ICP Test Report Certification Packet

Company Name: Littelfuse, Inc.

Product Type: Metal Oxide Varistors

Product Series: UltraMOV25S Series RoHS Models

Issue Date: Sep. 6, 2011

It is hereby certified by Littelfuse, Inc. that there is neither RoHS (EU Directive 2002/95/EC)-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.

And it is certified by Littelfuse, Inc. that the series products listed above are compliant with LF Halogen Free Standard (Cl≤800ppm, Br≤800ppm, Cl +Br≤1000ppm).

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

Issued by: David Huang

< DGLF Environmental, Health & Safety Engineer >

(1) Parts, sub-materials and unit parts

This document covers Metal Oxide Varistors UltraMOV25S series RoHS Compliant models manufactured by Littelfuse, Inc.

Please see Table 1 for raw materials used.

(2) The ICP data on all measurable substances

Please see appropriate pages as identified in Table 1

Remarks :

Table 1: List of Raw Materials covered by this report

Total Parts	P/N	Raw Material Description	Page
1	N/A	Black disc, type including DD, DM.	3-12
2	N/A	A6PL Silver Paste	13-22
3	N/A	Pb-free Sold Bar	23-30
4	N/A	Tinned Copper Wire	31-37
5	N/A	Epoxy，type including red	38-43

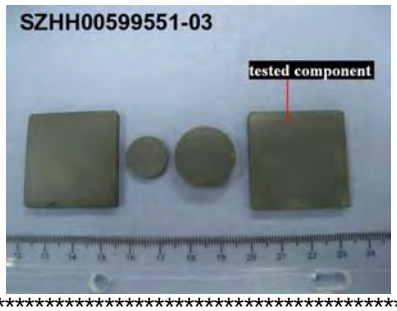
Test Report Number: SZHH0059955103

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

Date: Jun 17, 2011

Attn: KRISTEEN BACILA/ARSENIO CESISTA JR.

Sample Description:
One (1) submitted sample said to be **DD Black Disc.**
Tested component: dark grey magnet.



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

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Authorized by:
For Intertek Testing Services
Shenzhen Ltd.

Ben N.L. Lin
General Manager

Intertek Testing Services Shenzhen Ltd.-TFH Division
7/F., ShekouTechnology Main Building, Industrial 7th Road,Shekou,Shenzhen, China
Tel: (86-755) 2602 0111 Fax: (86-755) 2683 7118/9 Postcode: 518067

Test Report Number: SZHH0059955103

Tests Conducted

RoHS Chemical Test

(A) Test Result Summary:

Testing Item	Result
Cadmium (Cd) Content (mg/kg)	ND(<2)
Lead (Pb) Content (mg/kg)	ND(<2)
Mercury (Hg) Content (mg/kg)	ND(<2)
Chromium (VI)(Cr^{6+}) Content (mg/kg)	18
Polybrominated Biphenyls (PBBs)(mg/kg)	
Monobromobiphenyl (MonoBB)	ND(<5)
Dibromobiphenyl (DiBB)	ND(<5)
Tribromobiphenyl (TriBB)	ND(<5)
Tetrabromobiphenyl (TetraBB)	ND(<5)
Pentabromobiphenyl (PentaBB)	ND(<5)
Hexabromobiphenyl (HexaBB)	ND(<5)
Heptabromobiphenyl (HeptaBB)	ND(<5)
Octabromobiphenyl (OctaBB)	ND(<5)
Nonabromobiphenyl (NonaBB)	ND(<5)
Decabromobiphenyl (DecaBB)	ND(<5)
Polybrominated Diphenyl Ethers (PBDEs)(mg/kg)	
Monobromodiphenyl Ether (MonoBDE)	ND(<5)
Dibromodiphenyl Ether (DiBDE)	ND(<5)
Tribromodiphenyl Ether (TriBDE)	ND(<5)
Tetrabromodiphenyl Ether (TetraBDE)	ND(<5)
Pentabromodiphenyl Ether (PentaBDE)	ND(<5)
Hexabromodiphenyl Ether (HexaBDE)	ND(<5)
Heptabromodiphenyl Ether (HeptaBDE)	ND(<5)
Octabromodiphenyl Ether (OctaBDE)	ND(<5)
Nonabromodiphenyl Ether (NonaBDE)	ND(<5)
Decabromodiphenyl Ether (DecaBDE)	ND(<5)

Chemist: Wang Haijun/Tang Wenming

mg/kg = milligram per kilogram = ppm
< = Less than
ND = Not detected

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Test Report Number: SZHH0059955103

Tests Conducted

(B) RoHS Requirement:

Restricted Substances	Limits
Cadmium (Cd)	0.01% (100 ppm)
Lead (Pb)	0.1% (1000 ppm)
Mercury (Hg)	0.1% (1000 ppm)
Chromium (VI) (Cr^{6+})	0.1% (1000 ppm)
Polybrominated Biphenyls (PBBs)	0.1% (1000 ppm)
Polybrominated Diphenyl Ethers (PBDEs)	0.1% (1000 ppm)

The above limits were quoted from 2002/95/EC and amendment 2005/618/EC for homogeneous material.

(C) Test Method:

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

Date sample received: Jun 13, 2011
Testing period: Jun 13, 2011 to Jun 16, 2011

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7/F., ShekouTechnology Main Building, Industrial 7th Road,Shekou,Shenzhen, China
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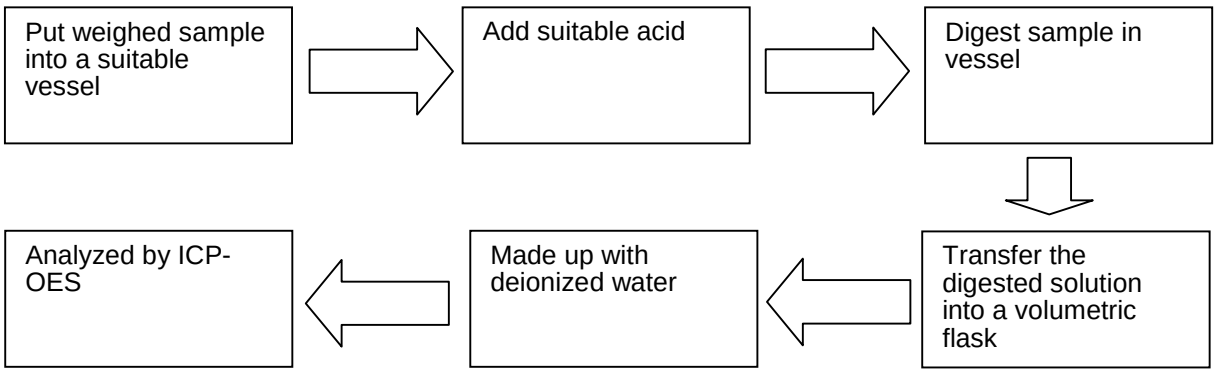
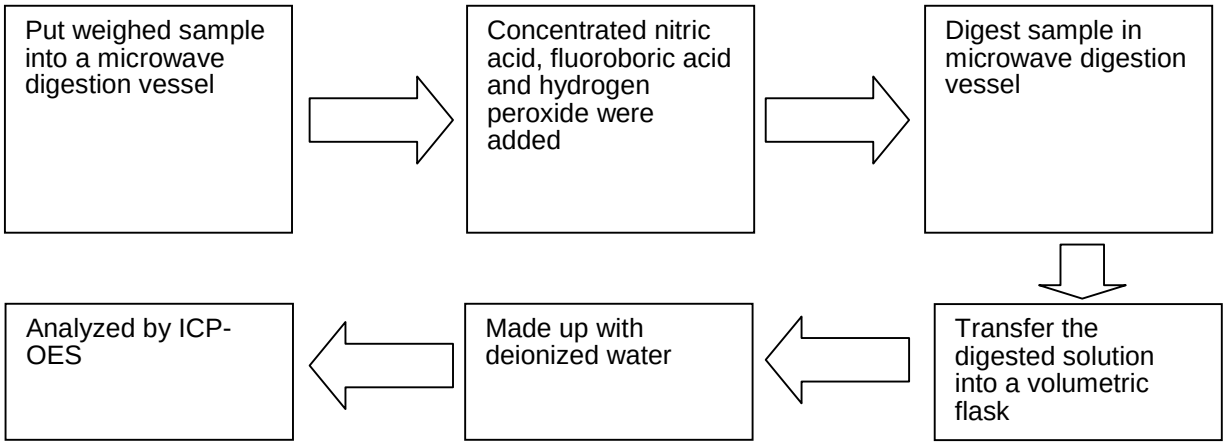
Tests Conducted

(D) Measurement Flowchart:

1. Test for Cd/Pb Contents



2. Test for Hg Content



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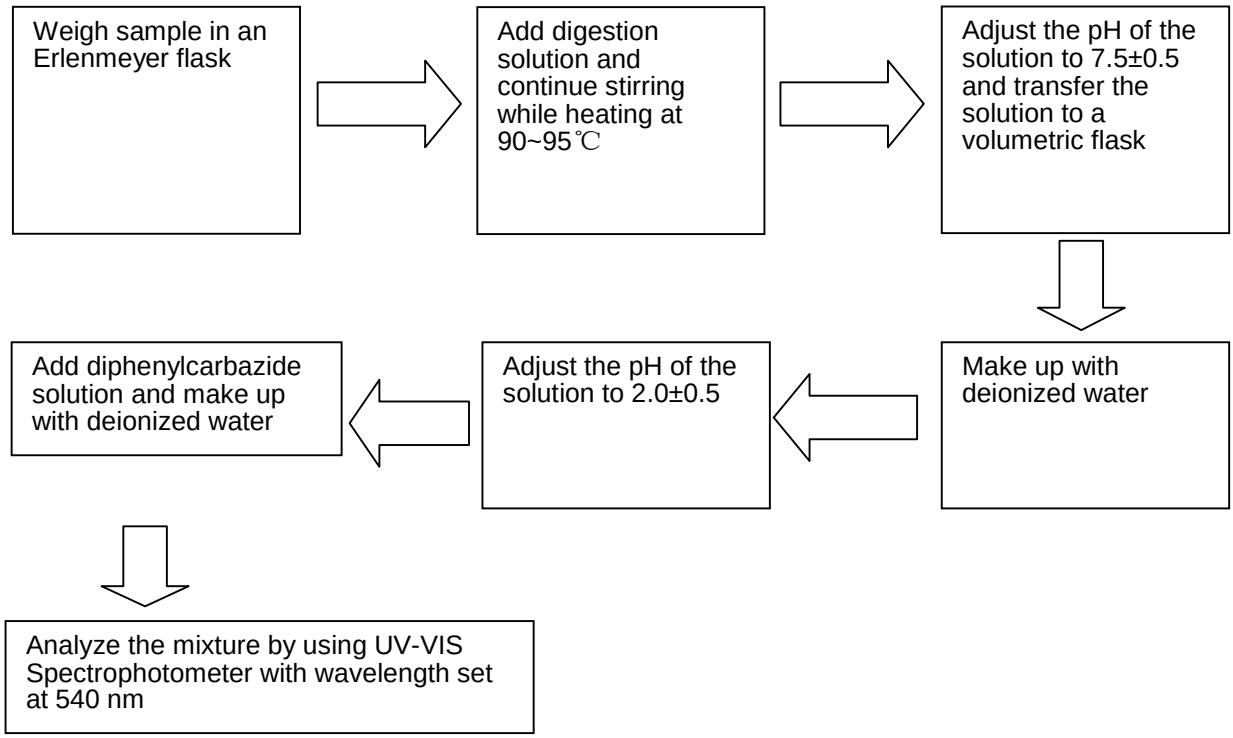
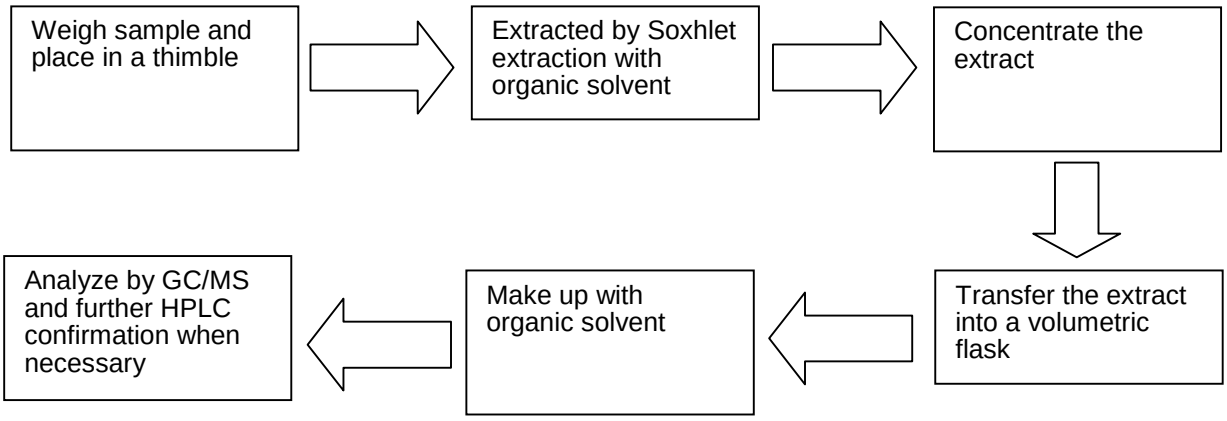
Tests Conducted

3. Test for Chromium (VI) (Cr^{6+}) Content (Alkaline Digestion)



4. Test for PBBs/PBDEs Contents



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End of report

Intertek Testing Services Shenzhen Ltd.-TFH Division
7/F., ShekouTechnology Main Building, Industrial 7th Road,Shekou,Shenzhen, China
Tel: (86-755) 2602 0111 Fax: (86-755) 2683 7118/9 Postcode: 518067

Test Report Number: SZHH0059955104

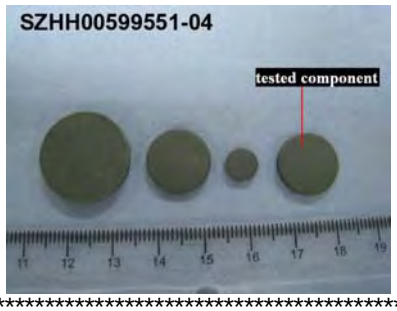
Applicant: LITTELFUSE, INC
8755 WEST HIGGINS ROAD SUITE
500CHICAGO IL 60631 USA

Date: Jun 17, 2011

Attn: KRISTEEN BACILA/ARSENIO CESISTA JR.

Sample Description:

One (1) submitted sample said to be **DM Black Disc.**
Tested component: dark grey magnet.



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Tests conducted:

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

****

Authorized by:
For Intertek Testing Services
Shenzhen Ltd.

Ben N.L. Lin
General Manager

Intertek Testing Services Shenzhen Ltd.-TFH Division
7/F., ShekouTechnology Main Building, Industrial 7th Road,Shekou,Shenzhen, China
Tel: (86-755) 2602 0111 Fax: (86-755) 2683 7118/9 Postcode: 518067

Test Report Number: SZHH0059955104

Tests Conducted

RoHS Chemical Test

(A) Test Result Summary:

Testing Item	Result
Cadmium (Cd) Content (mg/kg)	ND(<2)
Lead (Pb) Content (mg/kg)	ND(<2)
Mercury (Hg) Content (mg/kg)	ND(<2)
Chromium (VI)(Cr^{6+}) Content (mg/kg)	9
Polybrominated Biphenyls (PBBs)(mg/kg)	
Monobromobiphenyl (MonoBB)	ND(<5)
Dibromobiphenyl (DiBB)	ND(<5)
Tribromobiphenyl (TriBB)	ND(<5)
Tetrabromobiphenyl (TetraBB)	ND(<5)
Pentabromobiphenyl (PentaBB)	ND(<5)
Hexabromobiphenyl (HexaBB)	ND(<5)
Heptabromobiphenyl (HeptaBB)	ND(<5)
Octabromobiphenyl (OctaBB)	ND(<5)
Nonabromobiphenyl (NonaBB)	ND(<5)
Decabromobiphenyl (DecaBB)	ND(<5)
Polybrominated Diphenyl Ethers (PBDEs)(mg/kg)	
Monobromodiphenyl Ether (MonoBDE)	ND(<5)
Dibromodiphenyl Ether (DiBDE)	ND(<5)
Tribromodiphenyl Ether (TriBDE)	ND(<5)
Tetrabromodiphenyl Ether (TetraBDE)	ND(<5)
Pentabromodiphenyl Ether (PentaBDE)	ND(<5)
Hexabromodiphenyl Ether (HexaBDE)	ND(<5)
Heptabromodiphenyl Ether (HeptaBDE)	ND(<5)
Octabromodiphenyl Ether (OctaBDE)	ND(<5)
Nonabromodiphenyl Ether (NonaBDE)	ND(<5)
Decabromodiphenyl Ether (DecaBDE)	ND(<5)

Chemist: Wang Haijun/Tang Wenming

mg/kg = milligram per kilogram = ppm
< = Less than
ND = Not detected

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Test Report Number: SZHH0059955104

Tests Conducted

(B) RoHS Requirement:

Restricted Substances	Limits
Cadmium (Cd)	0.01% (100 ppm)
Lead (Pb)	0.1% (1000 ppm)
Mercury (Hg)	0.1% (1000 ppm)
Chromium (VI) (Cr^{6+})	0.1% (1000 ppm)
Polybrominated Biphenyls (PBBs)	0.1% (1000 ppm)
Polybrominated Diphenyl Ethers (PBDEs)	0.1% (1000 ppm)

The above limits were quoted from 2002/95/EC and amendment 2005/618/EC for homogeneous material.

(C) Test Method:

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

Date sample received: Jun 13, 2011
Testing period: Jun 13, 2011 to Jun 16, 2011

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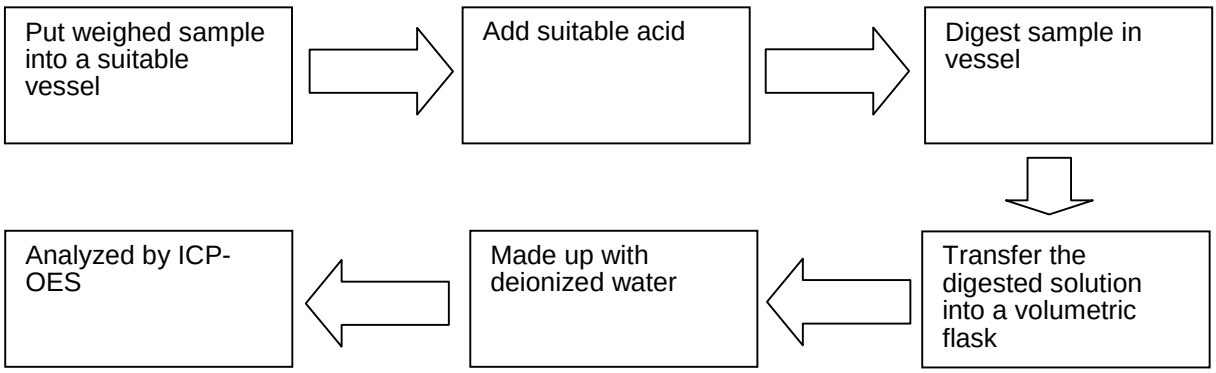
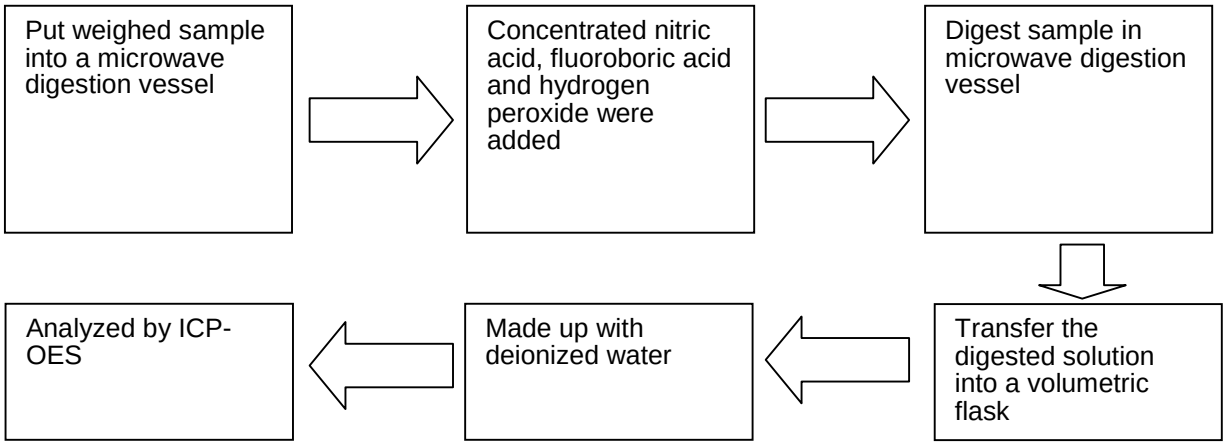
Tests Conducted

(D) Measurement Flowchart:

1. Test for Cd/Pb Contents



2. Test for Hg Content



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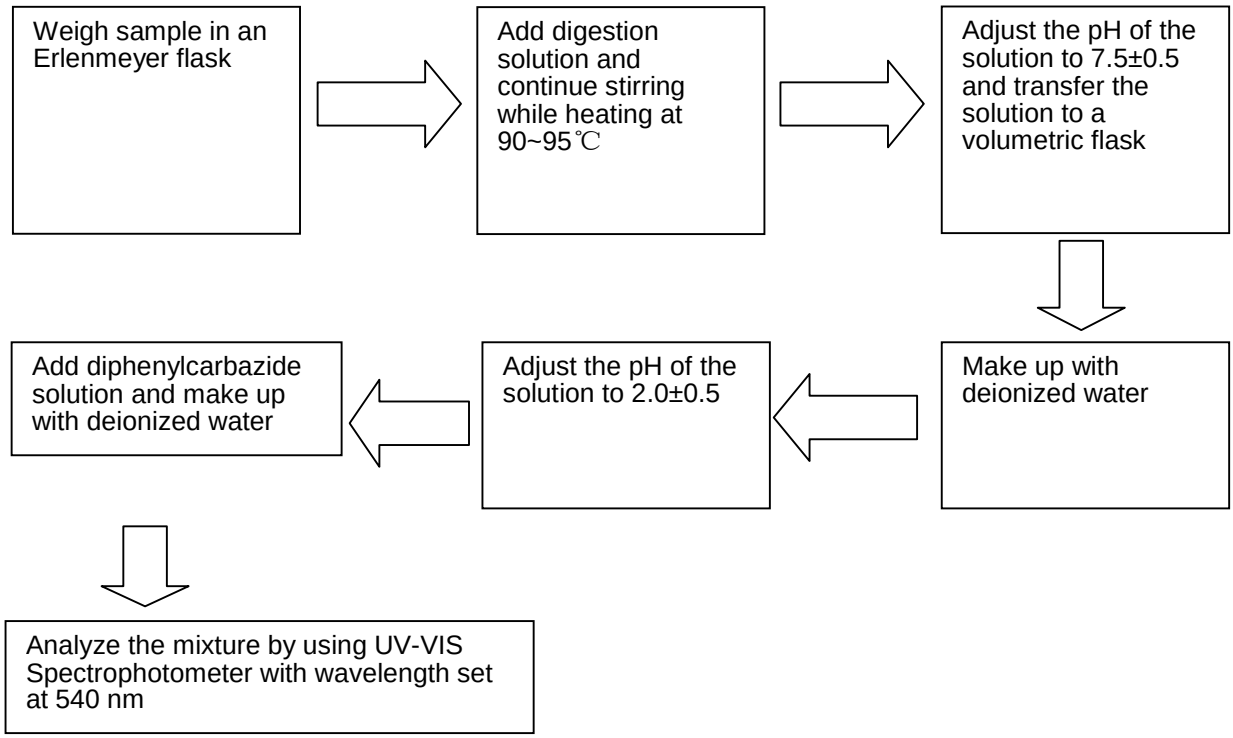
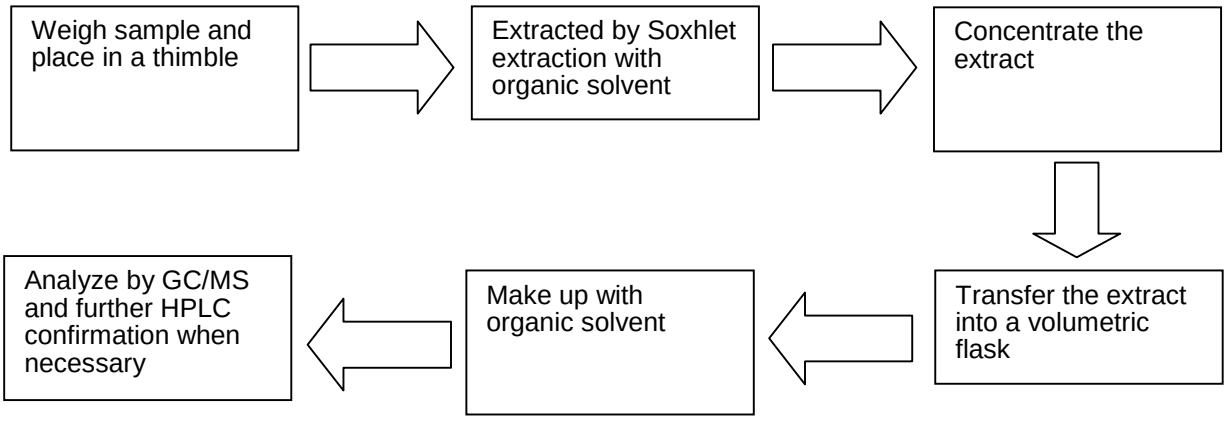
Tests Conducted

3. Test for Chromium (VI) (Cr^{6+}) Content (Alkaline Digestion)



4. Test for PBBs/PBDEs Contents



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End of report

Intertek Testing Services Shenzhen Ltd.-TFH Division
7/F., ShekouTechnology Main Building, Industrial 7th Road,Shekou,Shenzhen, China
Tel: (86-755) 2602 0111 Fax: (86-755) 2683 7118/9 Postcode: 518067

測試報告
Test Report

號碼(No.) : CE/2011/21056 日期(Date) : 2011/02/17 頁數(Page) : 1 of 10

新日本化金株式會社
SHIN-NIHON KAKIN CO., LTD.
東京都板橋區宮本町33番7號
33-7, MIYAMOTO-CHO, ITABASHI-KU, TOKYO, JAPAN

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

樣品名稱(Sample Description)	:	銀膏 (SILVER PASTE)
樣品型號(Style/Item No.)	:	SP-A6PL
材料批號(Lot No.)	:	01207
收件日期(Sample Receiving Date)	:	2011/2/10
測試期間(Testing Period)	:	2011/2/10 TO 2011/02/17

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

SGS TAIWAN LTD SGS TAIWAN

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

測試報告
Test Report

號碼(No.) : CE/2011/21056 日期(Date) : 2011/02/17 頁數(Page) : 2 of 10

新日本化金株式會社
SHIN-NIHON KAKIN CO., LTD.
東京都板橋區宮本町33番7號
33-7, MIYAMOTO-CHO, ITABASHI-KU, TOKYO, JAPAN

測試結果(Test Results)

測試部位(PART NAME)No.1 : 墨綠色膏狀 (BLACKISH GREEN PASTE)

測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測極限值 (MDL)	結果 (Result) No.1
鎘 / Cadmium (Cd)	mg/kg	參考IEC 62321: 2008方法，以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.
鉛 / Lead (Pb)	mg/kg	參考IEC 62321: 2008方法，以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.
汞 / Mercury (Hg)	mg/kg	參考IEC 62321: 2008方法，以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.
六價鉻 / Hexavalent Chromium Cr(VI) by alkaline extraction	mg/kg	參考IEC 62321: 2008方法，以UV-VIS檢測. / With reference to IEC 62321: 2008 and performed by UV-VIS.	2	n.d.
六溴環十二烷 / Hexabromocyclododecane (HBCDD) (CAS No.: 025637-99-4)	mg/kg	參考US EPA 3540C方法，以氣相層析/質譜儀檢測. / With reference to US EPA 3540C method. Analysis was performed by GC/MS.	5	n.d.

測試報告
Test Report

新日本化金株式會社
SHIN-NIHON KAKIN CO., LTD.
東京都板橋區宮本町33番7號
33-7, MIYAMOTO-CHO, ITABASHI-KU, TOKYO, JAPAN

測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測極限值 (MDL)	結果 (Result) No.1
鄰苯二甲酸甲苯基丁酯 / BBP (Benzyl butyl phthalate) (CAS No.: 000085-68-7)	%	參考EN 14372, 以氣相層析儀/質譜儀檢測之. / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.
鄰苯二甲酸二丁酯 / DBP (Dibutyl phthalate) (CAS No.: 000084-74-2)	%	參考EN 14372, 以氣相層析儀/質譜儀檢測之. / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	0.034
鄰苯二甲酸二 (2-乙基己基)酯 / DEHP (Di- (2-ethylhexyl) phthalate) (CAS No.: 000117-81-7)	%	參考EN 14372, 以氣相層析儀/質譜儀檢測之. / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.
四溴雙酚-A / Tetrabromobisphenol A (TBBP-A) (CAS No.: 000079-94-7)	mg/kg	參考DIN 53313方法, 以氣相層析儀/質譜儀檢測. / With reference to DIN 53313 method. Analysis was performed by	10	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)			50	n.d.
鹵素 (溴) / Halogen-Bromine (Br) (CAS No.: 010097-32-2)			50	n.d.
鹵素 (碘) / Halogen-Iodine (I) (CAS No.: 014362-44-8)			50	n.d.

測試報告
Test Report

號碼(No.) : CE/2011/21056 日期(Date) : 2011/02/17 頁數(Page) : 4 of 10

新日本化金株式會社
SHIN-NIHON KAKIN CO., LTD.
東京都板橋區宮本町33番7號
33-7, MIYAMOTO-CHO, ITABASHI-KU, TOKYO, JAPAN

測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測極限值 (MDL)	結果 (Result) No.1
多溴聯苯總和 / 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			-	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.

備註(Note) :

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

測試報告
Test Report

號碼(No.) : CE/2011/21056 日期(Date) : 2011/02/17 頁數(Page) : 5 of 10

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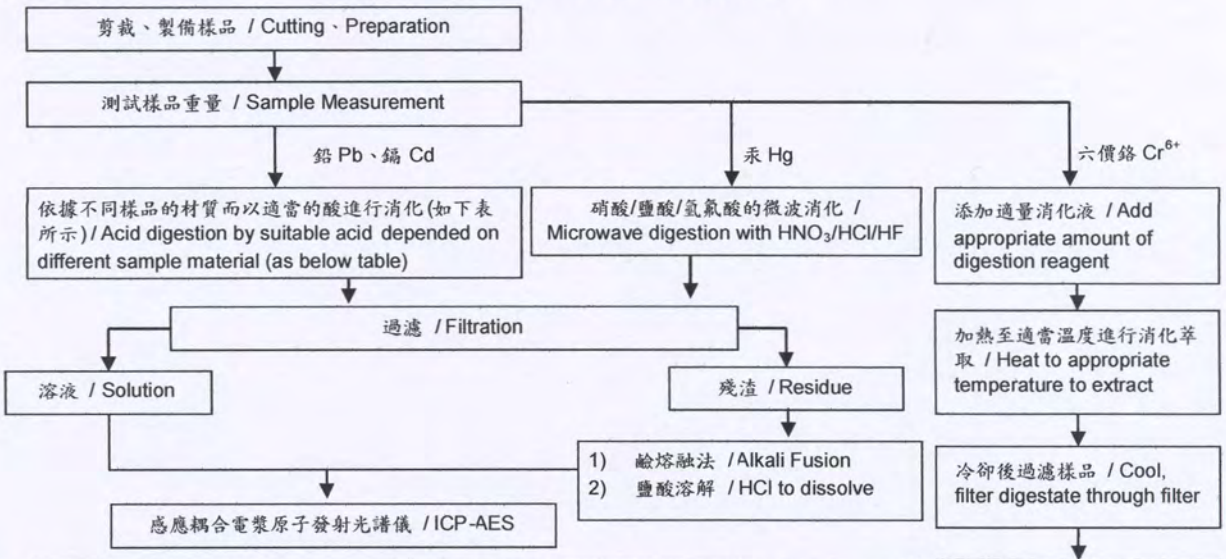
東京都板橋區宮本町33番7號
33-7, MIYAMOTO-CHO, ITABASHI-KU, TOKYO, JAPAN

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. (Cr^{6+} test method excluded)
2) 測試人員：楊登偉 / Name of the person who made measurement: Climbgreat Yang
3) 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang



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_2O_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_2SO_4, H_2O_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

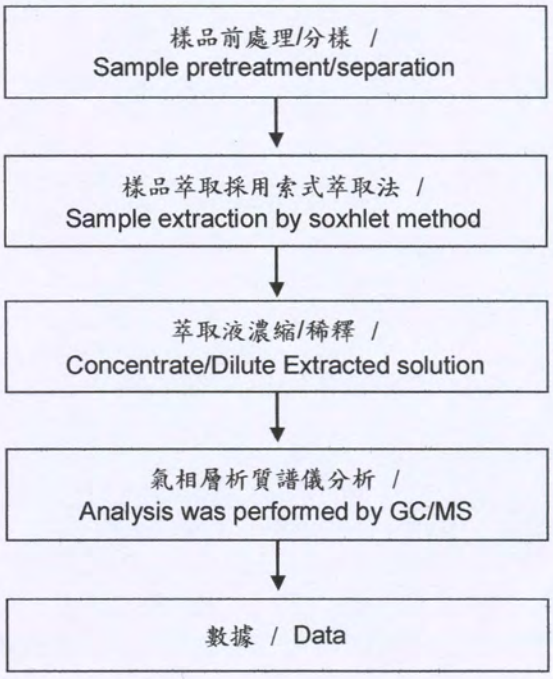
新日本化金株式會社
SHIN-NIHON KAKIN CO., LTD.
東京都板橋區宮本町33番7號
33-7, MIYAMOTO-CHO, ITABASHI-KU, TOKYO, JAPAN

索式萃取(GC/MS)分析流程圖 /
Analytical flow chart of Soxhlet extraction (GC/MS) procedure

1) 測試人員：傅莉雅 / Name of the person who made measurement: Lydia Fu

2) 測試負責人：陳新智 / Name of the person in charge of measurement: Shinjyh Chen

■ 測試項目(Test Items): 可塑劑、苯並三唑類化合物、六溴環十二烷、壬酚、單甲基二溴二苯基甲烷、有機磷化合物 / Phthalate、Benzotriazole、HBCDD、NP、DBBT、Organic phosphorus compounds



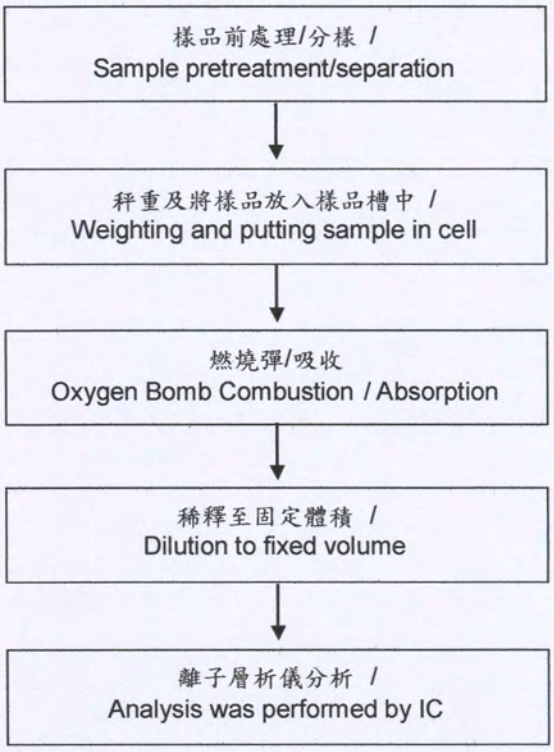
測試報告
Test Report

號碼(No.) : CE/2011/21056 日期(Date) : 2011/02/17 頁數(Page) : 7 of 10

新日本化金株式會社
SHIN-NIHON KAKIN CO., LTD.
東京都板橋區宮本町33番7號
33-7, MIYAMOTO-CHO, ITABASHI-KU, TOKYO, JAPAN

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

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



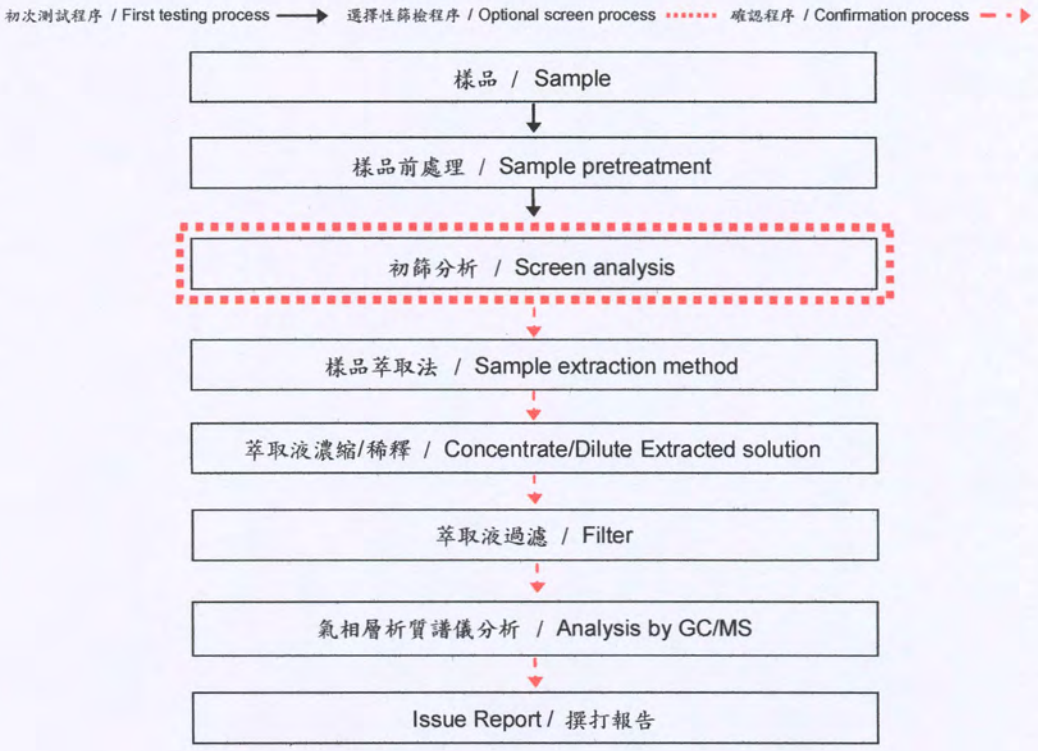
測試報告
Test Report

號碼(No.) : CE/2011/21056 日期(Date) : 2011/02/17 頁數(Page) : 8 of 10

新日本化金株式會社
SHIN-NIHON KAKIN CO., LTD.
東京都板橋區宮本町33番7號
33-7, MIYAMOTO-CHO, ITABASHI-KU, TOKYO, JAPAN

分析流程圖 / Analytical flow chart

1)測試人員：翁賜彬 / Name of the person who made measurement: Roman Wong
2)測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang
■測試項目(Test Items): 多溴聯苯/多溴聯苯醚, 四溴雙酚-A-雙 / PBB/PBDE, TBBP-A-bis



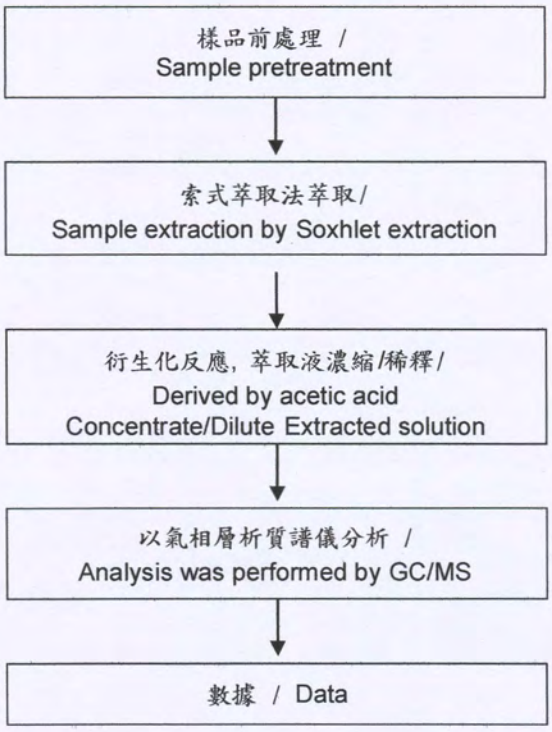
測試報告
Test Report

新日本化金株式會社
SHIN-NIHON KAKIN CO., LTD.
東京都板橋區宮本町33番7號
33-7, MIYAMOTO-CHO, ITABASHI-KU, TOKYO, JAPAN

分析流程圖 /
Analytical flow chart

1) 測試人員：傅莉雅 / Name of the person who made measurement: Lydia Fu
2) 測試負責人：陳新智 / Name of the person in charge of measurement: Shinjyh Chen

■ 測試項目(Test Items):四溴雙酚-A、雙酚 A / TBBP-A、Bisphenol A

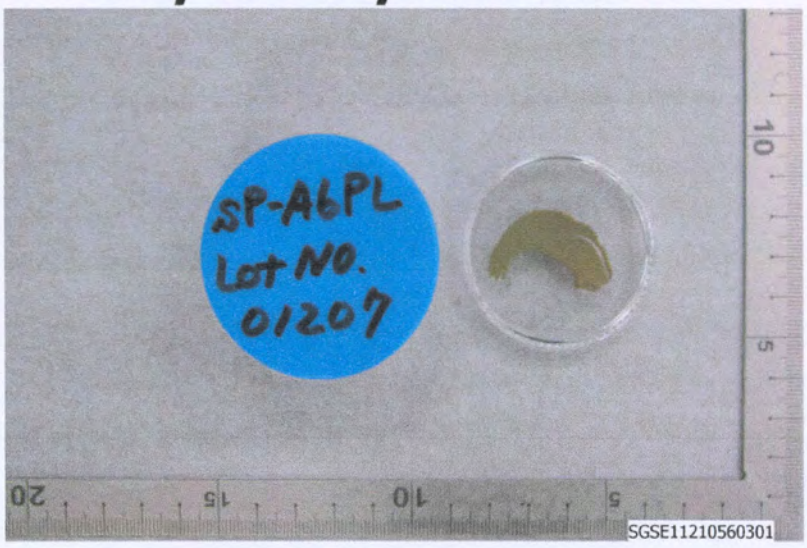


測試報告
Test Report

號碼(No.) : CE/2011/21056 日期(Date) : 2011/02/17 頁數(Page) : 10 of 10

新日本化金株式會社
SHIN-NIHON KAKIN CO., LTD.
東京都板橋區宮本町33番7號
33-7, MIYAMOTO-CHO, ITABASHI-KU, TOKYO, JAPAN

CE/2011/21056



** 報告結尾 (End of Report) **

Test Report

No. GZ1011128213/CHEM Date: NOV 16, 2010

ANSON SOLDER & TIN PRUDUCTS MADE LTD.
CHANG HONG RIDGE INDUSTRIAL PARK DAIL, NANHAI, GUANGDONG

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

SGS Job No.	: SCATR1011006894
Date of Sample Received	: NOV 10, 2010
Testing Period	: NOV 10, 2010 TO NOV 16, 2010

Test Requested :

A: As requested by client, SVHC screening is performed according to:
Fifteen (15) substances in the Candidate List of Substances of Very High Concern (SVHC) for authorization published by European Chemicals Agency (ECHA) on October 28, 2008 regarding Regulation (EC) No 1907/2006 concerning the REACH.

B: Selected test(s) as requested by client.

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

Summary :

A: According to the specified scope and analytical techniques, concentrations of tested SVHC are ≤ 0.1% (w/w) in the submitted sample.	PASS

Conclusion

B: Based on the performed tests on submitted sample(s), the results **comply with** the RoHS Directive 2002/95/EC and its subsequent amendments.

Signed for and on behalf of
SGS-CSTC Ltd.

Manson

Manson Yang
Approved Signatory

SGS-CSTC Standards Technical Services Co., Ltd.
Guangzhou Testing Service Certification Laboratory
198 Kezhu Road, Scientech Park Guangzhou Economic & Technology Development District, Guangzhou, China 510663 t (86-20) 82155555 f (86-20) 82075125 www.cn.sgs.com
中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075125 e sgs.china@sgs.com

Test Sample :

Sample Description :

Specimen No.	Description
001	Silvery metal bar

A: SVHC

Remark :

(1) The chemical analysis of specified SVHC is performed by means of currently available analytical techniques against the following SVHC related documents published by ECHA:
(A) http://echa.europa.eu/chem_data/authorisation_process/candidate_list_table_en.asp
(B) http://echa.europa.eu/consultations/authorisation/svhc/svhc_cons_en.asp
(C) http://echa.europa.eu/chem_data/reg_int_tables/reg_int_en.asp?substance_type=SVHC&substance_state=current
These lists are under evaluation by ECHA and may subject to change in the future.

(2) In accordance with Regulation (EC) No 1907/2006, any EU producer or importer of articles shall notify ECHA, in accordance with paragraph 4 of Article 7, if a substance meets the criteria in Article 57 and is identified in accordance with Article 59(1) of the Regulation, if (a) the substance in the Candidate List is present in those articles in quantities totaling over one tonne per producer or importer per year; and (b) the substance in the Candidate List is present in those articles above a concentration of 0.1% weight by weight (w/w).

(3) Article 33 of Regulation (EC) No 1907/2006 requires supplier of an article containing a substance meeting the criteria in Article 57 and identified in accordance with Article 59(1) in a concentration above 0.1% weight by weight (w/w) shall provide the recipient of the article with sufficient information, available to the supplier, to allow safe use of the article including, as a minimum, the name of that substance in the Candidate List.

(4) If a SVHC is found over the reporting limit, client is suggested to identify the component which contains the SVHC and the exact concentration of the SVHC by requesting further quantitative analysis from the laboratory.

Test Method :

SGS In-House method-RSTS-EE-SVHC-003, RSTS-EE-SVHC-004, Analyzed by ICP-OES, GC-MS and UV-VIS.

Test Result: (Substances in the Candidate List of SVHC)

Substance Name	CAS No.	EC No.	Concentration(%)	RL(%)
			001	
4,4'-Diaminodiphenylmethane(MDA)	101-77-9	202-974-4	ND	0.050
5-tert-butyl-2,4,6-trinitro-m-xylene (musk xylene)	81-15-2	201-329-4	ND	0.050
Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins)	85535-84-8	287-476-5	ND	0.050
Anthracene	120-12-7	204-371-1	ND	0.050
Benzyl butyl phthalate (BBP)	85-68-7	201-622-7	ND	0.050
Bis(2-ethylhexyl)phthalate (DEHP)	117-81-7	204-211-0	ND	0.050
Bis(tributyltin)oxide (TBTO)	56-35-9	200-268-0	ND	0.050
Cobalt dichloride*	7646-79-9	231-589-4	ND	0.005
Diarsenic pentaoxide*	1303-28-2	215-116-9	ND	0.005
Diarsenic trioxide*	1327-53-3	215-481-4	ND	0.005
Dibutyl phthalate (DBP)	84-74-2	201-557-4	ND	0.050
Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified (α-HBCDD, β-HBCDD, γ-HBCDD) Δ	25637-99-4 and 3194- 55-6	247-148-4 and 221-695-9	ND	0.050
Lead hydrogen arsenate*	7784-40-9	232-064-2	ND	0.005
Sodium dichromate*	7789-12-0 and 10588-01-9	234-190-3	ND	0.005
Triethyl arsenate*	15606-95-8	427-700-2	ND	0.005

Notes:

(1). RL = Reporting Limit. All RL are based on homogenous material.
ND = Not detected (lower than RL), ND is denoted on the target compound.

(2). Δ CAS No. of diastereoisomers identified (α-HBCDD, β-HBCDD, γ-HBCDD): 134237-50-6, 134237-51-7, 134237-52-8

(3). * The test result is based on the calculation of selected element(s) / marker(s) and to the worst-case scenario. For detail information, please refer to the SGS REACH website: www.reach.sgs.com/substance-of-very-high-concern-analysis-information-page.htm

The client is advised to review the chemical formulation to ascertain above substances present in the sample.

RL = 0.005% is evaluated for element (i.e. cobalt, arsenic, lead, sodium, chromium, chromium (VI) respectively)

B: RoHS Directive 2002/95/EC

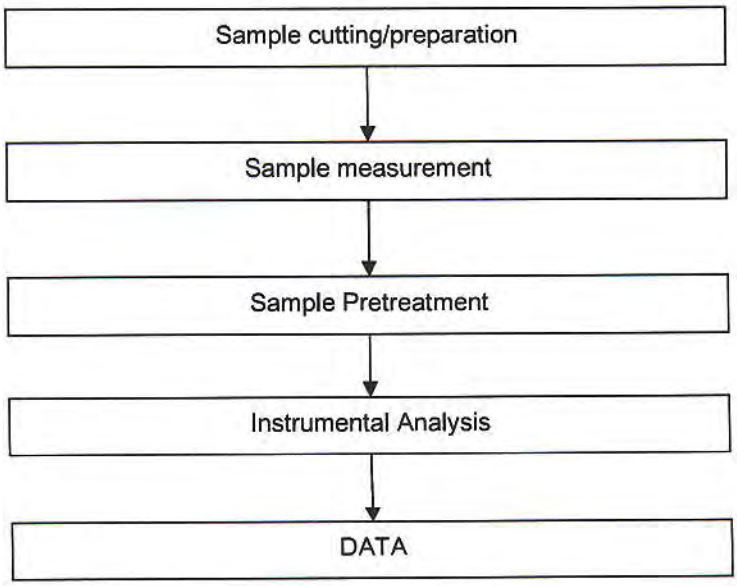
Test Item(s)	Unit	Test Method (Reference)	Result	MDL	Limit
Cadmium (Cd)	mg/kg	IEC 62321: 2008, ICP-OES	N.D.	2	100
Lead (Pb)	mg/kg	IEC 62321: 2008, ICP-OES	49	2	1000
Mercury (Hg)	mg/kg	IEC 62321: 2008, ICP-OES	N.D.	2	1000
Hexavalent Chromium (CrVI) by boiling water extraction	-	IEC 62321: 2008, UV-Vis	Negative	◇	#
Sum of PBBs	mg/kg	-	N.D.	-	1000
Monobromobiphenyl	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Dibromobiphenyl	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Tribromobiphenyl	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Tetrabromobiphenyl	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Pentabromobiphenyl	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Hexabromobiphenyl	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Heptabromobiphenyl	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Octabromobiphenyl	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Nonabromobiphenyl	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Decabromobiphenyl	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Sum of PBDEs	mg/kg	-	N.D.	-	1000
Monobromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Dibromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Tribromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Tetrabromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Pentabromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Hexabromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Heptabromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Octabromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Nonabromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Decabromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	

Note:
1. mg/kg = ppm
2. N.D. = Not Detected (< MDL)
3. MDL = Method Detection Limit
4. ◇ = Spot test:
   Negative = Absence of CrVI coating, Positive = Presence of CrVI coating;
   (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:
   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 50cm^2 sample surface area.
   Storage conditions and production date of the tested sample are unavailable and thus results of Cr(VI) represent status of the sample at the time of testing.
5. # = Positive indicates the presence of CrVI on the tested area.
   Negative indicates the absence of CrVI on the tested area.
6. "-" = Not regulated

ATTACHMENTS

SVHC Testing Flow Chart

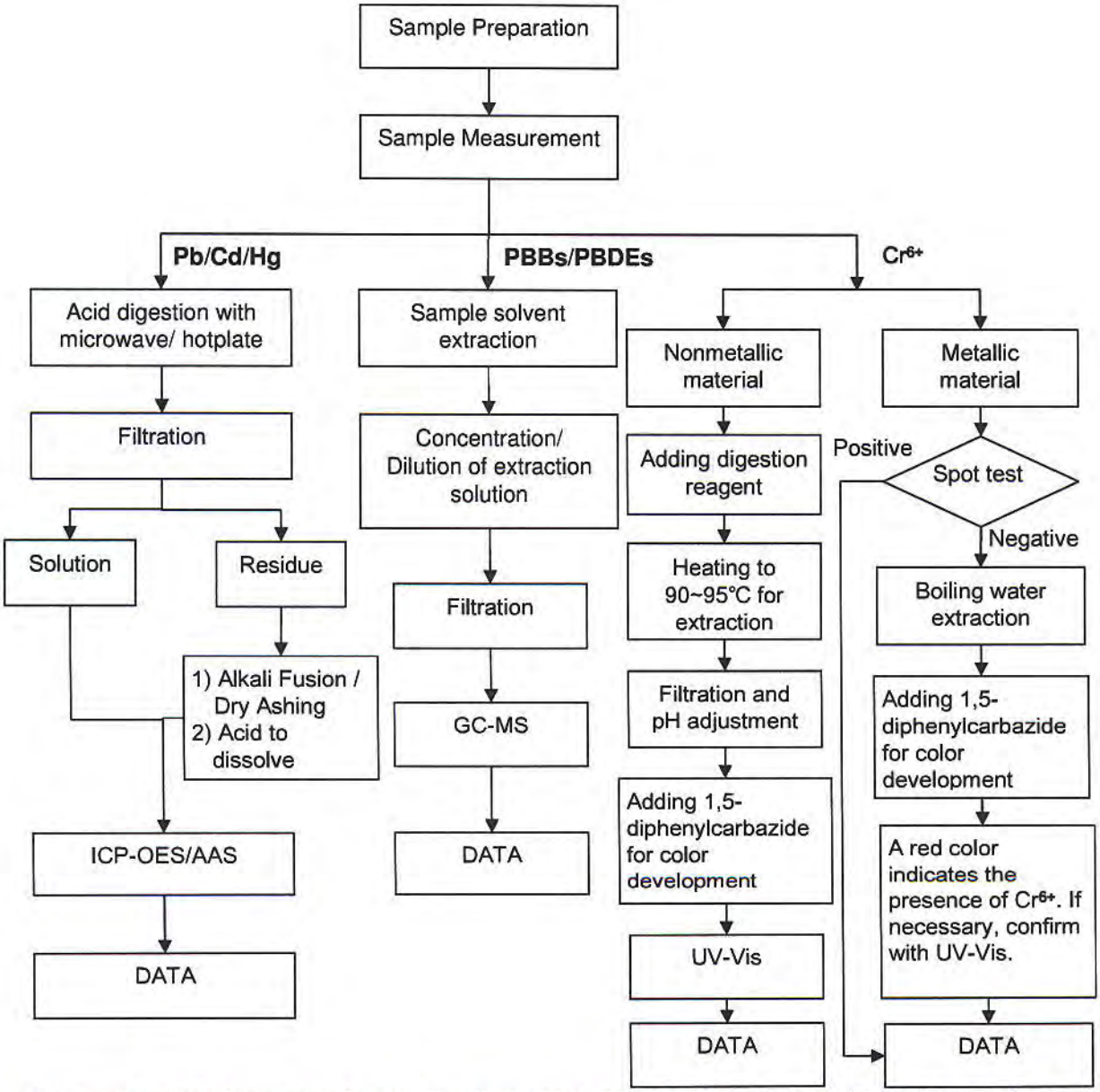
1) Name of the person who made testing: Bella Wang / Tina Zhao
2) Name of the person in charge of testing: Adams Yu / Ryan Yang



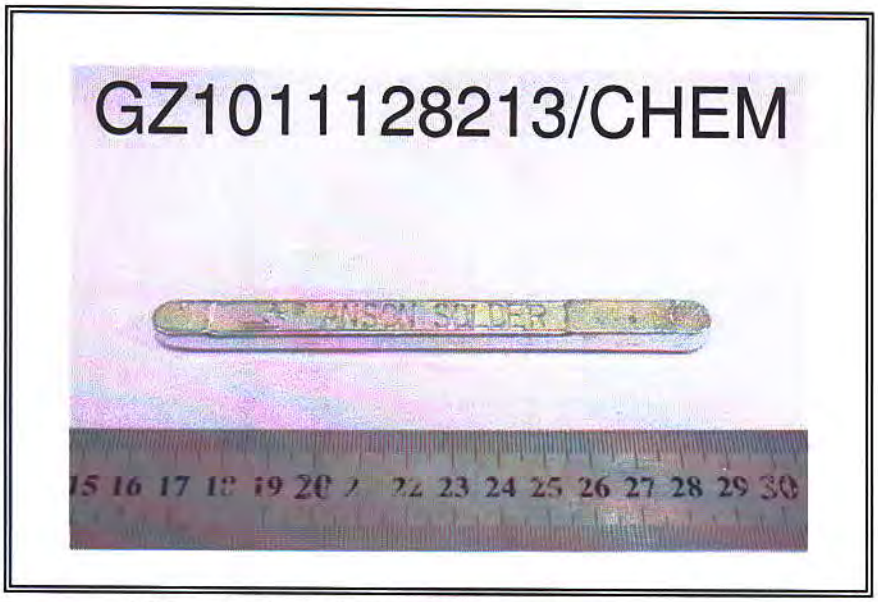
ATTACHMENTS

RoHS Testing Flow Chart

1) Name of the person who made testing: Bella Wang / Cutey Yu / Ross Zhan
2) Name of the person in charge of testing: Adams Yu / Ryan Yang



Sample photo:



SGS authenticate the photo on original report only

*** End of Report ***

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中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075125 e sgs.china@sgs.com

Test Report

DONGGUAN HANHUA METAL PRODUCTS CO.,LTD.
XINIUPO INDUSTRIAL AREA,DALANG TOWN,DONGGUAN CITY, P.R.
CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as :
TINNED COPPER WIRE

SGS Job No.	:	13310707 - SZ
SGS Internal Reference No.	:	2.1
Date of Sample Received	:	16 Aug 2011
Testing Period	:	16 Aug 2011 - 19 Aug 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).
Conclusion	:	Based on the performed tests on submitted samples, the results of Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBB), Polybrominated diphenyl ethers (PBDE) comply with the limits as set by RoHS Directive 2011/65/EU Annex II; recasting 2002/95/EC.

Signed for and on behalf of
SGS-CSTC Ltd.

Almay Gao
Approved Signatory

Test Results:

ID for specimen 1 : CAN11-031849.001

Description for specimen 1 : Silvery plated metal

RoHS Directive 2011/65/EU

Test Item(s)	Unit	Test Method (Reference)	Result	MDL	Limit
Cadmium (Cd)	mg/kg	IEC 62321:2008, ICP-OES	N.D.	2	100
Lead (Pb)	mg/kg	IEC 62321:2008, ICP-OES	N.D.	2	1000
Mercury (Hg)	mg/kg	IEC 62321:2008, ICP-OES	N.D.	2	1000
Hexavalent Chromium (CrVI) by boiling water extraction	-	IEC 62321:2008, UV-Vis	Negative	◇	#
Sum of PBBs	mg/kg	-	N.D.	-	1000
Monobromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Dibromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Tribromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Tetrabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Pentabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Hexabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Heptabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Octabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Nonabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Decabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Sum of PBDEs	mg/kg	-	N.D.	-	1000
Monobromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Dibromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Tribromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Tetrabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Pentabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Hexabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Heptabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Octabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Nonabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Decabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	

Note:

1. mg/kg = ppm
2. N.D. = Not Detected (< MDL)
3. MDL = Method Detection Limit
4. ◇ = Spot-Test:
   Negative = Absence of CrVI coating, Positive = Presence of CrVI coating;
   (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:

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.

Storage conditions and production date of the tested sample are unavailable and thus results of Cr(VI) represent status of the sample at the time of testing.

5. # = Positive indicates the presence of CrVI on the tested areas.
Negative indicates the absence of CrVI on the tested areas.

6. "- " = Not regulated

198 Kezhu Road,Scientech Park Guangzhou Economic & Technology Development District,Guangzhou,China 510663 t (86-20) 82155555 f (86-20) 82075113 www.cn.sgs.com
中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075113 e sgs.china@sgs.com

ID for specimen 2 : CAN11-031849.002
Description for specimen 2 : Silvery plating on metal

RoHS Directive 2011/65/EU

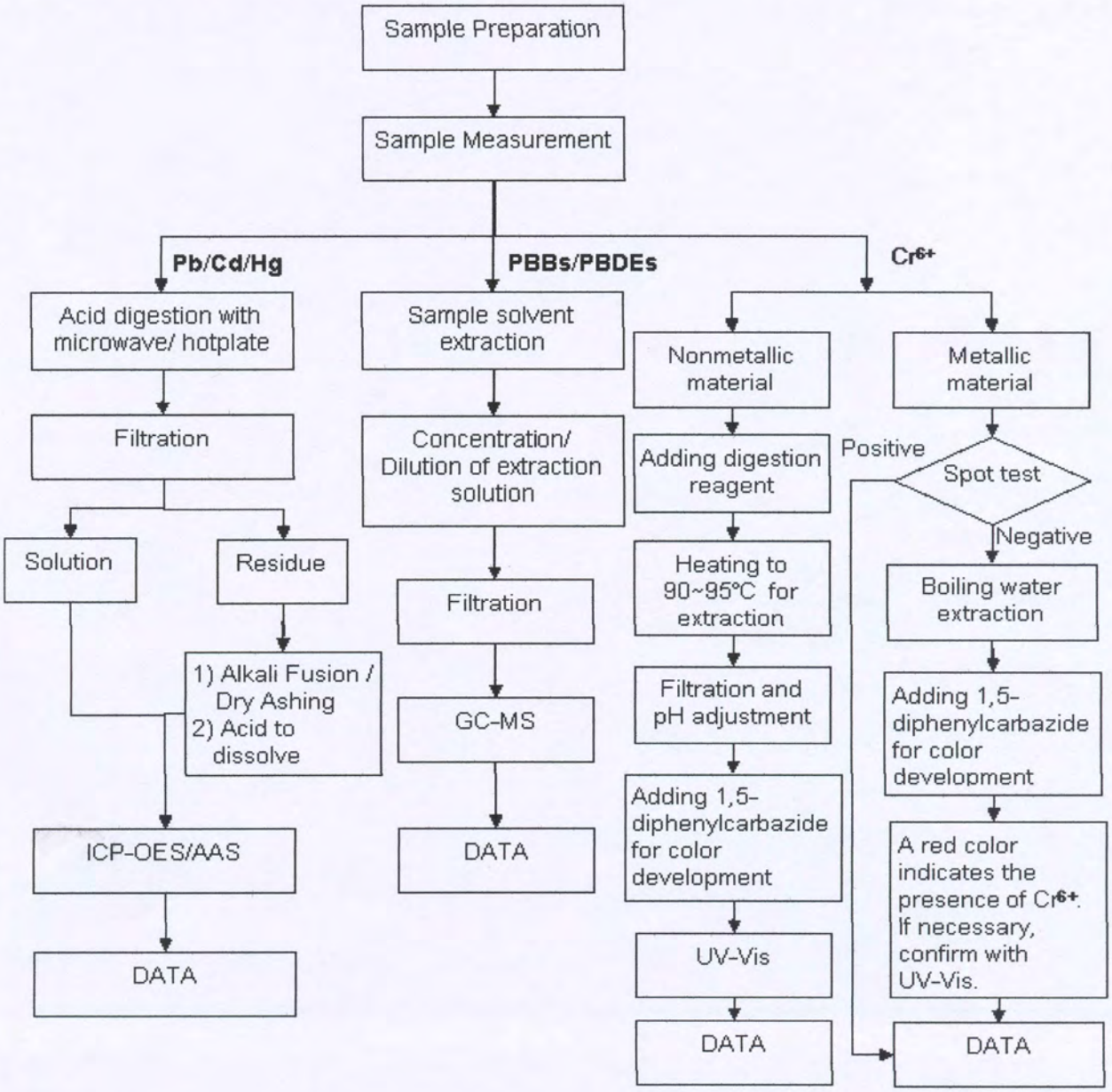
Test Item(s)	Unit	Test Method (Reference)	Result	MDL	Limit
Cadmium (Cd)	mg/kg	IEC 62321:2008 application of modified digestion by surface etching, ICP OES	N.D.	10	100
Lead (Pb)	mg/kg	IEC 62321:2008 application of modified digestion by surface etching, ICP OES	114	10	1000
Mercury (Hg)	mg/kg	IEC 62321:2008 application of modified digestion by surface etching, ICP OES	N.D.	10	1000
Hexavalent Chromium (CrVI) by boiling water extraction	-	IEC 62321:2008, UV-Vis	Negative	◇	#

Note:
1. mg/kg = ppm
2. N.D. = Not Detected (< MDL)
3. MDL = Method Detection Limit
4. ◇ = Spot-Test:
   Negative = Absence of CrVI coating, Positive = Presence of CrVI coating;
   (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:
   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.
   Storage conditions and production date of the tested sample are unavailable and thus results of Cr(VI) represent status of the sample at the time of testing.
5. # = Positive indicates the presence of CrVI on the tested areas.
   Negative indicates the absence of CrVI on the tested areas.
6. "- " = Not regulated

ATTACHMENTS

RoHS Testing Flow Chart

1) Name of the person who made testing: Bella Wang / Cutey Yu / Ross Zhan
2) Name of the person in charge of testing: Adams Yu / Ryan Yang
3) These samples were dissolved totally by pre-conditioning method according to below flow chart (Cr6+ and PBBs/PBDEs test method excluded).



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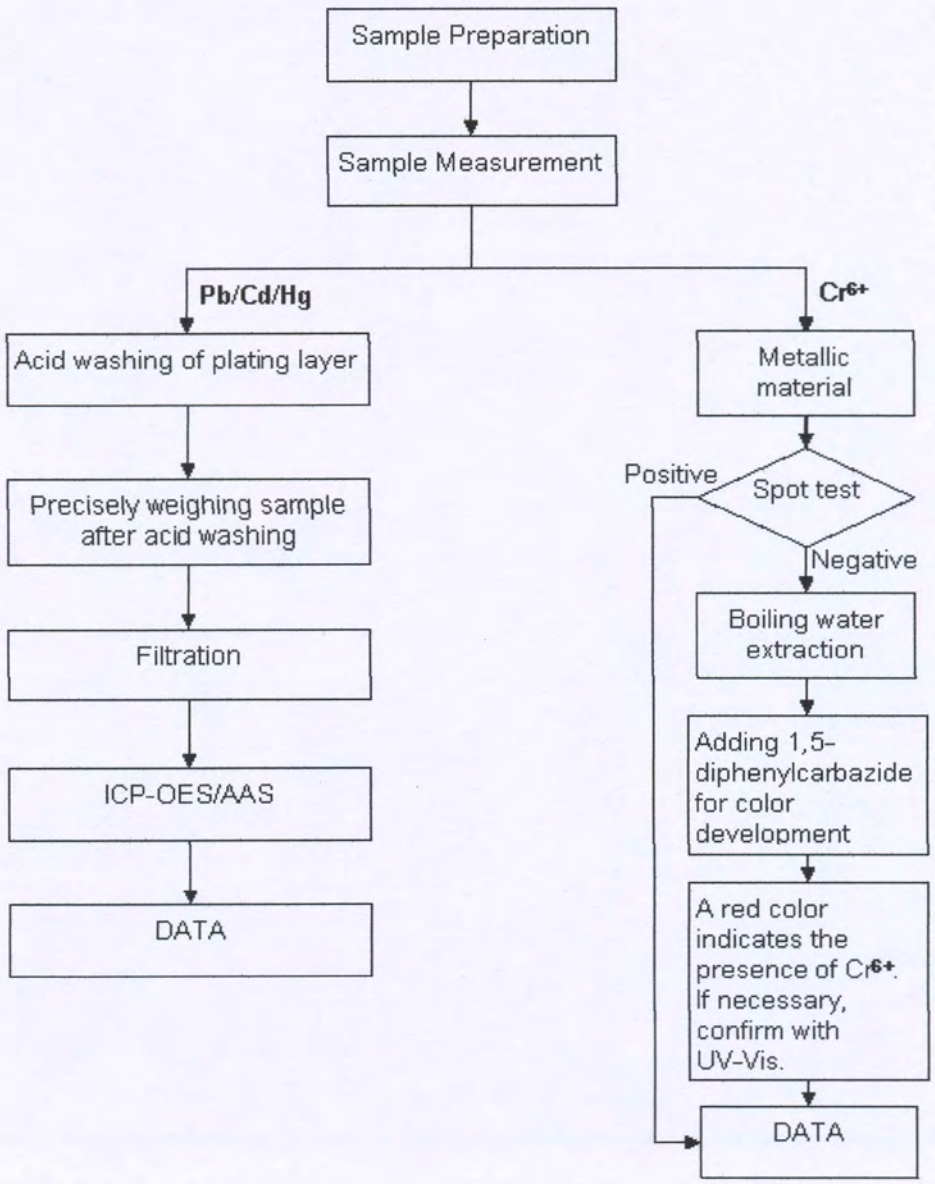
ATTACHMENTS

Plating Pb/Cd/Hg/Cr^{6+} Testing Flow Chart

1) Name of the person who made testing: Bella Wang / Ross Zhan
2) Name of the person in charge of testing: Adams Yu



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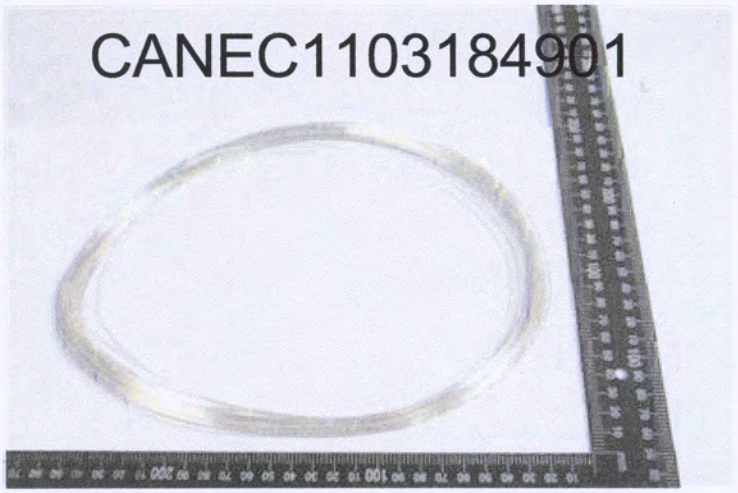
Sample photo:



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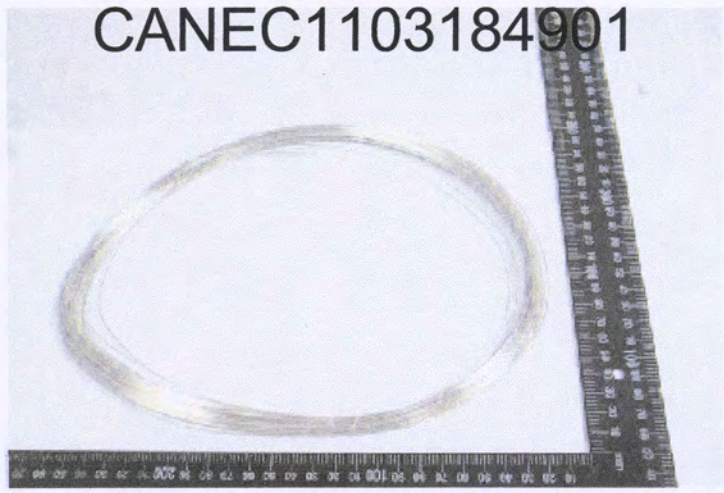

CAN11-031849.002

SGS authenticate the photo on original report only

*** End of Report ***

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Test Report

DONGGUAN DAEJOO ELECTRONIC MATERIALS CO.,LTD.
XIANYONG INDUSTRIAL ZONE, WANJIANG DISTRICT, DONGGUAN CITY, GUANGDONG PROVINCE
CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as :
CP-930-1HF

SGS Job No.	:	12999634 - GZ
SGS Internal Reference No.	:	10.9
Date of Sample Received	:	09 Mar 2011
Testing Period	:	09 Mar 2011 - 14 Mar 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).

Signed for and on behalf of
SGS-CSTC Ltd.

Trophy Zhang
Sr. Engineer

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Test Results:

ID for specimen 1 : CAN11-007272.009

Description for specimen 1 : Red solid material

Elementary Analysis

Test Item(s)	Unit	Test Method (Reference)	Result	MDL
Cadmium (Cd)	mg/kg	IEC 62321:2008, ICP-OES	N.D.	2
Lead (Pb)	mg/kg	IEC 62321:2008, ICP-OES	N.D.	2
Mercury (Hg)	mg/kg	IEC 62321:2008, ICP-OES	N.D.	2
Hexavalent Chromium (CrVI) by alkaline extraction	mg/kg	IEC 62321:2008, UV-Vis	N.D.	2

Note:

1. mg/kg = ppm
2. N.D. = Not Detected (< MDL)
3. MDL = Method Detection Limit

Flame Retardants

Test Item(s)	Unit	Test Method (Reference)	Result	MDL
Sum of PBBs	mg/kg	-	N.D.	-
Monobromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5
Dibromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5
Tribromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5
Tetrabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5
Pentabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5
Hexabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5
Heptabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5
Octabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5
Nonabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5
Decabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5
Sum of PBDEs	mg/kg	-	N.D.	-
Monobromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5
Dibromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5
Tribromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5
Tetrabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5
Pentabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5
Hexabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5
Heptabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5
Octabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5
Nonabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5
Decabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5

Note:
1. mg/kg = ppm
2. N.D. = Not Detected (< MDL)
3. MDL = Method Detection Limit
4. "-" = Not regulated

Halogen

Test Item(s)	Unit	Test Method (Reference)	Result	MDL
Fluorine (F)	mg/kg	BS EN 14582:2007, IC	N.D.	50
Chlorine (Cl)	mg/kg	BS EN 14582:2007, IC	248	50
Bromine (Br)	mg/kg	BS EN 14582:2007, IC	N.D.	50
Iodine (I)	mg/kg	BS EN 14582:2007, IC	N.D.	50

Note:
1. mg/kg = ppm
2. N.D. = Not Detected (< MDL)
3. MDL = Method Detection Limit

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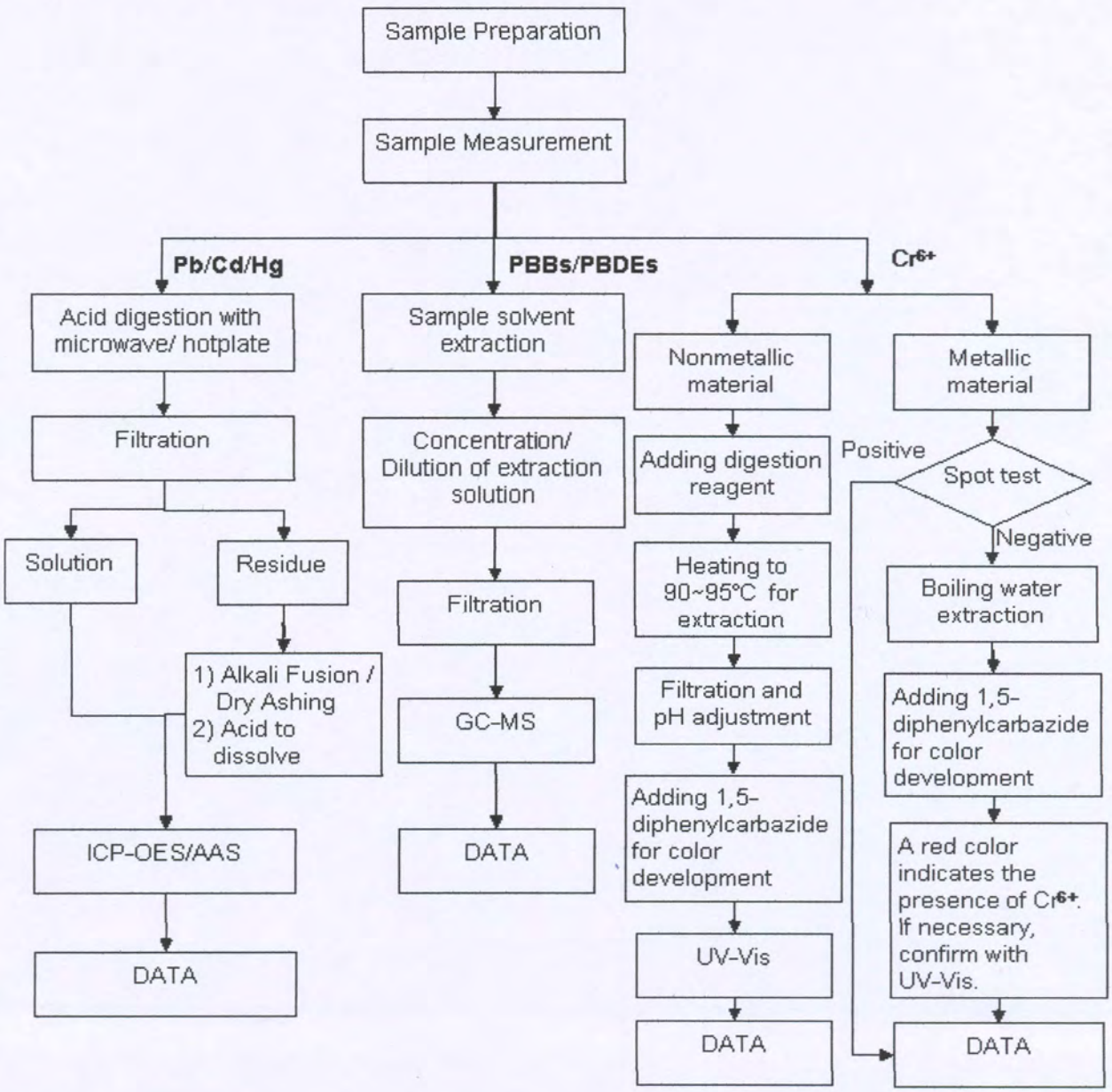
ATTACHMENTS

RoHS Testing Flow Chart

1) Name of the person who made testing: Bella Wang / Cutey Yu / Ross Zhan
2) Name of the person in charge of testing: Adams Yu / Ryan Yang
3) These samples were dissolved totally by pre-conditioning method according to below flow chart (Cr6+ and PBBs/PBDEs test method excluded).



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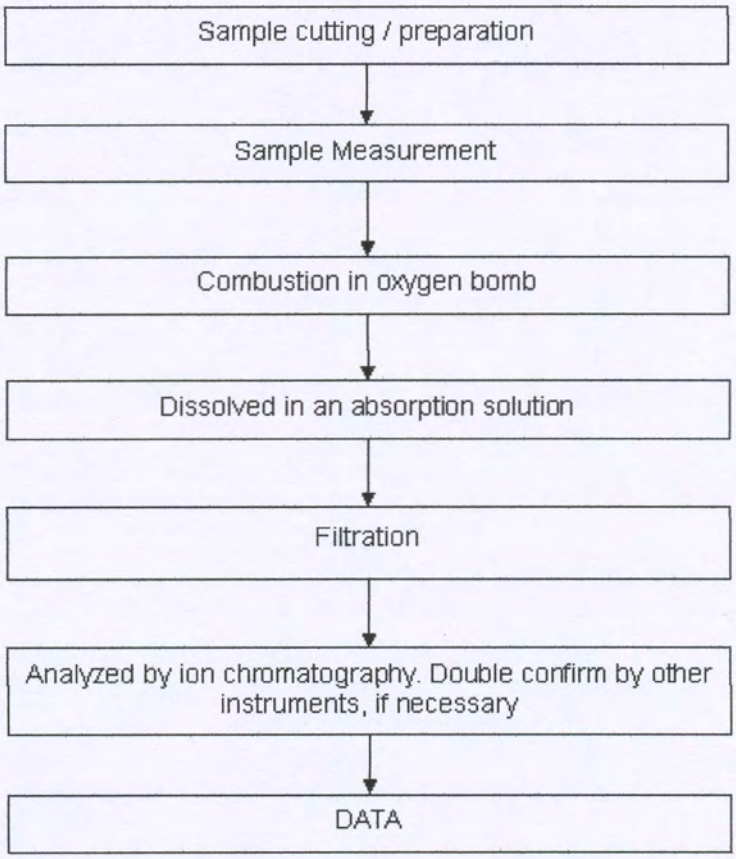
ATTACHMENTS

Halogen Testing Flow Chart

1) Name of the person who made testing: Liang Wang
2) Name of the person in charge of testing: Michelle Song



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Sample photo:

CAN11-007272.009

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