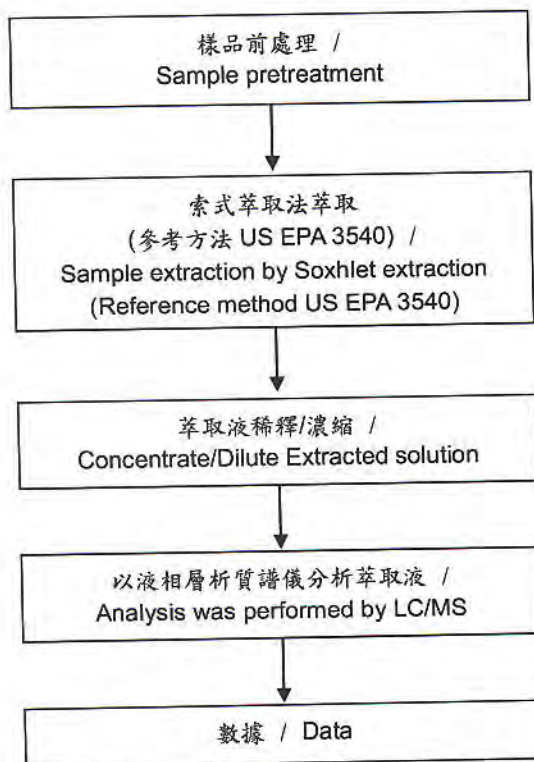
4/F, WATSON CENTRE, 16 KUNG YIP ST., KWAI CHUNG, HONG KONG (ASM HK)

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: 曹嘉琪 / Name of the person who made measurement: Anson Tsao

2) 測試負責人: 張伯睿 / Name of the person in charge of measurement: Ray Chang



測試報告 Test Report

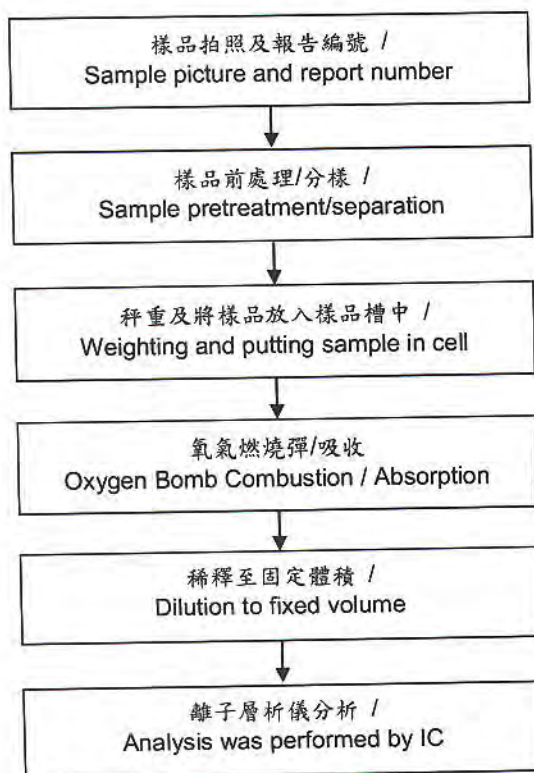
號碼(No.) : KA/2011/C1703 日期(Date) : 2012/01/05 頁數(Page) : 8 of 10

ASM HK

4/F, WATSON CENTRE, 16 KUNG YIP ST., KWAI CHUNG, HONG KONG (ASM HK)

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



測試報告 Test Report

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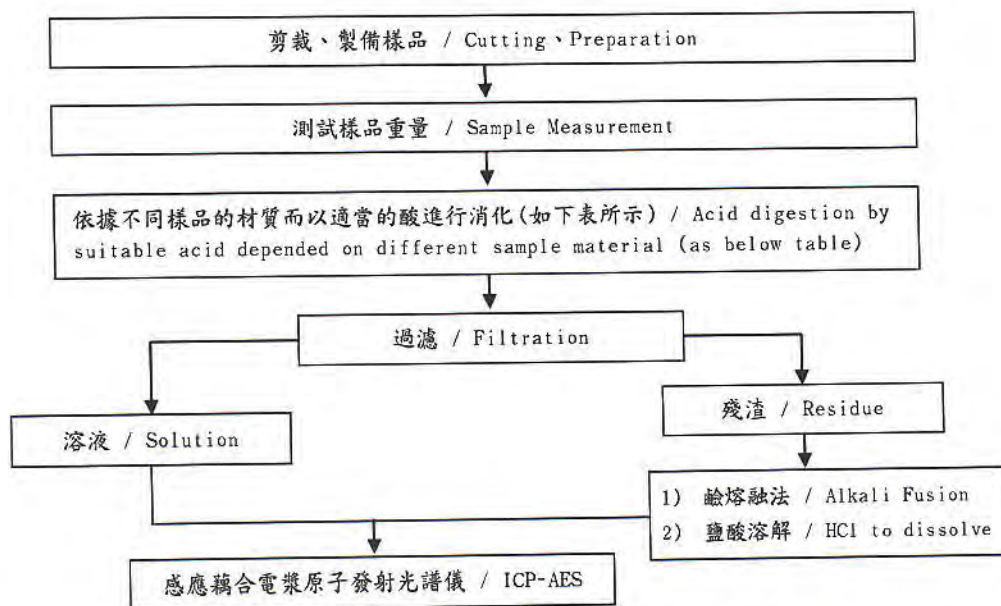
ASM HK

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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：張俊雄 / Name of the person who made measurement: Alex Chang
- 3) 測試負責人：張伯容 / Name of the person in charge of measurement: Ray 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,鈷,鈦,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	加入任何酸至完全溶解 / Any acid to total digestion

測試報告 Test Report

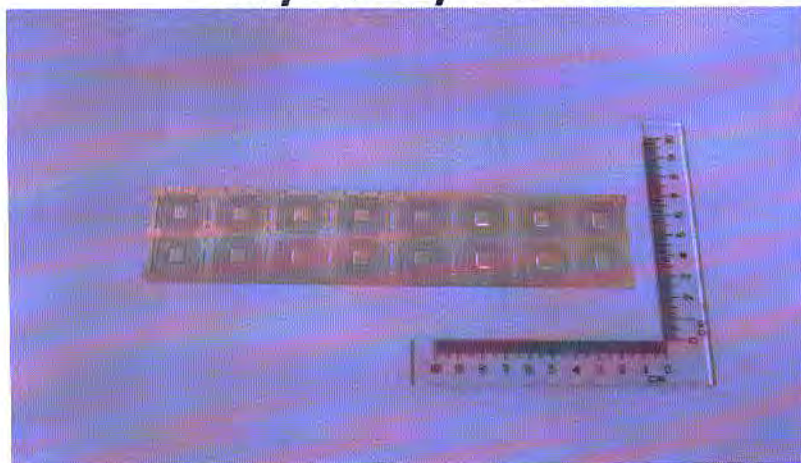
號碼(No.) : KA/2011/C1703 日期(Date) : 2012/01/05 頁數(Page) : 10 of 10

ASM HK

4/F, WATSON CENTRE, 16 KUNG YIP ST., KWAI CHUNG, HONG KONG (ASM HK)

* 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/2011/C1703



** 報告結尾(End of Report) **

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Test Report No. F690101/LF-CTSAYAA11-30305

Issued Date: 2011. 09. 20 Page 1 of 6

To: **HENKEL TECHNOLOGIES**
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569-21, Gasan-dong
Geumcheon-gu
Seoul
Korea

The following merchandise was submitted and identified by the client as :

SGS File No. : AYAA11-30305
Product Name : 8006NS
Item No./Part No. : N/A
Received Date : 2011. 09. 14
Test Period : 2011. 09. 15 to 2011. 09. 20
Test Results : For further details, please refer to following page(s)
Test Performed : SGS Korea tested the sample(s) selected by applicant with following results.

SGS Korea Co. Ltd.

Jeff Jang / Chemical Lab Mgr

Timothy Jeon
Jinhee Kim
Cindy Park
Jerry Jung/ Testing Person

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SGS Korea Co., Ltd.

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t +82 (0)31 4608 000 f +82 (0)31 4600 059 <http://www.sgslab.co.kr>, www.kr.sgs.com/greenlab



Test Report No. F690101/LF-CTSAYAA11-30305

Issued Date: 2011. 09. 20 Page 2 of 6

Sample No. : AYAA11-30305.001

Sample Description : 8006NS

Item No./Part No. : N/A

Materials : Paste

Heavy Metals

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	With reference to IEC 62321:2008, ICP	0.5	N.D.
Lead (Pb)	mg/kg	With reference to IEC 62321:2008, ICP	5	N.D.
Mercury (Hg)	mg/kg	With reference to IEC 62321:2008, ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	With reference to IEC 62321:2008, UV-VIS	1	N.D.
Antimony (Sb)	mg/kg	With reference to EPA 3052(1996), US EPA 6010B(1996), ICP	10	N.D.
Phosphorous (P)	mg/kg	With reference to EPA 3050B(1996), US EPA 6010B(1996), ICP	10	N.D.

Flame Retardants-PBBs/PBDEs

Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Dibromobiphenyl	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Tribromobiphenyl	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Tetrabromobiphenyl	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Pentabromobiphenyl	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Hexabromobiphenyl	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Heptabromobiphenyl	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Octabromobiphenyl	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Nonabromobiphenyl	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Decabromobiphenyl	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Monobromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Dibromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Tribromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Hexabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Heptabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.

NOTE: (1) N.D. = Not detected.(<MDL)

(2) mg/kg = ppm

(3) MDL = Method Detection Limit

(4) - = No regulation

(5) ** = Qualitative analysis (No Unit)

(6) * = Boiling-water-extraction:

Negative = Absence of CrVI coating

Positive = Presence of CrVI coating; the detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm² sample surface area.

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SGS Korea Co., Ltd

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Test Report No. F690101/LF-CTSAYAA11-30305

Issued Date: 2011. 09. 20 Page 3 of 6

Sample No. : AYAA11-30305.001
Sample Description : 8006NS
Item No./Part No. : N/A
Materials : Paste

Flame Retardants-PBBs/PBDEs

Test Items	Unit	Test Method	MDL	Results
Octabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Decabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.

Halogen Contents

Test Items	Unit	Test Method	MDL	Results
Bromine(Br)	mg/kg	BS EN 14582:2007, IC	30	N.D.
Chlorine(Cl)	mg/kg	BS EN 14582:2007, IC	30	386
Fluorine(F)	mg/kg	BS EN 14582:2007, IC	30	N.D.
Iodine(I)	mg/kg	BS EN 14582:2007, IC	50	N.D.

Other(s)

Test Items	Unit	Test Method	MDL	Results
PFOA(Perfluorooctanoic acid)	mg/kg	US EPA 3540C/3550C, LC/MS	1	N.D.
PFOS(Perfluorooctane Sulfonates-Acid/Metal Salt/Amide)	mg/kg	US EPA 3540C/3550C, LC/MS	1	N.D.

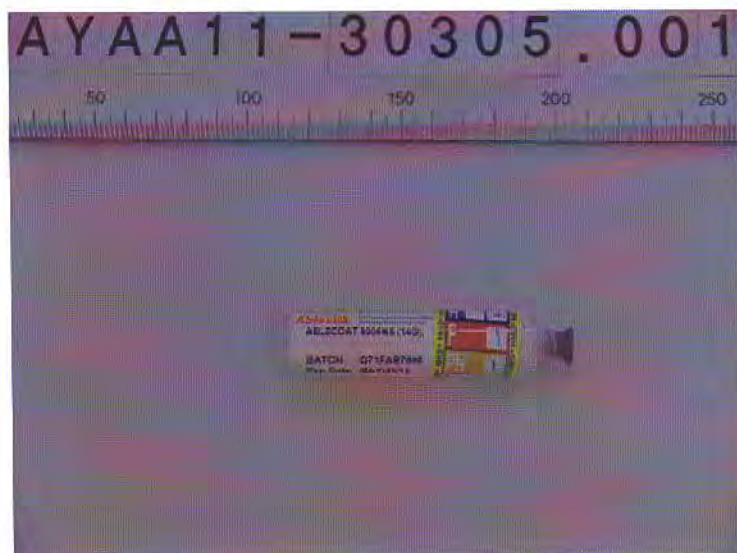
NOTE: (1) N.D. = Not detected.(<MDL)
(2) mg/kg = ppm
(3) MDL = Method Detection Limit
(4) - = No regulation
(5) ** = Qualitative analysis (No Unit)
(6) * = Boiling-water-extraction:
Negative = Absence of CrVI coating
Positive = Presence of CrVI coating; the detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm² sample surface area.

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222 The G valley 555-9 Hangeeong, Dongan-gu, Anyang-si, Gyeonggi-do, Korea 431-080
t +82 (0)31 4608 000 f +82 (0)31 4608 059 <http://www.sgslab.co.kr> www.kr.sgs.com/greentab

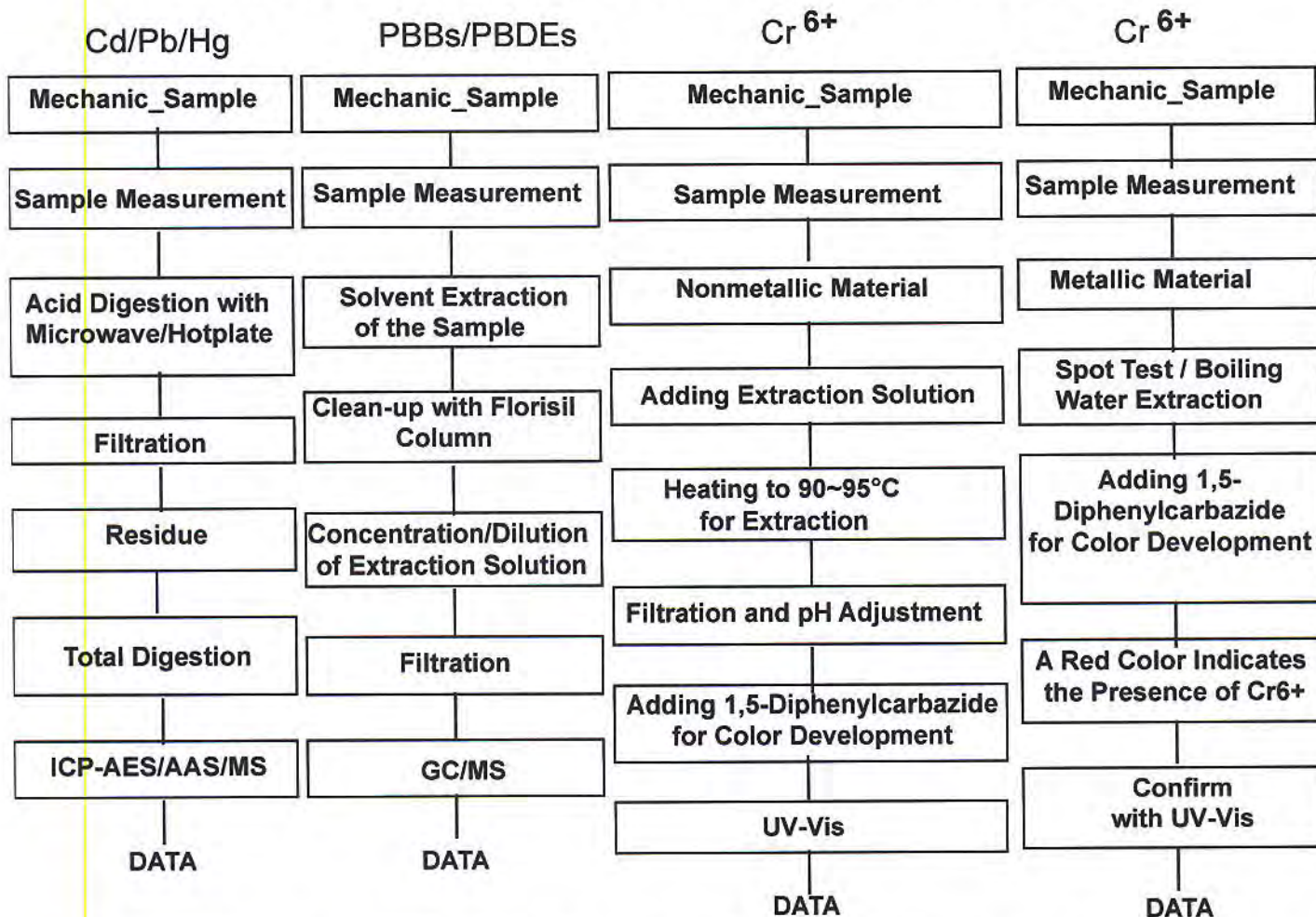
Picture of Sample as Received:



- NOTE:**
- (1) N.D. = Not detected.(<MDL)
 - (2) mg/kg = ppm
 - (3) MDL = Method Detection Limit
 - (4) - = No regulation
 - (5) ** = Qualitative analysis (No Unit)
 - (6) * = Boiling-water-extraction:
 Negative = Absence of CrVI coating
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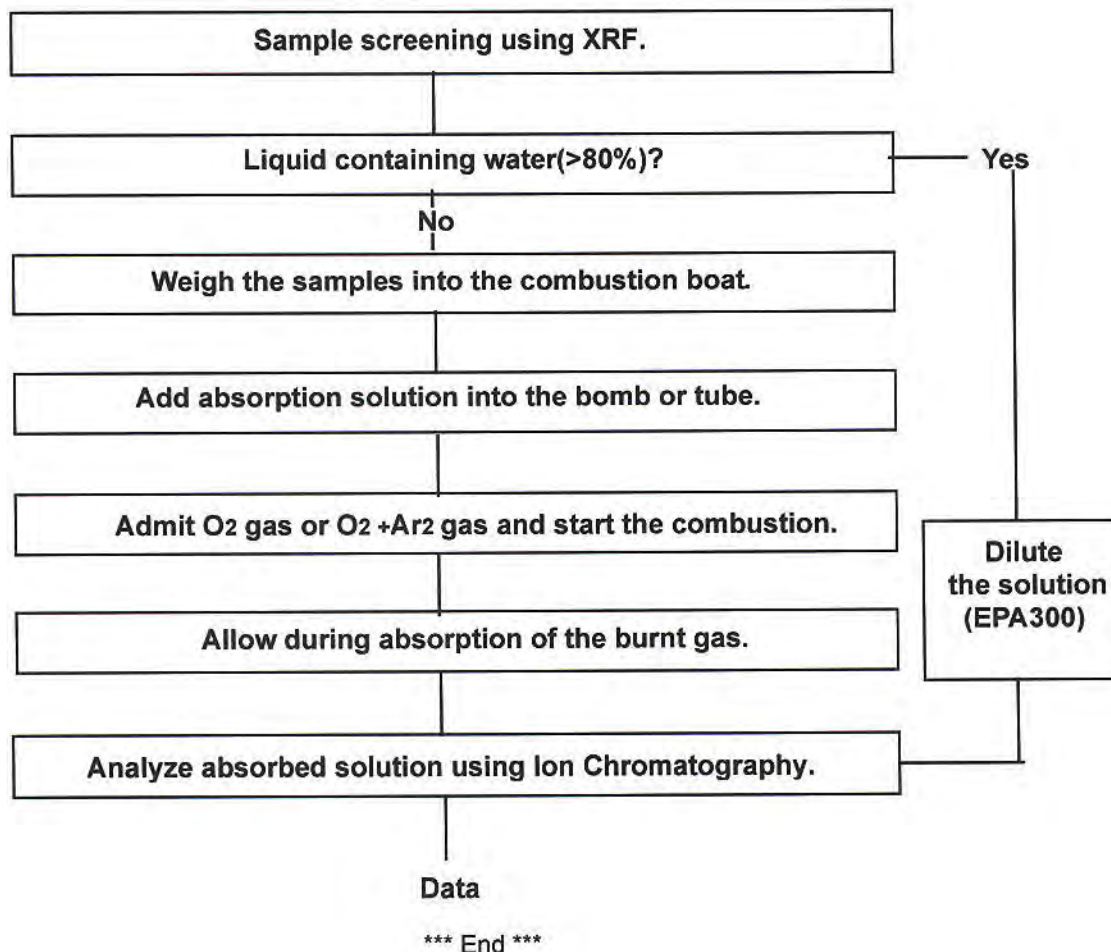
Testing Flow Chart for RoHS: Cd/Pb/Hg/Cr⁶⁺ /PBBs&PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg.
Section Chief : Gilsae Yi

- NOTE: (1) N.D. = Not detected.(<MDL)
 (2) mg/kg = ppm
 (3) MDL = Method Detection Limit
 (4) - = No regulation
 (5) ** = Qualitative analysis (No Unit)
 (6) * = Boiling-water-extraction:
 Negative = Absence of CrVI coating
 Positive = Presence of CrVI coating; the detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm² sample surface area.

Flow Chart for Halogen Test



NOTE: (1) N.D. = Not detected.(<MDL)
 (2) mg/kg = ppm
 (3) MDL = Method Detection Limit
 (4) - = No regulation
 (5) ** = Qualitative analysis (No Unit)
 (6) * = Boiling-water-extraction:
 Negative = Absence of CrVI coating
 Positive = Presence of CrVI coating; the detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm2 sample surface area.



Test Report

Number : TWNC00217298

Applicant: Littelfuse, Inc.
800 E. Northwest Hwy
Desplaines IL 60016

Date : Jul 25, 2011

Sample Description:

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

Part Description : Adhesive
Part Number : 8006NS
Date Sample Received : Jul 21, 2011
Date Test Started : Jul 21, 2011

Test Conducted :

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

Authorized By:

On Behalf Of Intertek Testing Services
Taiwan Limited



K. Y. Liang
Director

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except in full, without the written
approval of the laboratory.

Number : TWNC00217298

Test Conducted

(I) Test Result Summary:

<u>Test Item</u>	<u>Result (ppm)</u>
	<u>White Paste</u>
Phthalates	
Di(2-ethylhexyl) Phthalate (DEHP)	ND
Dibutyl Phthalate (DBP)	ND
Benzyl Butyl Phthalate (BBP)	ND
Others	
Hexabromocyclododecane (HBCDD)	ND

Remarks : ppm = Parts per million based on wet weight of tested sample
 ND = Not detected

Responsibility Of Chemist: Irene Chiou / Kevin Liu / Cathy Chen

Date Sample Received : Jul 21, 2011

Test Period : Jul 21, 2011 To Jul 25, 2011

(II) Test Method:

<u>Test Item</u>	<u>Test method</u>	<u>Reporting Limit</u>
Phthalates	With reference to ASTM D3421-75, by solvent extraction and determined by GC-MSD or GC-FID	10 ppm
Hexabromocyclododecane (HBCDD)	With reference to USEPA 3540C, by solvent extraction and determined by GC-MSD	10 ppm

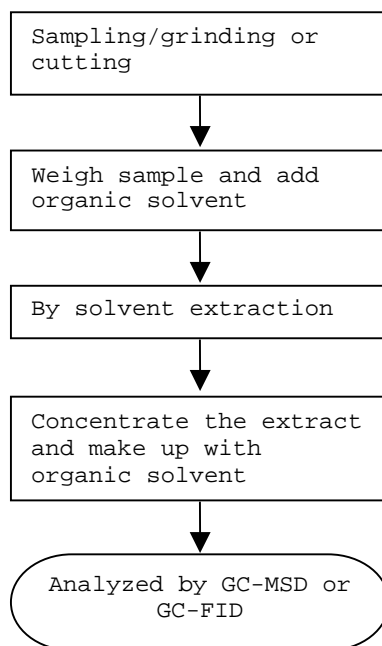
Remark : Reporting Limit = Quantitation limit of analyte in sample

Test Conducted

(Ⅲ) Measurement Flowchart:

Test For Phthalates Contents

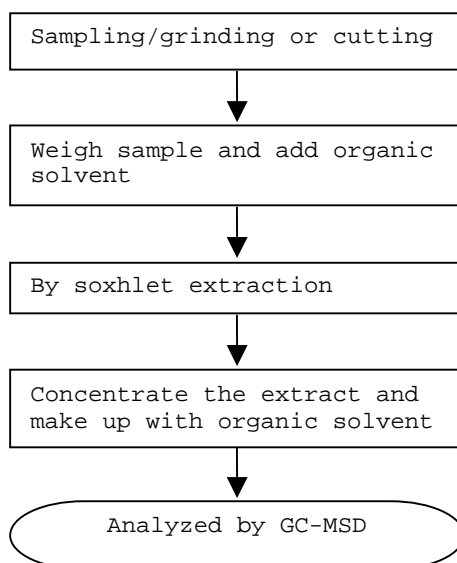
Reference Method: ASTM D3421-75



Test Conducted

(III) Measurement Flowchart:

Test For Hexabromocyclododecane (HBCDD)
Reference Standard : USEPA 3540C

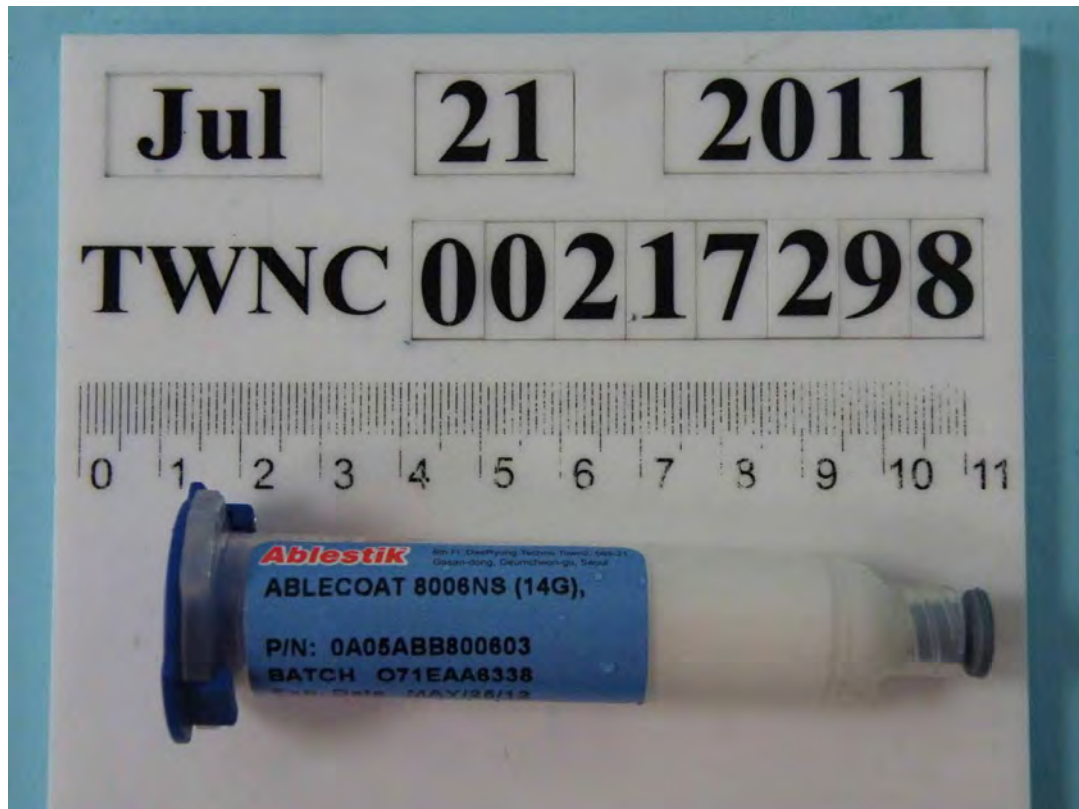


End of Report

Number : TWNC00217298

Test Conducted

Photo





Test Report

No. LPCI/25132(B)/11+KA/2011/B1388 Date : 02/12/2011 Page: 1 of 13
CTS Ref. CTS/11/4539/Tanaka

TANAKA ELECTRONICS (MALAYSIA) SDN BHD
PLOT 11, PHASE IV, BAYAN LEPAS FIZ
11900 PENANG, MALAYSIA

The following merchandise was (were) submitted and identified by the client as:

Sample Description	:	Au Bonding Wire
Sample Receiving Date	:	21/11/2011
Testing Period	:	21/11/2011 to 02/12/2011
Date Completed	:	02/12/2011
Reporting Date	:	02/12/2011

Test Requested	:	Selected test(s) as requested by client
Test Method	:	Please refer to next page(s).
Test Results	:	Please refer to next page(s).
Analysts	:	Teh Pui Sean, Tay Siam Pine, Eileen Tan Yi Pin, Yee Sook Wai & Lim Meng Hoe

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Test Report

No. LPCI/25132(B)/11+KA/2011/B1388 Date : 02/12/2011 Page: 2 of 13
 CTS Ref. CTS/11/4539/Tanaka

Test results:

Test Part Description :

Sample Description : Au Bonding Wire

RoHS Directive 2011/65/EU Annex II

Test Item(s):	Unit	Test Method	Results	MDL
Cadmium (Cd)	mg/kg	With reference to IEC 62321:2008, and performed by ICP-OES	N.D.	2
Lead (Pb)	mg/kg	With reference to IEC 62321:2008, and performed by ICP-OES	N.D.	2
Mercury (Hg)	mg/kg	With reference to IEC 62321:2008, and performed by ICP-OES	N.D.	2
Hexavalent Chromium (CrVI) by Spot test / boiling water extraction (optional) #	---	With reference to IEC 62321:2008	Negative	-
Hexavalent Chromium (CrVI)	mg/kg	With reference to JIS H 8625, and performed by UV-VIS Spectrophotometry	N.D.	2
Sum of PBBs	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	-
Monobromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Dibromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Tribromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Tetrabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Hexabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Pentabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Heptabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Octabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Nonabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Decabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5

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Test Report

No. LPCI/25132(B)/11+KA/2011/B1388 Date : 02/12/2011 Page: 3 of 13
CTS Ref. CTS/11/4539/Tanaka

Sum of PBDEs	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	-
Monobromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Dibromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Tribromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Tetrabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Pentabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Hexabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Heptabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Octabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Nonabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Decabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5

Note : (a) mg/kg = ppm ; (0.1wt% = 1000ppm)

(b) N.D. = Not Detected

(c) MDL = Method Detection Limit

(d) # = **Spot-Test:**

a. Negative means the absence of Cr(VI) on the tested areas

b. Positive means the presence of Cr(VI) on the tested areas

(The tested sample should be further verified by boiling-water-extraction method if the spot test result is negative or cannot be confirmed)

Boiling water extraction:

a. Negative means the absence of Cr(VI) on the tested areas

b. Positive means the presence of Cr(VI) on the tested areas;

The detected concentration in 50 mL boiling water extraction solution is equal or greater than 0.02 mg/kg with 50 cm² sample surface area.

For corrosion protection coatings on metals: Information on storage conditions and production date of the tested sample is unavailable and thus results of Cr(VI) represent status of the sample at the time of testing.

(e) - = Not regulated

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Test Report

No. LPCI/25132(B)/11+KA/2011/B1388 Date : 02/12/2011 Page: 4 of 13
CTS Ref. CTS/11/4539/Tanaka

Test results by chemical method:

Test Item (s):	Unit	Method	Result	MDL
Antimony (Sb)	ppm	With reference to EPA Method 3052, and performed by ICP-OES	N.D.	2
Polyvinylchloride (PVC)	**	Analysis was performed by FT-IR/ATR	Negative	-
Halogen	---	---	---	
Halogen-Fluorine (F)	mg/kg	With reference to BS EN 14582. Analysis was performed by IC method for Fluorine content.	N.D.	50
Halogen-Chlorine (Cl)	mg/kg	With reference to BS EN 14582. Analysis was performed by IC method for Chlorine content.	N.D.	50
Halogen-Bromine (Br)	mg/kg	With reference to BS EN 14582. Analysis was performed by IC method for Bromine content.	N.D.	50
Halogen-Iodine (I)	mg/kg	With reference to BS EN 14582. Analysis was performed by IC method for Iodine content.	N.D.	50

Test Part Description :

Sample Description : Au Bonding Wire

- Note : (a) mg/kg = ppm
(b) N.D. = Not Detected
(c) MDL = Method Detection Limit
(d) --- = Not Conducted
(e) ** = Qualitative analysis (no unit)
(f) Negative = Undetectable / Positive = Detectable

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Test Report

No. LPCI/25132(B)/11+KA/2011/B1388 Date : 02/12/2011 Page: 5 of 13
CTS Ref. CTS/11/4539/Tanaka

Test result:

Test Part Description :

Sample Description : Au Bonding Wire

Optional: RoHS Directive 2011/65/EU, priority substances

Test Item(s):	Unit	Test Method	Results	MDL
Hexabromocyclododecane (HBCDD)	mg/kg	Based on IEC 62321:2008, and performed by GC-MS	N.D.	10
Phthalates	---	---	---	---
DBP (Di-butyl phthalate) (CAS No.: 000084-74-2)	%	With reference to Chromatographia Vol.47, No.784, 1998. Analysis was performed by GC/MS.	N.D.	0.003
DEHP (Di-(2-ethylhexyl phthalate) (CAS No.: 000117-81-7)	%	With reference to Chromatographia Vol.47, No.784, 1998. Analysis was performed by GC/MS.	N.D.	0.003
BBP (Benzyl Butyl phthalate) (CAS NO.: 000085-68-7)	%	With reference to Chromatographia Vol.47, No.784, 1998. Analysis was performed by GC/MS.	N.D.	0.003
DINP (Di-isononyl phthalate) (CAS No.: 028553-12-0)	%	With reference to Chromatographia Vol.47, No.784, 1998. Analysis was performed by GC/MS.	N.D.	0.01
DIDP (Di-isodecyl phthalate) (CAS No.: 026761-40-0)	%	With reference to Chromatographia Vol.47, No.784, 1998. Analysis was performed by GC/MS.	N.D.	0.01
DNOP (Di-n-octyl phthalate) (CAS No.: 000117-84-0)	%	With reference to Chromatographia Vol.47, No.784, 1998. Analysis was performed by GC/MS.	N.D.	0.003
DNHP (Di-n-hexyl phthalate) (CAS No.: 000084-75-3)	%	With reference to Chromatographia Vol.47, No.784, 1998. Analysis was performed by GC/MS.	N.D.	0.003

Note : (a) mg/kg = ppm
(b) N.D. = Not Detected
(c) MDL = Method Detection Limit
(d) --- = Not Conducted

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Test Report

No. LPCI/25132(B)/11+KA/2011/B1388 Date : 02/12/2011 Page: 6 of 13
CTS Ref. CTS/11/4539/Tanaka

Test Item(s):	Unit	Test Method	Results	MDL
*Phosphorus (P)	mg/kg	With reference to US EPA Method 3052 for Phosphorus Content. Analysis was performed by ICP-AES.	N.D.	2
*Beryllium (Be)	mg/kg	With reference to US EPA Method 3052 for Beryllium Content. Analysis was performed by ICP-AES.	6.64	2
*Magnesium (Mg)	mg/kg	With reference to US EPA Method 3052 for Magnesium Content. Analysis was performed by ICP-AES.	N.D.	2
*Perfluorooctane sulfonates (PFOS - Acid, Metal Salt, Amide)	mg/kg	With reference to US EPA 3540C: 1996 method for PFOS Content. Analysis was performed by LC/MS.	N.D.	10
* PFOA (CAS No.: 335-67-1)	mg/kg	With reference to US EPA 3540C: 1996 method for PFOA Content. Analysis was performed by LC/MS.	N.D.	10
*Dimethyl Fumarate (CAS No.: 624-49-7)	mg/kg	With reference to US EPA 3540C method. Analysis was performed by GC/MS.	N.D.	0.1
*DMEP (Bis (2-methoxyethyl) phthalate) (CAS No.: 117-82-8)	%	With reference to EN 14372. Analysis was performed by GC/MS	N.D.	0.003

Note : (a) mg/kg = ppm ; (0.1wt% = 1000ppm)

(b) N.D. = Not Detected

(c) MDL = Method Detection Limit

(d) *The above tests were subcontracted to SGS Taiwan based on report no. KA/2011/B1388

PFOS Reference Information : Directive 2006/122/EC

- (1) 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) 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 µg/m² of the coated material.

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B.Sc.(HONS) AMIC
LAB MANAGER

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Test Report

No. LPCI/25132(B)/11+KA/2011/B1388 Date : 02/12/2011 Page: 7 of 13
CTS Ref. CTS/11/4539/Tanaka

Test Part Description :

Sample Description : Au Bonding Wire

TANAKA ELECTRONICS (MALAYSIA) SDN BHD
LPCI/25132(B)/11+KA/2011/B1388



SGS authenticate the photo on the original report only

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Test Report

No. LPCI/25132(B)/11+KA/2011/B1388 Date : 02/12/2011 Page: 8 of 13
CTS Ref. CTS/11/4539/Tanaka

1. DETERMINATION OF CADMIUM CONTENT BY

IEC 62321 2008

Sample Receiving and Registration
↓
Cut sample in small pieces
↓
Weight sample (0.2-0.5g) into digestion vessel
↓
Acid digestion (Microwave)
↓
"Totally Dissolved"
↓
Filtration
↓
Analyses by ICP

2. DETERMINATION OF LEAD CONTENT BY

IEC 62321 2008

Sample Receiving and Registration
↓
Cut sample in small pieces
↓
Weight sample (0.2-0.5g) into digestion vessel
↓
Acid digestion (Microwave)
↓
"Totally Dissolved"
↓
Filtration
↓
Analyses by ICP

3. DETERMINATION OF MERCURY CONTENT BY

IEC 62321 2008

Sample Receiving and Registration
↓
Cut sample in small pieces
↓
Weight sample (0.2-0.5g) into digestion vessel
↓
Acid digestion (Microwave)
↓
"Totally Dissolved"
↓
Filtration
↓
Analyses by ICP

4. DETERMINATION OF HEXAVALENT CHROMIUM

BY IEC 62321 2008

Sample Receiving and Registration
↓
Sample Preparation
↓
Spot-test (Qualitative)
↓
Boiling-water-extraction
↓
Analyses by UV- Spectrophotometer
↓
Test Report

5. DETERMINATION OF PBB/PBDE WITH GC-MS

BY IEC 62321 2008

Cut sample in small pieces
↓
Weight sample (0.5-4.0g) into extraction thimble
↓
Soxhlet Extraction with Toluene
↓
Filter through 0.45 µm membrane filter
↓
Analyses by GC-MS (with appropriate dilution)

7. DETERMINATION OF HEXAVALENT CHROMIUM

BY JIS H 8625

Sample Preparation
↓
Hot water extraction
↓
Add colour-developing reagent
↓
Let stand for 5-10 min
↓
Analyses by UV- Spectrophotometer (540 nm)

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Test Report

No. LPCI/25132(B)/11+KA/2011/B1388
CTS Ref. CTS/11/4539/Tanaka

Date : 02/12/2011 Page: 9 of 13

8. MICROWAVE ASSISTED ACID DIGESTION OF SILICEOUS AND ORGANICALLY BASED METRICES (US EPA 3052)

Cut sample in small pieces
↓
Weight sample (0.2-0.5g) into digestion vessel
↓
Acid digestion (HF and HNO₃) – Microwave
↓
"Totally Dissolved"
↓
Filtration
↓
Analyses by ICP

9. DETERMINATION OF HALOGEN CONTENT

Sample pretreatment
↓
Weighting and putting sample in cell
↓
Combustion / Absorption
↓
Dilution to fixed volume
↓
Analyses by IC

10. ANALYSIS FLOW CHART FOR DETERMINATION OF PVC

Cut sample in small pieces
↓
Sample analysed by FTIR
↓
Data

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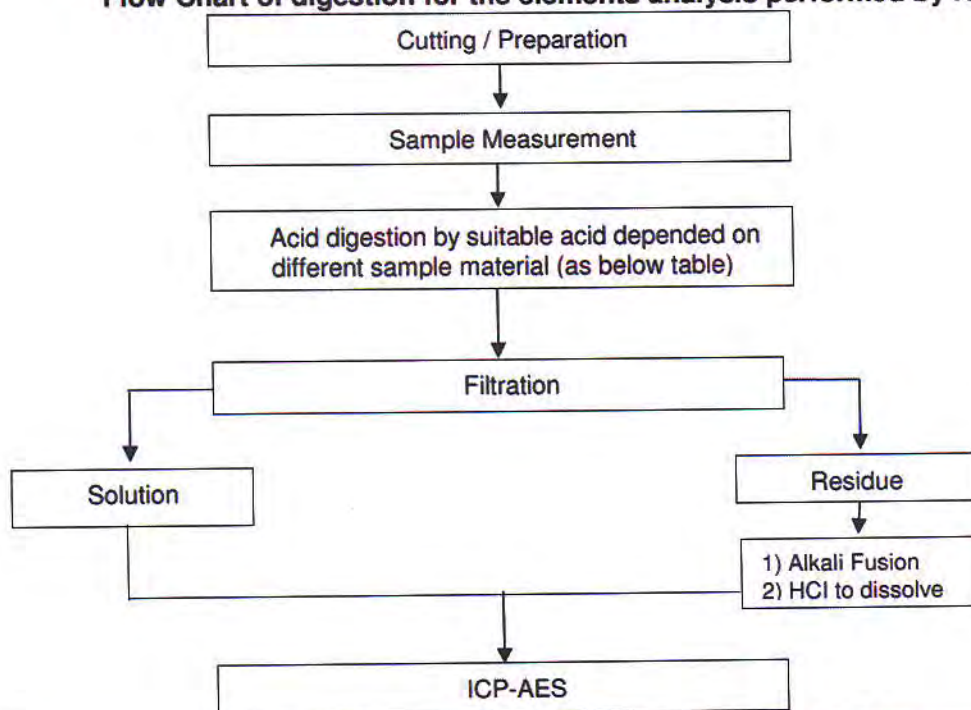
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Test Report

No. LPCI/25132(B)/11+KA/2011/B1388 Date : 02/12/2011 Page: 10 of 13
 CTS Ref. CTS/11/4539/Tanaka

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

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



Steel, copper, aluminium, 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	Any acid to total digestion

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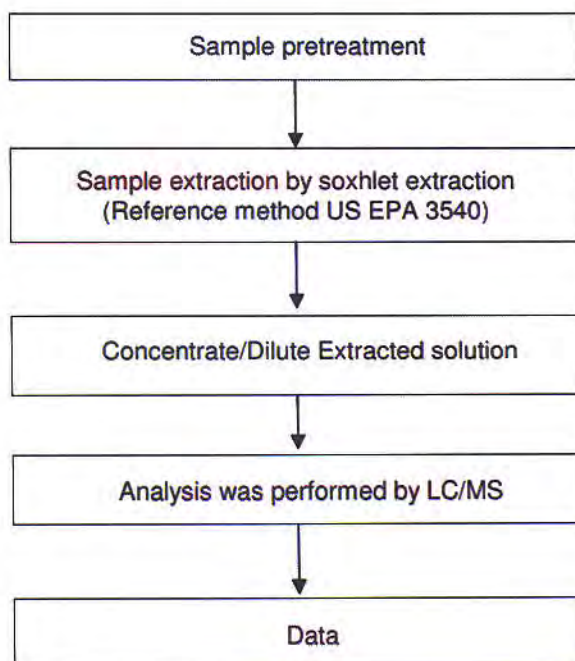
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Test Report

No. LPCI/25132(B)/11+KA/2011/B1388 Date : 02/12/2011 Page: 11 of 13
CTS Ref. CTS/11/4539/Tanaka

Analytical flow chart of PFOA/PFOS content

- 1) Name of the person who made measurement: Anson Tsao
- 2) Name of the person in charge of measurement: Ray Chang



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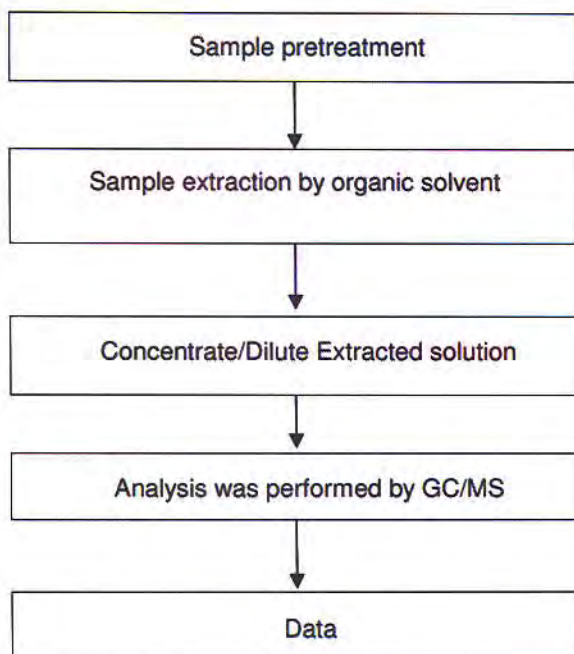
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Test Report

No. LPCI/25132(B)/11+KA/2011/B1388 Date : 02/12/2011 Page: 12 of 13
CTS Ref. CTS/11/4539/Tanaka

Analytical flow chart of Dimethyl Fumarate content

- 1) Name of the person who made measurement: Anson Tsao
- 2) Name of the person in charge of measurement: Ray Chang



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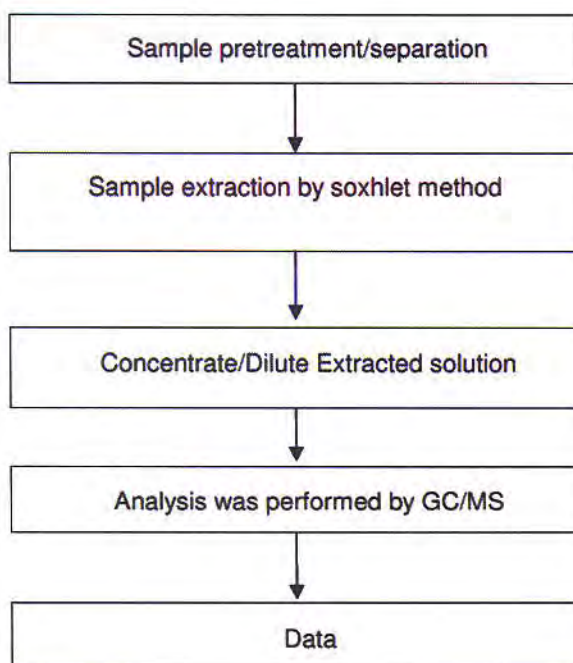
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Test Report

No. LPCI/25132(B)/11+KA/2011/B1388 Date : 02/12/2011 Page: 13 of 13
CTS Ref. CTS/11/4539/Tanaka

Analytical flow chart of phthalate content

- 1) Name of the person who made measurement: Anson Tsao
- 2) Name of the person in charge of measurement: Ray Chang



****End of Report****

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Test Report

No. : CE/2012/42804 Date : 2012/04/25 Page : 1 of 8

HITACHI CHEMICAL CO., LTD.
1772-1 KANAKUBO YUUKI-SHI IBARAKI, 307-0015, JAPAN



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

Sample Description : EPOXY MOLDING COMPOUND
Style/Item No. : CEL-9220HF
Sample Receiving Date : 2012/04/16
Testing Period : 2012/04/16 TO 2012/04/25

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


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

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Test Report

No. : CE/2012/42804 Date : 2012/04/25 Page : 2 of 8

HITACHI CHEMICAL CO., LTD.
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Test Result(s)

PART NAME No.1 : DARK GRAY LUMP

Test Item(s)	Unit	Method	MDL	Result No.1
Cadmium (Cd)	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.
Lead (Pb)	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.
Mercury (Hg)	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.
Hexavalent Chromium Cr(VI)	mg/kg	With reference to IEC 62321: 2008 and performed by UV-VIS.	2	n.d.
Antimony (Sb)	mg/kg	With reference to US EPA Method 3052 for Antimony Content. Analysis was performed by ICP-AES.	2	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)	mg/kg		50	n.d.
Halogen-Bromine (Br) (CAS No.: 10097-32-2)	mg/kg		50	n.d.
Halogen-Iodine (I) (CAS No.: 14362-44-8)	mg/kg		50	n.d.
Sum of PBBs	mg/kg	With reference to IEC 62321: 2008 and performed by GC/MS.	-	n.d.
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.

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Test Report

No. : CE/2012/42804 Date : 2012/04/25 Page : 3 of 8

HITACHI CHEMICAL CO., LTD.
1772-1 KANAKUBO YUUKI-SHI IBARAKI, 307-0015, JAPAN



Test Item(s)	Unit	Method	MDL	Result No.1
Sum of PBDEs	mg/kg	With reference to IEC 62321: 2008 and performed by GC/MS.	-	n.d.
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.

Note :

1. mg/kg = ppm ; 0.1wt% = 1000ppm
2. n.d. = Not Detected
3. MDL = Method Detection Limit
4. " - " = Not Regulated

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Test Report

No. : CE/2012/42804 Date : 2012/04/25 Page : 6 of 8

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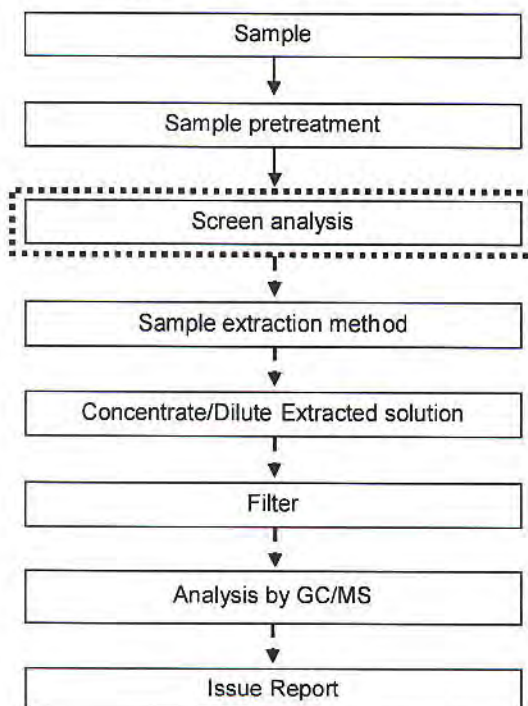


Analytical flow chart

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

【 Test Items: PBB/PBDE, TBBP-A-bis 】

First testing process → Optional screen process Confirmation process - - ->



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Test Report

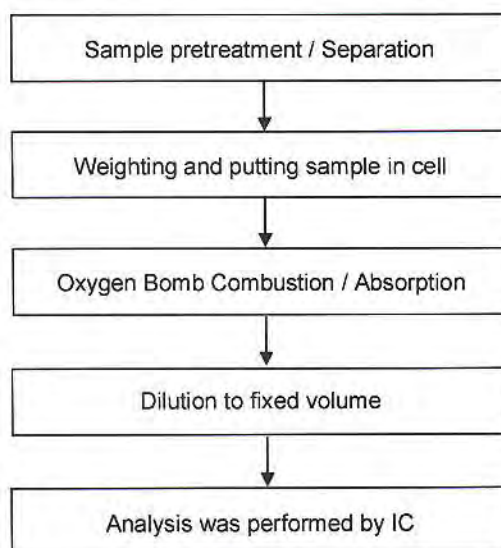
No. : CE/2012/42804 Date : 2012/04/25 Page : 7 of 8

HITACHI CHEMICAL CO., LTD.
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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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Test Report

No. : CE/2012/42804 Date : 2012/04/25 Page : 8 of 8

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

CE/2012/42804



** End of Report **

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Test Report

Number : TWNC00217299

Applicant: Littelfuse, Inc.
800 E. Northwest Hwy
Desplaines IL 60016

Date : Jul 25, 2011

Sample Description:

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

Part Description : Epoxy Compound

Part Number : CEL-9220

Date Sample Received : Jul 21, 2011

Date Test Started : Jul 21, 2011

Test Conducted :

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

Authorized By:

On Behalf Of Intertek Testing Services
Taiwan Limited



K. Y. Liang
Director

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approval of the laboratory.



Number : TWNC00217299

Test Conducted

(I) Test Result Summary:

<u>Test Item</u>	<u>Result (ppm)</u>
	<u>Black Material</u>
Phthalates	
Di(2-ethylhexyl) Phthalate (DEHP)	ND
Dibutyl Phthalate (DBP)	ND
Benzyl Butyl Phthalate (BBP)	ND
Others	
Hexabromocyclododecane (HBCDD)	ND

Remarks : ppm = Parts per million based on weight of tested sample
ND = Not detected

Responsibility Of Chemist: Irene Chiou / Kevin Liu / Cathy Chen

Date Sample Received : Jul 21, 2011

Test Period : Jul 21, 2011 To Jul 25, 2011

(II) Test Method:

<u>Test Item</u>	<u>Test method</u>	<u>Reporting Limit</u>
Phthalates	With reference to ASTM D3421-75, by solvent extraction and determined by GC-MSD or GC-FID	10 ppm
Hexabromocyclododecane (HBCDD)	With reference to USEPA 3540C, by solvent extraction and determined by GC-MSD	10 ppm

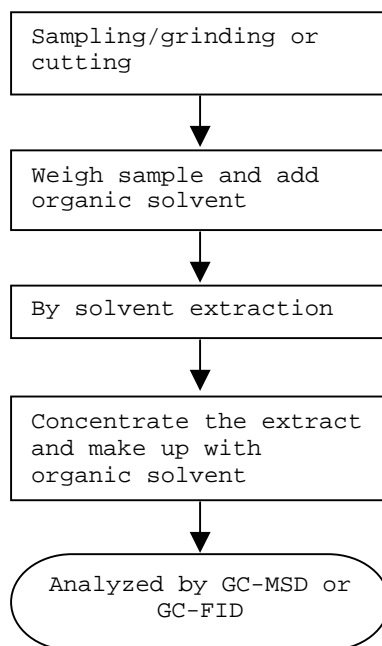
Remark : Reporting Limit = Quantitation limit of analyte in sample

Test Conducted

(III) Measurement Flowchart:

Test For Phthalates Contents

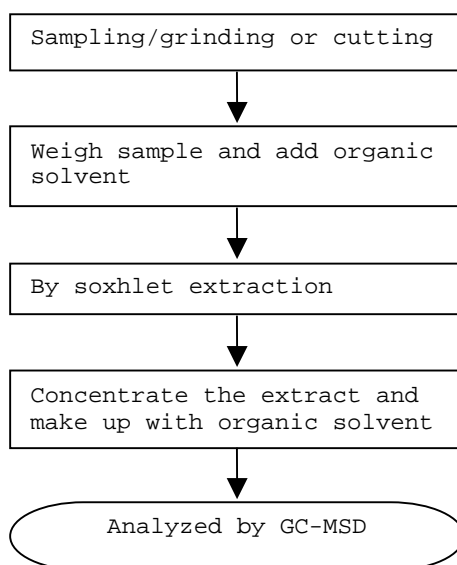
Reference Method: ASTM D3421-75



Test Conducted

(III) Measurement Flowchart:

Test For Hexabromocyclododecane (HBCDD)
Reference Standard : USEPA 3540C

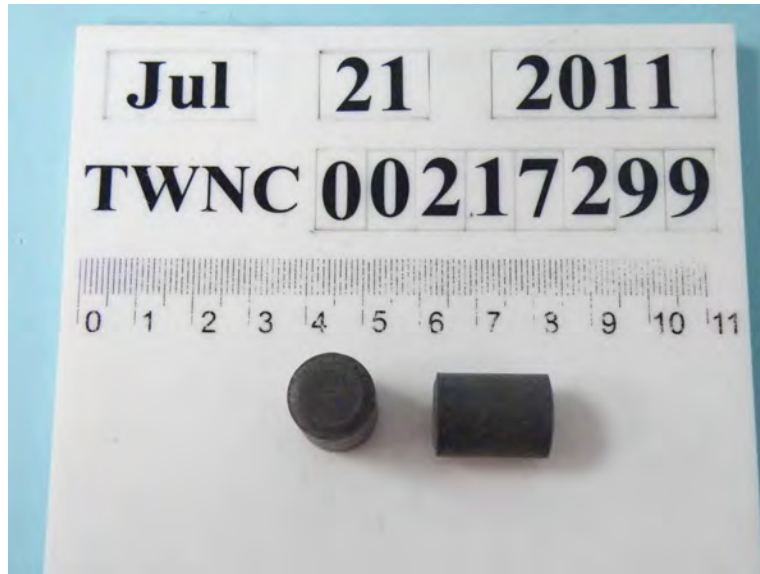


End of Report

Number : TWNC00217299

Test Conducted

Photo



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Date : 2012/01/18

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EPISIL TECHNOLOGIES INC.

NO. 3, INNOVATION ROAD 1, SCIENCE BASED INDUSTRIAL PARK, HSINCHU, TAIWAN, R. O. C.



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

Sample Description : IC WAFER
Style/Item No. : ALUMINUM PROCESS
Sample Receiving Date : 2012/01/11
Testing Period : 2012/01/11 TO 2012/01/18

Test Requested : As specified by client, with reference to RoHS Directive 2011/65/EU Annex II to determine Cadmium, Lead, Mercury, Cr(VI) contents in the submitted sample.

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


Nicole Chien / Supervisor
Signed for and on behalf of
SGS TAIWAN LTD.
Chemical Laboratory - Taipei

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EPISIL TECHNOLOGIES INC.

NO. 3, INNOVATION ROAD 1, SCIENCE BASED INDUSTRIAL PARK, HSINCHU, TAIWAN, R. O. C.



Test Result(s)

PART NAME No.1 : MULTICOLOR WAFER

Test Item(s)	Unit	Method	MDL	Result
				No.1
Cadmium (Cd)	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.
Lead (Pb)	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.
Mercury (Hg)	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.
Hexavalent Chromium Cr(VI)	mg/kg	With reference to IEC 62321: 2008 and performed by UV-VIS.	2	n.d.

Note :

1. mg/kg = ppm ; 0.1wt% = 1000ppm
2. n.d. = Not Detected
3. MDL = Method Detection Limit

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Test Report

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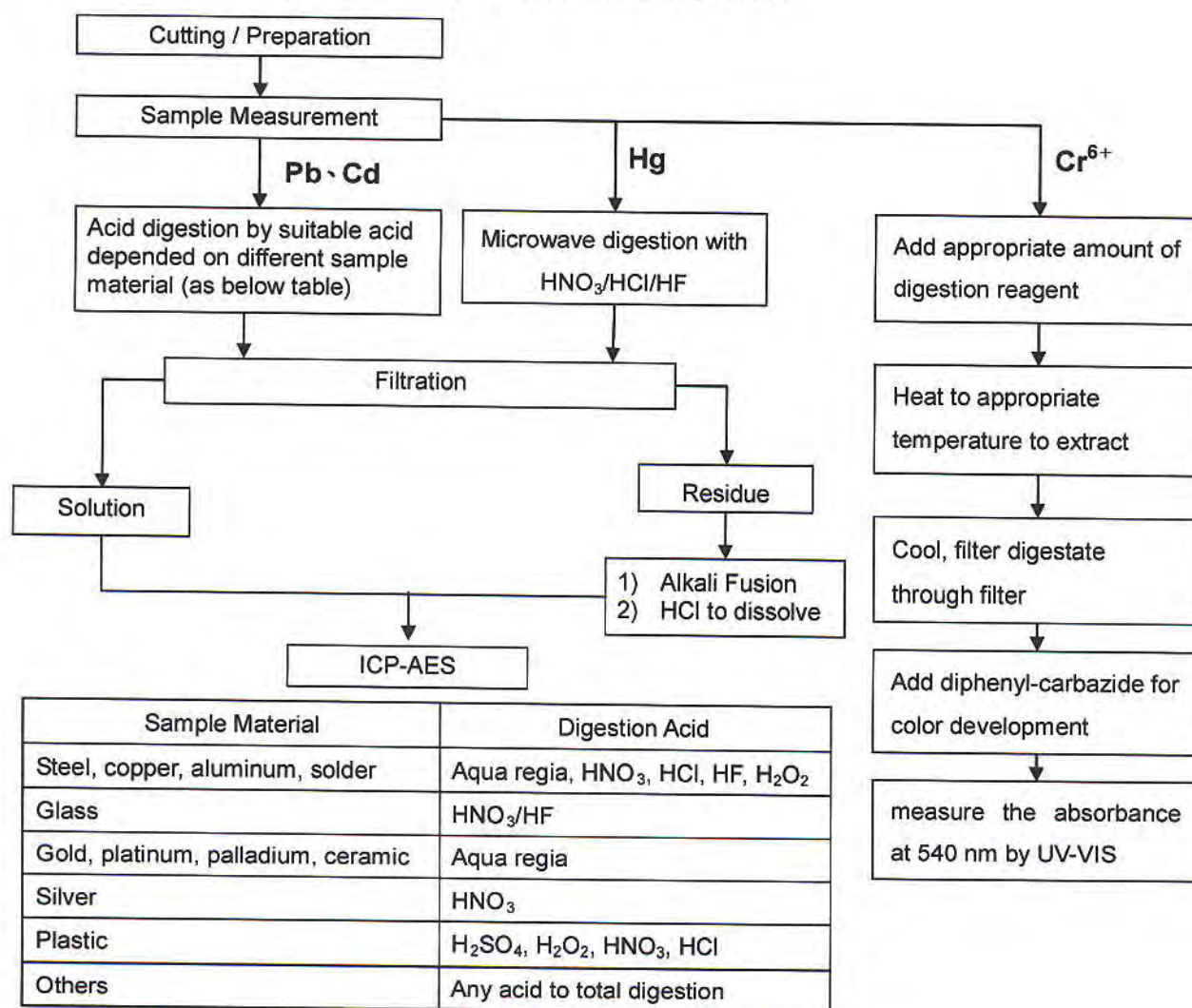
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EPISIL TECHNOLOGIES INC.

NO. 3, INNOVATION ROAD 1, SCIENCE BASED INDUSTRIAL PARK, HSINCHU, TAIWAN, R. O. C.



- 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



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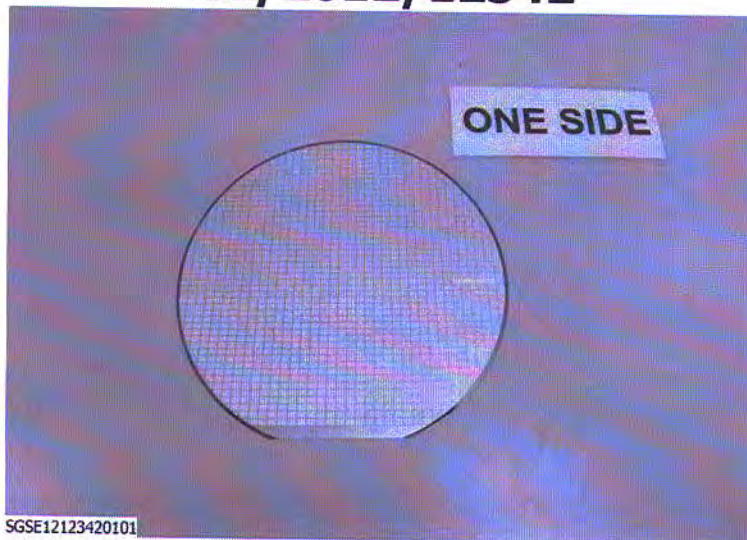
EPISIL TECHNOLOGIES INC.

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

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**** End of Report ****

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Test Report

Number : TWNC00253298

Applicant: Littelfuse Philippines Inc. Date : Apr 25, 2012
LIMA Technology Center, Lipa City,
Malvar, Batangas

Sample Description:

One (1) group of submitted samples said to be :
Sample Description : UDFN (SP3000 series product)
Date Sample Received : Apr 17, 2012
Date Test Started : Apr 18, 2012

Test Conducted:

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

Authorized By:
On Behalf Of Intertek Testing Services
Taiwan Limited



K. Y. Liang
Director

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approval of the laboratory.

Number : TWNC00253298

Test Conducted

(I) Test Result Summary:

<u>Test Item</u>	<u>Result (ppm)</u>
	<u>Black Electronic Component (Mixed All Parts)</u>
Phthalates	
Di(2-ethylhexyl) Phthalate (DEHP)	ND
Dibutyl Phthalate (DBP)	ND
Benzyl Butyl Phthalate (BBP)	ND
Others	
Hexabromocyclododecane (HBCDD)	ND

Remarks : ppm = Parts per million based on weight of tested sample
 ND = Not detected

Responsibility of Chemist: Irene Chiou / Cathy Chen

Date Sample Received : Apr 17, 2012

Test Period : Apr 18, 2012 To Apr 19, 2012

(II) Test Method:

<u>Test Item</u>	<u>Test method</u>	<u>Reporting Limit</u>
Phthalates	With reference to EN 14372: 2004, by solvent extraction and determined by GC-MS.	50 ppm
Hexabromocyclododecane (HBCDD)	With reference to USEPA 3540C, by solvent extraction and determined by GC-MSD	10 ppm

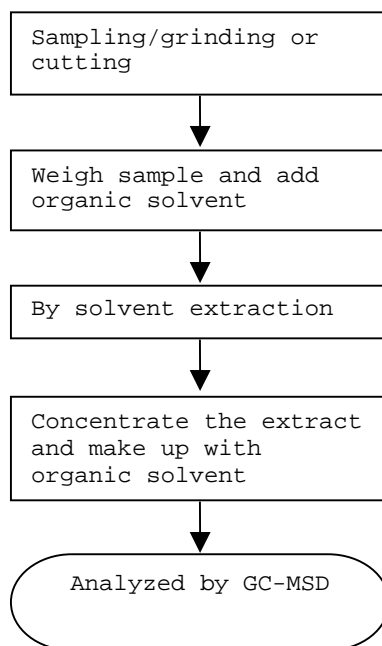
Remark : Reporting Limit = Quantitation limit of analyte in sample

Test Conducted

(III) Measurement Flowchart :

Test For Phthalates Contents

Reference Method: EN 14372: 2004

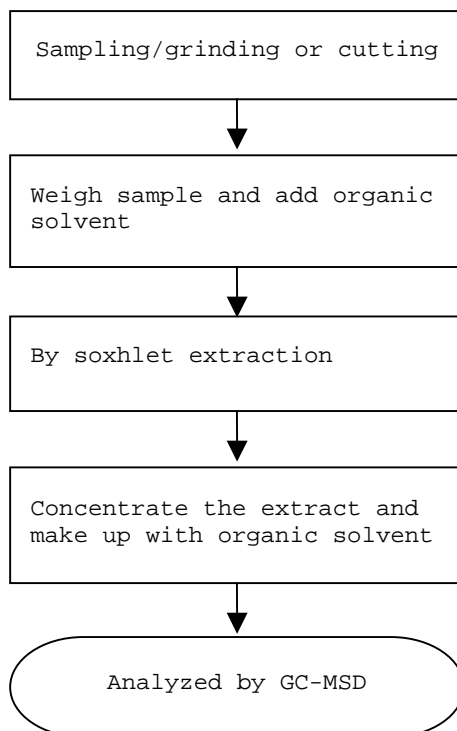


Test Conducted

(III) Measurement Flowchart :

Test For Hexabromocyclododecane (HBCDD)

Reference Standard : USEPA 3540C



End of Report

Number : TWNC00253298

Test Conducted

Photo

