



ICP Test Report Certification Packet

Company name: Littelfuse, Inc.

Product Series: FLQ Series

Product #: FLQ Series

Issue Date: October 3, 2012

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

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

Issued by: 
KRISTEEN BACILA

<Global EHS Engineer>

(1) Parts, sub-materials and unit parts

This document covers the FLQ RoHS-Compliant series products manufactured by Littelfuse, Inc.

< Raw Materials Used

Please see Table 1

(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	Raw Material Part Number	Raw Material Description	Page(s)
1	648102	Yarn	3-10
2	082xxx (082384)	Wire-Copper Nickel Alloy	11-20
3	079xxx	Wire-Cu 110 Strip w/center Sn Overlay	21-24
4	685xxx	Pure Ag (685406)	25-29
5	923-001	Fuse cap	30-34
6	692532	Wire Solder	35-39
7	927-027	Solder Pellet	40-44
8	909-410	Midget Paper Body	45-51
9	09018x	Sand filler	52-60
10	425723/425721	Ribbon	61-66
11	087293	Adhesive	67-74



TEST REPORT

NUMBER: SHAH00334352

APPLICANT: LITTELFUSE, INC.
800 E. NORTHWEST HWY
ATTN: A. CESISTA/ K. BACILA

DATE: AUG 15, 2012

SAMPLE DESCRIPTION:

One (1) submitted sample said to be **White Yarn.**

Part Description : Yarn.

Part Number : 648102.

TESTS CONDUCTED:

AS REQUESTED BY THE APPLICANT, FOR DETAILS REFER TO ATTACHED PAGE(S)

TO BE CONTINUED

AUTHORIZED BY:
FOR INTERTEK TESTING SERVICES
LTD., SHANGHAI

JACOB LIN
GENERAL MANAGER

TEST REPORT

NUMBER: SHAH00334352

TESTS CONDUCTED

1 (I) Test Result Summary:

TESTING ITEM	RESULT (ppm)
HEAVY METAL	
CADMIUM (Cd) CONTENT	ND
LEAD (Pb) CONTENT	ND
MERCURY (Hg) CONTENT	ND
CHROMIUM VI (Cr ⁶⁺) CONTENT	ND
POLYBROMINATED BIPHENYLS (PBBs)	
MONOBROMINATED BIPHENYLS (MonoBB)	ND
DIBROMINATED BIPHENYLS (DiBB)	ND
TRIBROMINATED BIPHENYLS (TriBB)	ND
TETRABROMINATED BIPHENYLS (TetraBB)	ND
PENTABROMINATED BIPHENYLS (PentaBB)	ND
HEXABROMINATED BIPHENYLS (HexaBB)	ND
HEPTABROMINATED BIPHENYLS (HeptaBB)	ND
OCTABROMINATED BIPHENYLS (OctaBB)	ND
NONABROMINATED BIPHENYLS (NonaBB)	ND
DECABROMINATED BIPHENYL (DecaBB)	ND
POLYBROMINATED DIPHENYL ETHERS (PBDEs)	
MONOBROMINATED DIPHENYL ETHERS (MonoBDE)	ND
DIBROMINATED DIPHENYL ETHERS (DiBDE)	ND
TRIBROMINATED DIPHENYL ETHERS (TriBDE)	ND
TETRABROMINATED DIPHENYL ETHERS (TetraBDE)	ND
PENTABROMINATED DIPHENYL ETHERS (PentaBDE)	ND
HEXABROMINATED DIPHENYL ETHERS (HexaBDE)	ND
HEPTABROMINATED DIPHENYL ETHERS (HeptaBDE)	ND
OCTABROMINATED DIPHENYL ETHERS (OctaBDE)	ND
NONABROMINATED DIPHENYL ETHERS (NonaBDE)	ND
DECABROMINATED DIPHENYL ETHER (DecaBDE)	ND
HALOGEN CONTENT	
FLUORINE (F)	ND
CHLORINE (Cl)	ND
BROMINE (Br)	ND
IODINE (I)	ND

REMARKS: ppm = PARTS PER MILLION = mg/kg
ND = NOT DETECTED

RESPONSIBILITY OF CHEMIST: DENT FANG / KEN HE

TO BE CONTINUED

TEST REPORT

NUMBER: SHAH00334352

TESTS CONDUCTED
(II) ROHS REQUIREMENT:

<u>RESTRICTED SUBSTANCES</u>	<u>LIMITS</u>
CADMIUM (Cd) CONTENT	0.01% (100ppm)
LEAD (Pb) CONTENT	0.1% (1000ppm)
MERCURY (Hg) CONTENT	0.1% (1000ppm)
CHROMIUM VI (Cr ⁶⁺) CONTENT	0.1% (1000ppm)
POLYBROMINATED BIPHENYLS (PBBs)	0.1% (1000ppm)
POLYBROMINATED DIPHENYL ETHERS (PBDEs)	0.1% (1000ppm)

THE ABOVE LIMITS WERE QUOTED FROM ROHS DIRECTIVE 2002/95/EC AND AMENDMENT 2005/618/EC FOR HOMOGENEOUS MATERIAL.

(III) TEST METHOD:

<u>TESTING ITEM</u>	<u>TESTING METHOD</u>	<u>REPORTING LIMIT</u>
CADMIUM (Cd) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0:2008 IN CLAUSE 8/9/10, BY MICROWAVE DIGESTION UNTIL THE TESTED SAMPLES ARE TOTALLY DISSOLVED AND DETERMINED BY ICP-OES.	2 ppm
LEAD (Pb) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0:2008 IN CLAUSE 8/9/10, BY MICROWAVE DIGESTION UNTIL THE TESTED SAMPLES ARE TOTALLY DISSOLVED AND DETERMINED BY ICP-OES.	2 ppm
MERCURY (Hg) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0:2008 IN CLAUSE 7, BY MICROWAVE DIGESTION UNTIL THE TESTED SAMPLES ARE TOTALLY DISSOLVED AND DETERMINED BY ICP-OES.	2 ppm
CHROMIUM VI (Cr ⁶⁺) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0:2008 IN ANNEX C, BY ALKALINE DIGESTION AND DETERMINED BY UV-VIS SPECTROPHOTOMETER.	1 ppm
POLYBROMINATED BIPHENYLS (PBBs)	WITH REFERENCE TO IEC 62321 EDITION 1.0:2008 IN ANNEX A, BY SOLVENT EXTRACTION AND DETERMINED BY GC-MSD AND FURTHER HPLC CONFIRMATION WHEN NECESSARY.	5 ppm
POLYBROMINATED DIPHENYL ETHERS (PBDEs)	WITH REFERENCE TO IEC 62321 EDITION 1.0:2008 IN ANNEX A, BY SOLVENT EXTRACTION AND DETERMINED BY GC-MSD AND FURTHER HPLC CONFIRMATION WHEN NECESSARY.	5 ppm

REMARK: REPORTING LIMIT = QUANTITATION LIMIT OF ANALYZE IN SAMPLE

Date Sample Receive: AUG.9, 2012

Test Period: AUG.9, 2012 To AUG.15, 2012

RESPONSIBILITY OF CHEMIST: KEN HE

TO BE CONTINUED

TEST REPORT

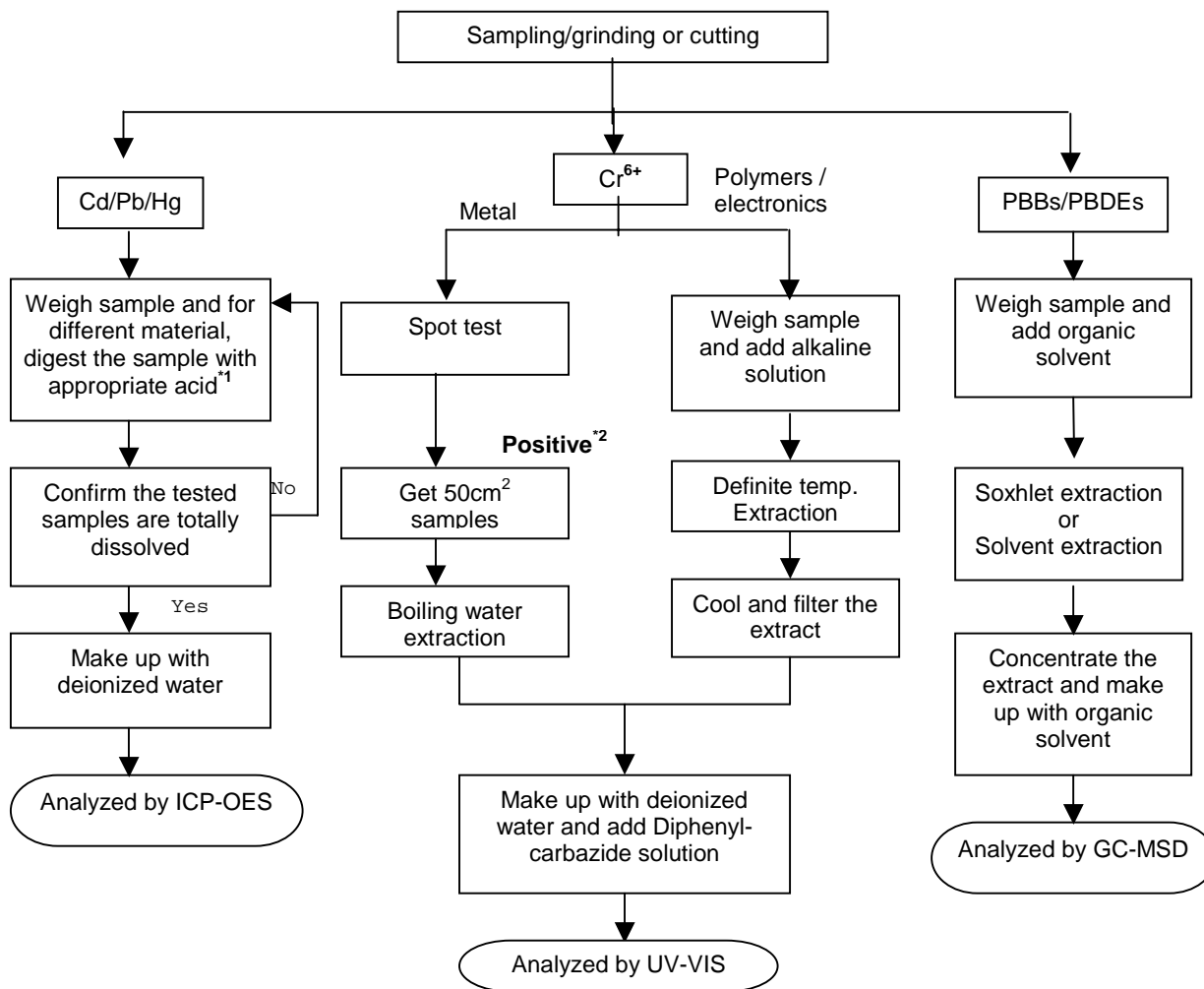
NUMBER: SHAH00334352

TESTS CONDUCTED

(IV) MEASUREMENT FLOWCHART:

TEST FOR Cd/ Pb/ Hg/ Cr (VI)/ PBBs/PBDES CONTENTS

REFERENCE STANDARD: IEC 62321 EDITION 1.0:2008



 TO BE CONTINUED



TEST REPORT

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TESTS CONDUCTED

REMARKS:

*1: LIST OF APPROPRIATE ACID:

MATERIAL	ACID ADDED FOR DIGESTION
POLYMERS	HNO ₃ , HCL, HF, H ₂ O ₂ , H ₃ BO ₃
METALS	HNO ₃ , HCL, HF
ELECTRONICS	HNO ₃ , HCL, H ₂ O ₂ , HBF ₄

*2: IF THE RESULT OF SPOT TEST IS POSITIVE, CHROMIUM (VI) WOULD BE DETERMINED AS DETECTED.

TO BE CONTINUED



TEST REPORT

NUMBER: SHAH00334352

TESTS CONDUCTED

2 (I) Test Result Summary :

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

Remarks: ppm = Parts per million = mg/kg
ND = Not detected

(III) Test Method:

<u>Testing Item</u>	<u>Testing Method</u>	<u>Reporting Limit</u>
Halogen Content	With reference to EN 14582:2007 by combustion flask with oxygen and determined by ion chromatography	50 ppm

Remark: Reporting limit = Quantitation limit of analyte in sample

TO BE CONTINUED

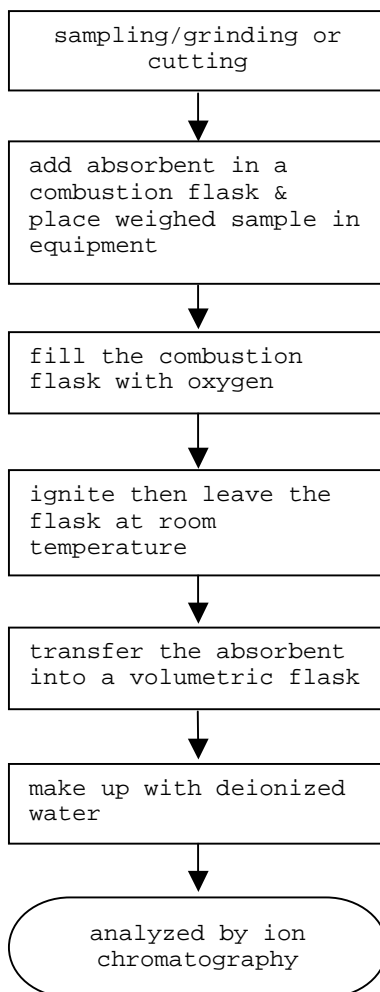
TEST REPORT

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TESTS CONDUCTED

(IV) Measurement Flowchart:

Test For Halogen Content
Reference Standard: EN 14582



TO BE CONTINUED

TEST REPORT

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TESTS CONDUCTED



END OF REPORT

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測試報告 Test Report

號碼(No.) : CE/2012/10837

日期(Date) : 2012/01/11

頁數(Page) : 1 of 10

ELSCHUKOM ELEKTROSCHUTZKOMPONENTENBAU GMBH
GEWERBESTRASSE 87, D-98669 VEILSDORF, GERMANY

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) : COPPER NICKEL ALLOY WIRES, NICKEL PLATED WIRES
樣品型號(Style/Item No.) : 請參考第5頁 (PLEASE REFER TO PAGE 5)
原產國(Country of Origin) : 德國 (GERMANY)
收件日期(Sample Receiving Date) : 2012/01/04
測試期間(Testing Period) : 2012/01/04 TO 2012/01/11

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


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

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GEWERBESTRASSE 87, D-98669 VEILSDORF, GERMANY



測試結果(Test Results)

測試部位(PART NAME) No.1 : 混測所有顏色金屬線 (含鍍層) (共10款) (MIXED ALL COLOR METAL WIRE
(INCLUDING THE PLATING LAYER) (10 TYPES))

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)	**	參考IEC 62321: 2008方法, 以沸水萃取法檢測. / With reference to IEC 62321: 2008 and performed by Boiling water extraction Method.#	#	Negative
全氟辛酸磺酸 / Perfluorooctane sulfonates (PFOS-Acid, Metal Salt, Amide)	mg/kg	參考US EPA 3540C: 1996方法, 以液相層析質譜儀檢測全氟辛酸磺酸含量. / 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.: 335-67-1)	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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GEWERBESTRASSE 87, D-98669 VEILSDORF, GERMANY



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.
鹵素 / Halogen				
鹵素(氟) / Halogen-Fluorine (F) (CAS No.: 14762-94-8)	mg/kg	參考BS EN 14582:2007, 以離子層析儀分析. / With reference to BS EN 14582:2007. Analysis was performed by IC.	50	n.d.
鹵素(氯) / Halogen-Chlorine (Cl) (CAS No.: 22537-15-1)			50	n.d.
鹵素(溴) / Halogen-Bromine (Br) (CAS No.: 10097-32-2)			50	n.d.
鹵素(碘) / Halogen-Iodine (I) (CAS No.: 14362-44-8)			50	n.d.

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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)

7. 樣品的測試是基於申請人要求混合測試，報告中的混合測試結果不代表其中個別單一材質的含量。
(The samples was/were analyzed on behalf of the applicant as mixing sample in one testing. The above results was/were only given as the informality value.)

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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GEWERBESTRASSE 87, D-98669 VEILSDORF, GERMANY



樣品型號(Style/Item No.)

:

- (D-1) 101 - - 228. 0 - - - - tungsten - tinned wire - W, Sn
- (D-2) 101.0126. 0 - - - - tungsten purity, nickel plated wire - W, Ni
- (D-3) 101.0121.0 - - - - copper - nickel 44 alloy (constantan) wire - CuNi44
- (D-4) 101.0124.0 - - - - copper - nickel - zinc - alloy wire (NS18) - CuNi18Zn20
- (D-5) 101.0127.0 - - - - copper - nickel - alloy wire - CuNi 2
- (D-6) 101.0129.0 - - - - copper - nickel - alloy wire - CuNi 12
- (D-7) 101.0174.0 - - - - copper - nickel - alloy wire - CuNi 6
- (D-8) 101.0175. 0 - - - - copper - nickel - alloy wire - CuNi 22
- (D-9) 101.0178. 0 - - - - iron - nickel - alloy wire - FeNi36 (Invar)
- (D-10) 101.0125. 0 - - - - copper - manganese - nickel - alloy wire - CuMn12Ni

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測試報告 Test Report

號碼(No.) : CE/2012/10837

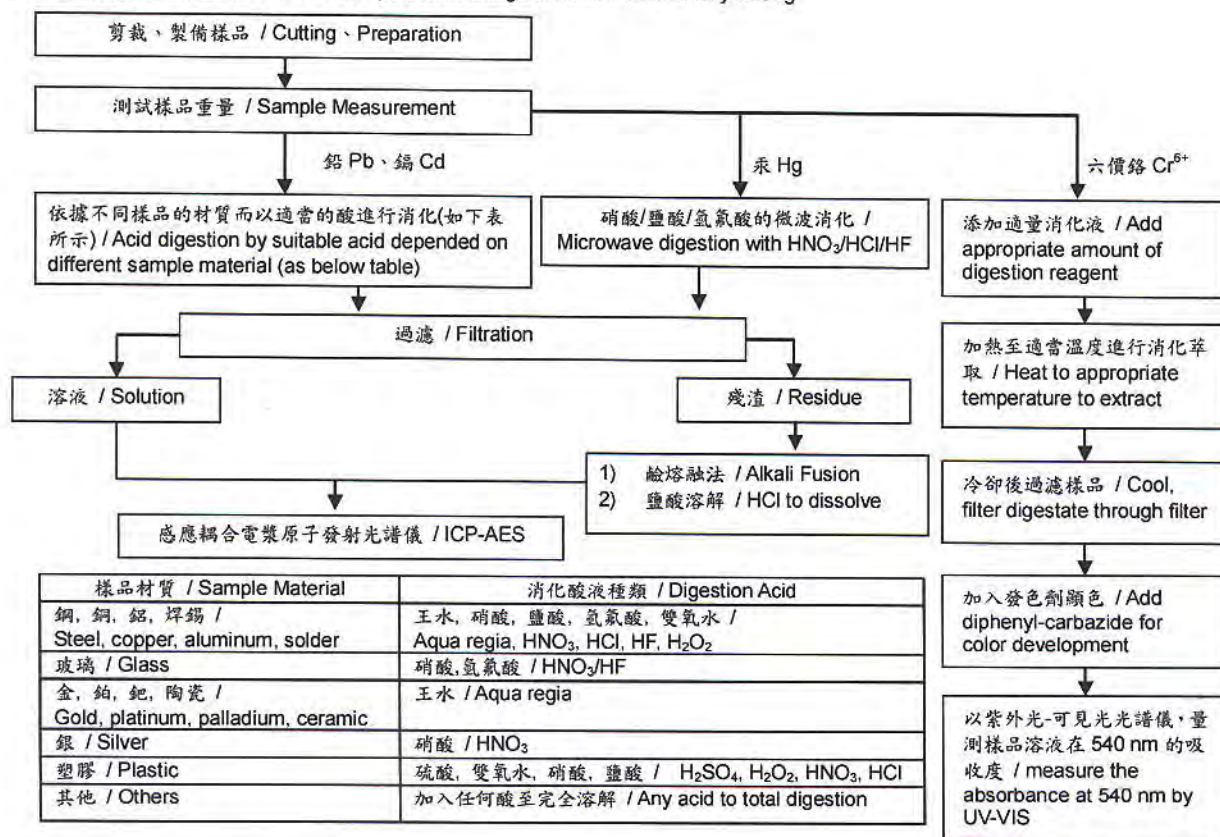
日期(Date) : 2012/01/11

頁數(Page) : 6 of 10

ELSCHUKOM ELEKTROSCHUTZKOMPONENTENBAU GMBH
GEWERBESTRASSE 87, D-98669 VEILSDORF, GERMANY



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



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測試報告 Test Report

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號碼(No.) : CE/2012/10837

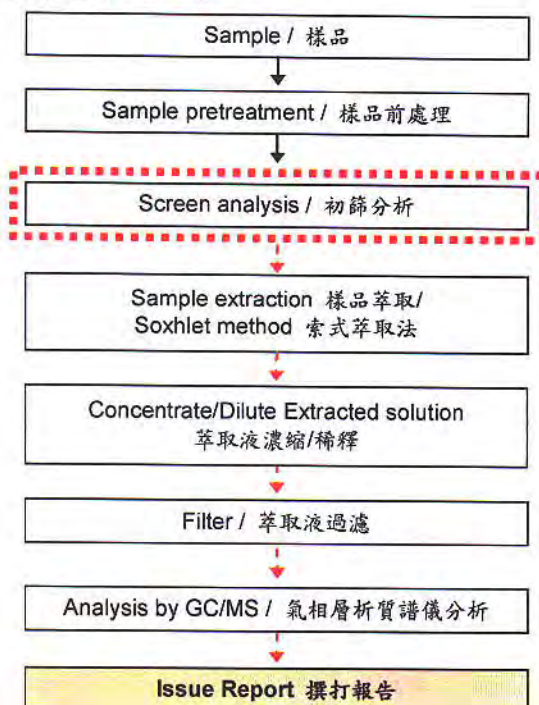
日期(Date) : 2012/01/11

頁數(Page) : 7 of 10



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

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



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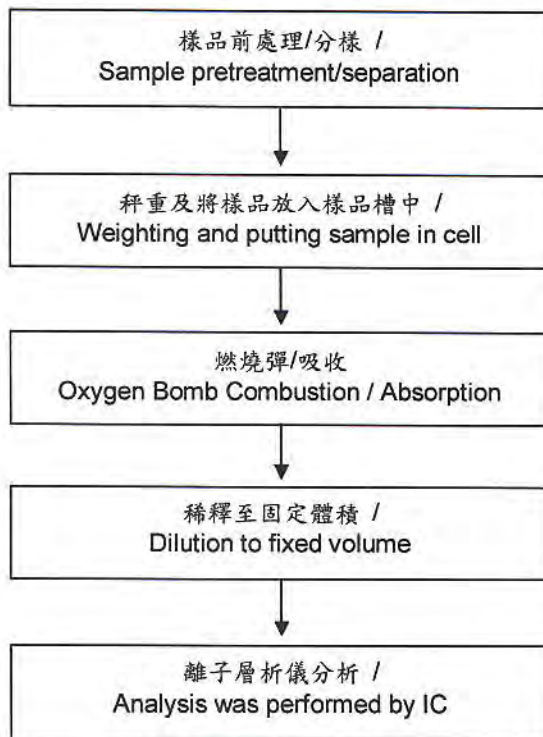
頁數(Page) : 8 of 10

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

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



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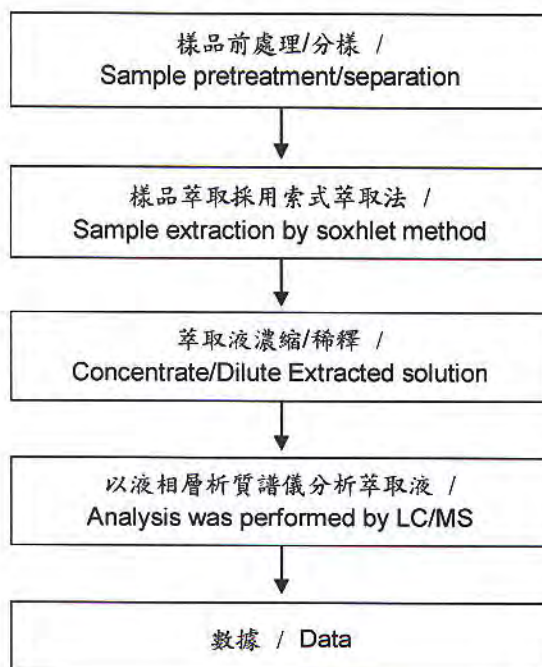
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索式萃取分析流程圖 / Analytical flow chart of Soxhlet extraction (LC/MS) procedure

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

【測試項目：全氟辛烷磺酸/全氟辛酸(銨)、苯並三唑類化合物 /
Test Items: PFOS/PFOA、Benzotriazole】



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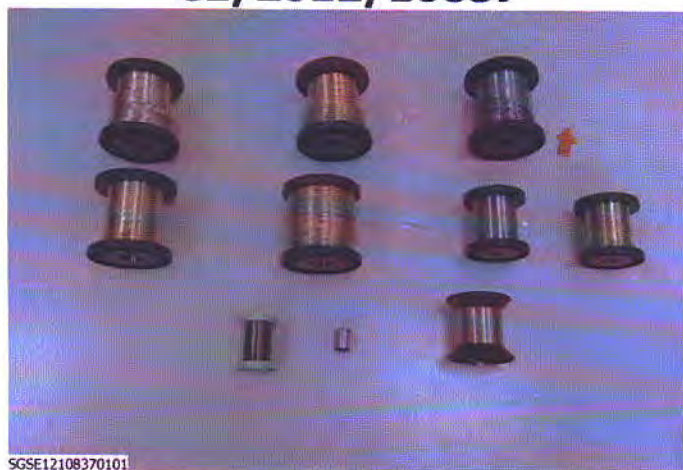
* 照片中如有箭頭標示，則表示為實際檢測之樣品/部位。*
(The tested sample / part is marked by an arrow if it's shown on the photo.)

CE/2012/10837



SGSE12108370001

CE/2012/10837



SGSE12108370101

**** 報告結尾(End of Report) ****

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Pony Testing International Group

Test Report

NO.: W02032011204D

Date: 2012.02.07

Page 1 of 4

Applicant:

SUZHOU XINWU OPTRONICT TECHNOLOGY CO.,LTD

Address:

368 YOUYI RD,YOUYI DEVELOPMENT AREA,SONGLING TOWN WUJIANG
SUZHOU,CHINA

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

Sample Name:

BRASS

Manufacturer:

SUZHOU XINWU OPTRONICT TECHNOLOGY CO.,LTD

Sample Description:

SOLDER COATING ON Cu

Testing Part Description:

MIX TESTED

Sample Received Date: 2012.02.03

Test Period: 2012.02.03 To 2012.02.07

Test Requested:

In accordance with the RoHS Directive 2011/65/EU Annex II

Test Method:

With reference to IEC62321 Edition 1.0 :2008 method: Regulated Substances
Content of test process with Electrical & Electronic Products

(1) Lead Analysis is performed by AAS

(2) Cadmium Analysis is performed by AAS

(3) Mercury Analysis is performed by ICP-OES

(4) Hexavalent Chromium Analysis is performed By Spot-test/Boiling-water-
extraction Method

(5) PBBs and PBDEs Analysis is performed by GC-MS

Test Result:

Please refer to next page(s)

Approved by:

zhang dengjin

Code: e5ptm0y6

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Tel: (010) 82618116

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Fax: (010) 86219629

(021) 64856403

E-mail: pony@ponytest.com

cs@ponytest.com

Building 6 of Zhongxing Industry City, Chuangye Road, Nanshan District, Shenzhen

(0755) 26050909

(0755) 26068336

sz@ponytest.com

Pony Testing International Group



Pony Testing International Group

Test Report

NO.: W02032011204D

Date: 2012.02.07

Page 2 of 4

Test Result (Unit: mg/kg)

Test Item	MDL	Test Result	RoHS Limit
Lead (Pb)	1	N.D.	1000
Cadmium (Cd)	1	N.D.	100
Mercury (Hg)	1	N.D.	1000
Hexavalent Chromium (Cr ⁶⁺)	See Note (6)	Negative	—
PBBs	—	—	1000
Bromobiphenyl	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.	—
PBDEs	—	—	1000
Bromodiphenyl 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.	—

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Test Report

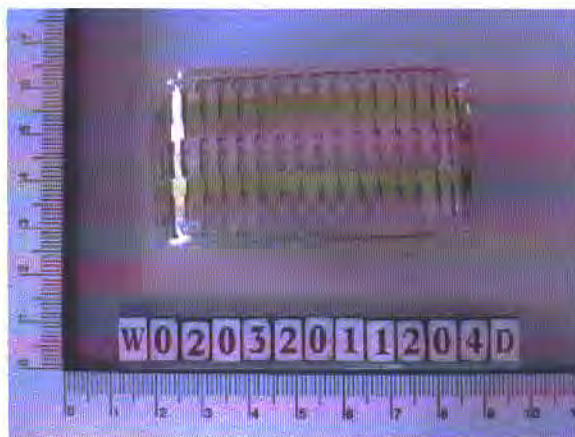
NO.: W02032011204D

Date: 2012.02.07

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- Note:
- (1) mg/kg = ppm
 - (2) "—" = Does not stipulate
 - (3) N.D. = Not Detected (<MDL)
 - (4) MDL = Method Detection Limit
 - (5) The most allowable limit value reference to RoHS Directive 2011/65/EU Annex II
 - (6) Spot-test:
 - Negative = Not Detected 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 cannot be confirmed or negative)
 - Boiling-water-extraction:
 - Negative = Not Detected 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 50cm² sample surface area used.
 - (7) The mixing sample test was performed as client's request. Result obtained only gives informality value and does not represent individual sample material.

Photo:



Pony authenticate the photo on original report only

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Test Report

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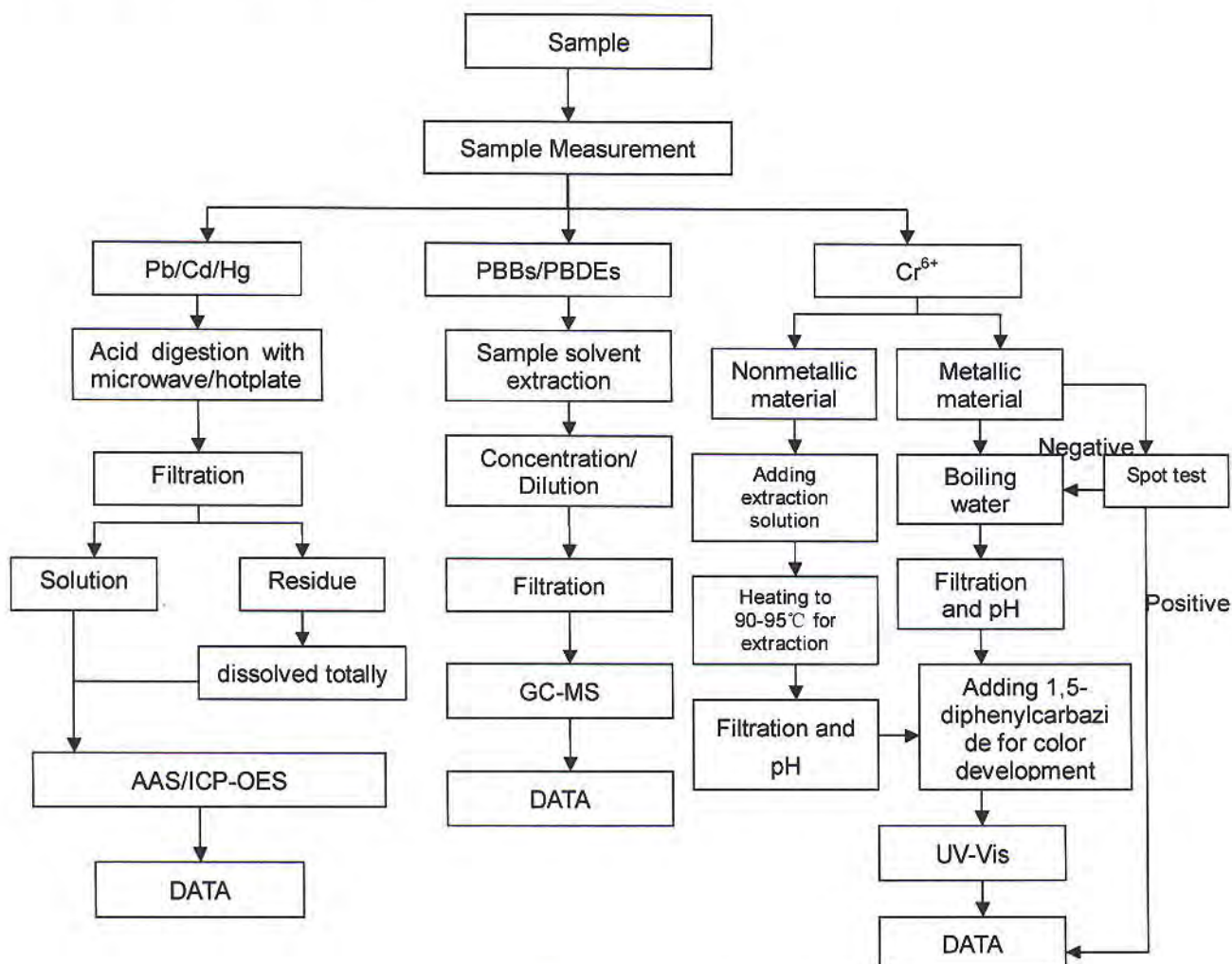
Measurement Flow-chart

Tested by: XuYing

Checked by: Walter

Person in charge of the lab: Zhangdaiqin

These Samples Were Dissolved Totally By Pre-conditioning Method According To Below Flow Chart. (Cr⁶⁺ And PBBs/PBDEs Test Method Excluded)



End of Report

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(0755) 26068336
sz@ponytest.com

Test Report

Number : TWNC00240910

Applicant: Littelfuse Philippines Inc.
LIMA Technology Center, Lipa City,
Malvar, Batangas

Date : Jan 20, 2012

Sample Description:

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

Part Description : Pure Silver Strip

Part Number : 685xxx

Date Sample Received : Jan 16, 2012

Date Test Started : Jan 16, 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 : TWNC00240910

Test Conducted

(I) Test Result Summary :

<u>Test Item</u>	<u>Result (ppm)</u>
	<u>Silvery Metal</u>
Heavy Metal	
Cadmium (Cd) content	ND
Lead (Pb) content	ND
Mercury (Hg) content	ND
Chromium VI (Cr ⁶⁺) content (mg/kg with 50cm ²)	Negative (< 0.02)

Remarks: ppm = Parts per million based on weight of tested sample = mg/kg
 ND = Not detected
 < = Less than
 mg/kg with 50cm² = milligram per kilogram with 50 square centimetre
 Negative = A negative test result indicated positive observation was not found at the time of Test.

Responsibility of Chemist : Irene Chiou / Kevin Liu

Date Sample Received : Jan 16, 2012

Test Period : Jan 16, 2012 To Jan 20, 2012

(II) RoHS Requirement:

<u>Restricted Substances</u>	<u>Limits</u>
Cadmium (Cd) Content	0.01% (100ppm)
Lead (Pb) Content	0.1% (1000ppm)
Mercury (Hg) Content	0.1% (1000ppm)
Chromium VI (Cr ⁶⁺) Content	0.1% (1000ppm)

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

Test Conducted

(III) Test Method:

Test Item	Test Method	Reporting Limit
Cadmium (Cd) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Lead (Pb) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Mercury (Hg) content	With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Chromium VI (Cr ⁶⁺) content (mg/kg with 50cm ²)	With reference to IEC 62321 edition 1.0:2008 in annex B, by boiling water extraction and determined by UV-Vis Spectrophotometer.	0.02 mg/kg with 50cm ²

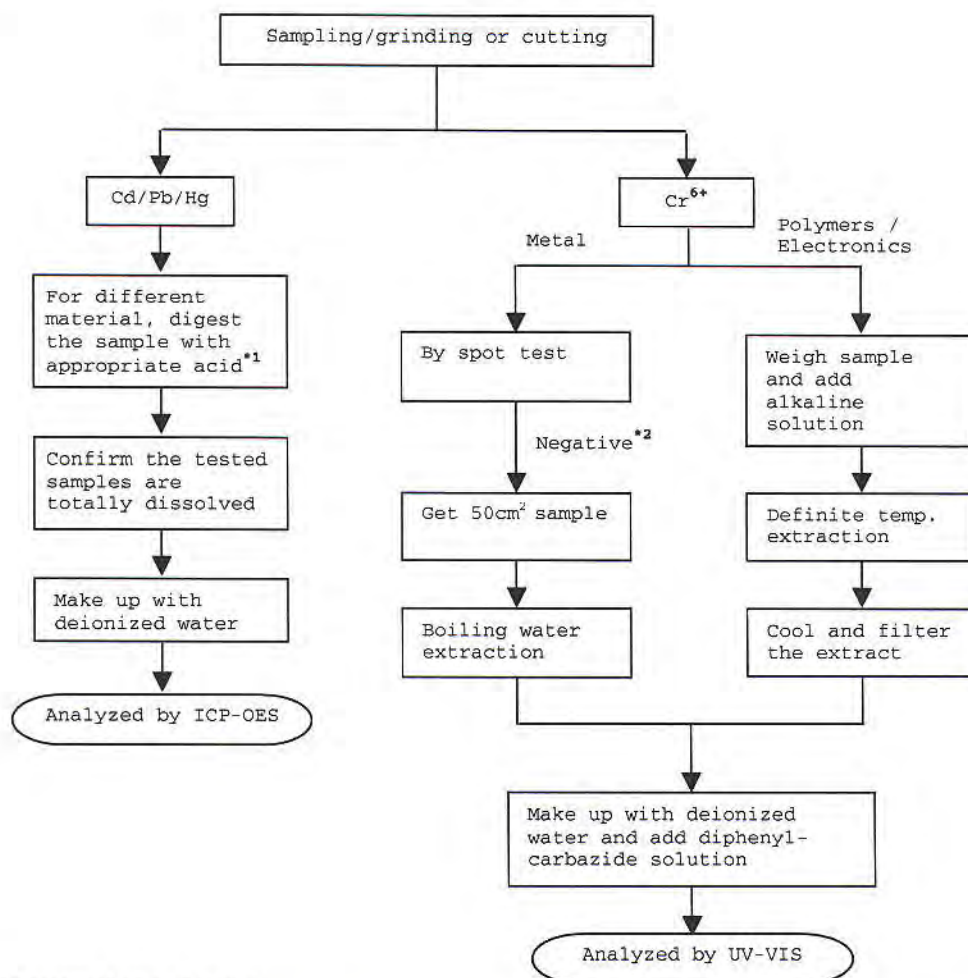
Remark: Reporting limit = Quantitation limit of analyte in sample

Test Conducted

(IV) Measurement Flowchart:

Test For Cd/Pb/Hg/Chromium (VI)

Reference Standard: IEC 62321 edition 1.0:2008



Remarks:

*1: List Of Appropriate Acid:

Material	Acid Added For Digestion
Polymers	HNO ₃ , HCl, HF, H ₂ O ₂ , H ₃ BO ₃
Metals	HNO ₃ , HCl, HF
Electronics	HNO ₃ , HCl, H ₂ O ₂ , HBF ₄

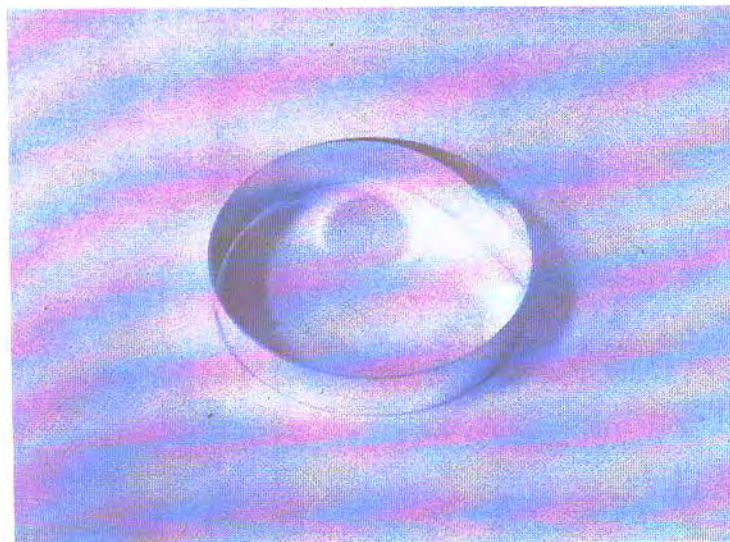
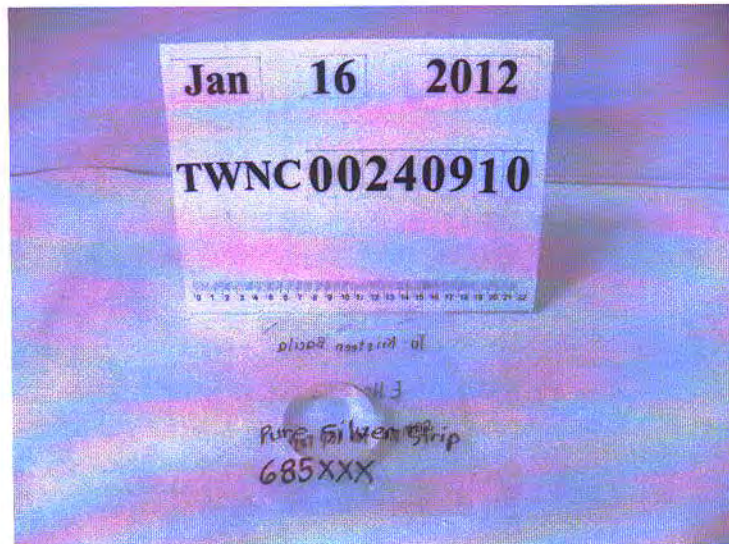
*2: If the result of spot test is positive, Chromium VI would be determined as detected.

End of Report

Number : TWNC00240910

Test Conducted

Photo





Test Report

Number : TWNC00213348

Applicant: Littelfuse, S.A. de C.V.
Blvd. Fausto Z. Martinez #1800
Col. Magisterio Seccion 38 C.P.
26070 Piedra Negras, Coahuila,
Mexico

Date : Jul 01, 2011

Sample Description:

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

Part Description : FUSE CAP-Plated

Part Number : 923-001

Date Sample Received : Jun 28, 2011

Date Test Started : Jun 28, 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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Number : TWNC00213348

Test Conducted

(I) Test Result Summary :

<u>Test Item</u>	<u>Result (ppm)</u>	
	<u>(1)</u>	<u>(2)</u>
Heavy Metal		
Cadmium (Cd) content	ND	ND
Lead (Pb) content	ND	ND
Mercury (Hg) content	ND	ND
Chromium VI (Cr ⁶⁺) content (mg/kg with 50cm ²)	Negative (< 0.02)(#)	Negative (< 0.02)(#)

Remarks: ppm = Parts per million based on weight of tested sample = mg/kg
ND = Not detected
< = Less than
mg/kg with 50cm² = milligram per kilogram with 50 square centimetre
Negative = A negative test result indicated positive observation was not found at the time of Test.
= Due to the insufficient sample area, reduced total sample surface of 10 cm² was used and the dilution factor was adjusted accordingly.

Tested Components

- (1) Silvery Plating Layer
- (2) Silvery Metal Base Material

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

Date Sample Received : Jun 28, 2011

Test Period : Jun 28, 2011 To Jul 01, 2011

(II) RoHS Requirement:

<u>Restricted Substances</u>	<u>Limits</u>
Cadmium (Cd) Content	0.01% (100ppm)
Lead (Pb) Content	0.1% (1000ppm)
Mercury (Hg) Content	0.1% (1000ppm)
Chromium VI (Cr ⁶⁺) Content	0.1% (1000ppm)

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

Test Conducted

(III) Test Method:

Test Item	Test Method	Reporting Limit
Cadmium (Cd) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Lead (Pb) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Mercury (Hg) content	With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Chromium VI (Cr^{6+}) content	With reference to IEC 62321 edition 1.0:2008 in annex B, by boiling water extraction and determined by UV-Vis spectrophotometer.	0.02 mg/kg with 50cm ²

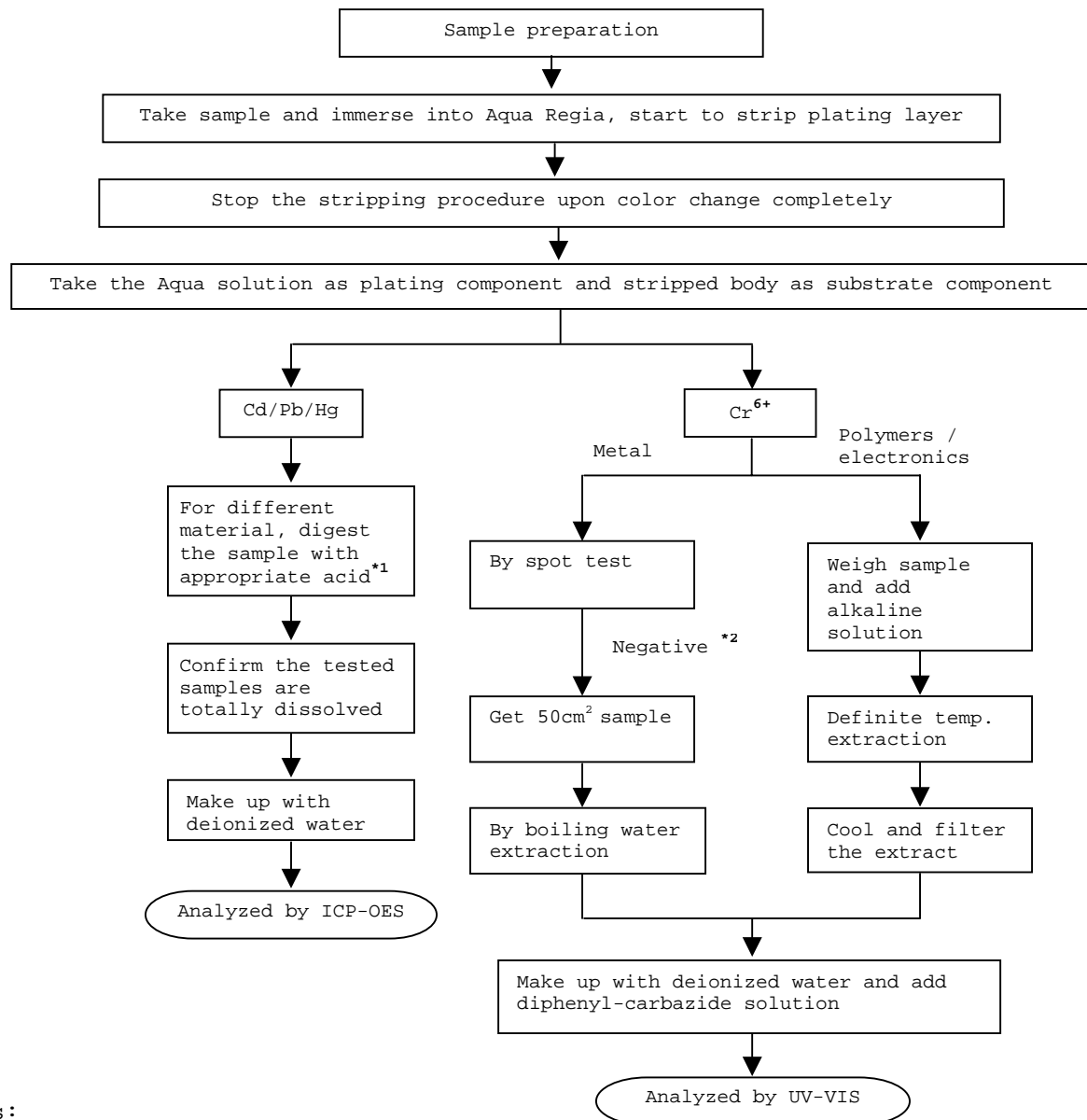
Remark: Reporting limit = Quantitation limit of analyte in sample

Test Conducted

(IV) Measurement Flowchart:

Test For Cd/Pb/Hg/Chromium (VI)

Reference Standard : IEC 62321 edition 1.0:2008



Remarks:

*1: List Of Appropriate Acid:

Material	Acid Added For Digestion
Polymers	HNO ₃ , HCl, HF, H ₂ O ₂ , H ₃ BO ₃
Metals	HNO ₃ , HCl, HF
Electronics	HNO ₃ , HCl, H ₂ O ₂ , HBF ₄

*2: If the result of spot test is positive, Chromium VI would be determined as detected.

End Of Report

Number : TWNC00213348

Test Conducted

Photo





Test Report

Number : TWNC00213351

Applicant: Littelfuse, S.A. de C.V.
Blvd. Fausto Z. Martinez #1800
Col. Magisterio Seccion 38 C.P.
26070 Piedra Negras, Coahuila,
Mexico

Date : Jul 01, 2011

Sample Description:

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

Part Description : WIRE SOLDER .100 DIA - ROHS

Part Number : 692532

Date Sample Received : Jun 28, 2011

Date Test Started : Jun 28, 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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Number : TWNC00213351

Test Conducted

(I) Test Result Summary :

<u>Test Item</u>	<u>Result (ppm)</u>
	<u>Silvery Metal</u>
Heavy Metal	
Cadmium (Cd) content	ND
Lead (Pb) content	221
Mercury (Hg) content	ND
Chromium VI (Cr ⁶⁺) content (mg/kg with 50cm ²)	Negative (< 0.02)

Remarks: ppm = Parts per million based on weight of tested sample = mg/kg
 ND = Not detected
 < = Less than
 mg/kg with 50cm² = milligram per kilogram with 50 square centimetre
 Negative = A negative test result indicated positive observation was not found at the time of Test.

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

Date Sample Received : Jun 28, 2011

Test Period : Jun 28, 2011 To Jul 01, 2011

(II) RoHS Requirement:

<u>Restricted Substances</u>	<u>Limits</u>
Cadmium (Cd) Content	0.01% (100ppm)
Lead (Pb) Content	0.1% (1000ppm)
Mercury (Hg) Content	0.1% (1000ppm)
Chromium VI (Cr ⁶⁺) Content	0.1% (1000ppm)

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

Test Conducted

(III) Test Method:

Test Item	Test Method	Reporting Limit
Cadmium (Cd) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Lead (Pb) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Mercury (Hg) content	With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Chromium VI (Cr^{6+}) content	With reference to IEC 62321 edition 1.0:2008 in annex B, by boiling water extraction and determined by UV-Vis spectrophotometer.	0.02 mg/kg with 50cm ²

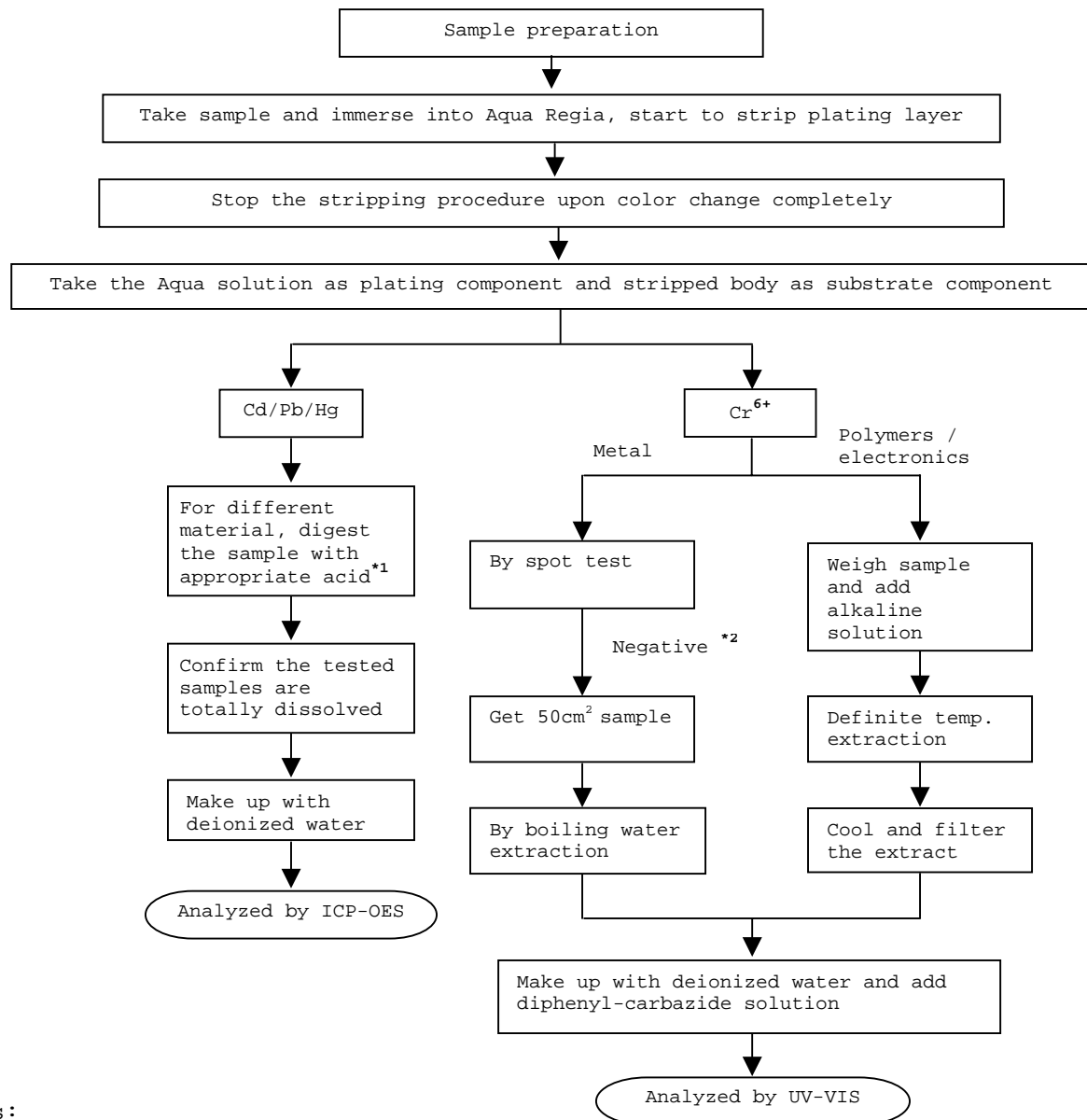
Remark: Reporting limit = Quantitation limit of analyte in sample

Test Conducted

(IV) Measurement Flowchart:

Test For Cd/Pb/Hg/Chromium (VI)

Reference Standard : IEC 62321 edition 1.0:2008



Remarks:

*1: List Of Appropriate Acid:

Material	Acid Added For Digestion
Polymers	HNO ₃ , HCl, HF, H ₂ O ₂ , H ₃ BO ₃
Metals	HNO ₃ , HCl, HF
Electronics	HNO ₃ , HCl, H ₂ O ₂ , HBF ₄

*2: If the result of spot test is positive, Chromium VI would be determined as detected.

End Of Report

Number : TWNC00213351

Test Conducted

Photo





Test Report

Number : TWNC00213353

Applicant: Littelfuse, S.A. de C.V.
Blvd. Fausto Z. Martinez #1800
Col. Magisterio Seccion 38 C.P.
26070 Piedra Negras, Coahuila,
Mexico

Date : Jul 01, 2011

Sample Description:

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

Part Description : SOLDER PELLET

Part Number : 927-027

Date Sample Received : Jun 28, 2011

Date Test Started : Jun 28, 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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Number : TWNC00213353

Test Conducted

(I) Test Result Summary :

<u>Test Item</u>	<u>Result (ppm)</u>
	<u>Silvery Metal</u>
Heavy Metal	
Cadmium (Cd) content	ND
Lead (Pb) content	335
Mercury (Hg) content	ND
Chromium VI (Cr ⁶⁺) content (mg/kg with 50cm ²)	Negative (< 0.02)

Remarks: ppm = Parts per million based on weight of tested sample = mg/kg
 ND = Not detected
 < = Less than
 mg/kg with 50cm² = milligram per kilogram with 50 square centimetre
 Negative = A negative test result indicated positive observation was not found at the time of Test.

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

Date Sample Received : Jun 28, 2011

Test Period : Jun 28, 2011 To Jul 01, 2011

(II) RoHS Requirement:

<u>Restricted Substances</u>	<u>Limits</u>
Cadmium (Cd) Content	0.01% (100ppm)
Lead (Pb) Content	0.1% (1000ppm)
Mercury (Hg) Content	0.1% (1000ppm)
Chromium VI (Cr ⁶⁺) Content	0.1% (1000ppm)

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

Test Conducted

(III) Test Method:

Test Item	Test Method	Reporting Limit
Cadmium (Cd) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Lead (Pb) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Mercury (Hg) content	With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Chromium VI (Cr^{6+}) content	With reference to IEC 62321 edition 1.0:2008 in annex B, by boiling water extraction and determined by UV-Vis spectrophotometer.	0.02 mg/kg with 50cm ²

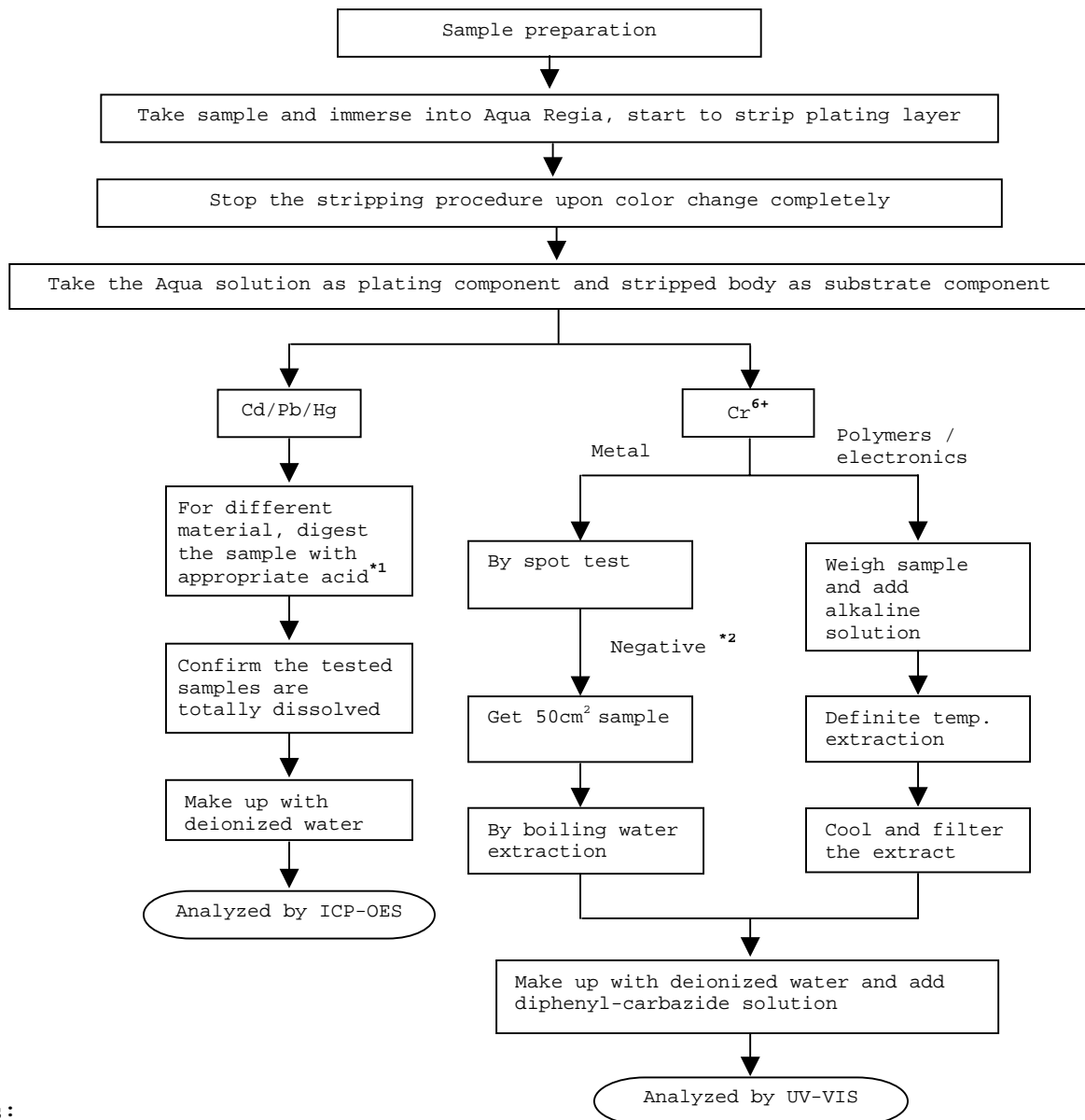
Remark: Reporting limit = Quantitation limit of analyte in sample

Test Conducted

(IV) Measurement Flowchart:

Test For Cd/Pb/Hg/Chromium (VI)

Reference Standard : IEC 62321 edition 1.0:2008



Remarks:

*1: List Of Appropriate Acid:

Material	Acid Added For Digestion
Polymers	HNO ₃ , HCl, HF, H ₂ O ₂ , H ₃ BO ₃
Metals	HNO ₃ , HCl, HF
Electronics	HNO ₃ , HCl, H ₂ O ₂ , HBF ₄

*2: If the result of spot test is positive, Chromium VI would be determined as detected

End Of Report

Number : TWNC00213353

Test Conducted

Photo





Test Report

Number : TWNC00213350

Applicant: Littelfuse, S.A. de C.V.
Blvd. Fausto Z. Martinez #1800
Col. Magisterio Seccion 38 C.P.
26070 Piedra Negras, Coahuila,
Mexico

Date : Jun 30, 2011

Sample Description:

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

Part Description : MIDGET PAPER BODY

Part Number : 909-410

Date Sample Received : Jun 28, 2011

Date Test Started : Jun 28, 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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Number : TWNC00213350

Test Conducted

(I) Test Result Summary :

Test Item	Result (ppm)
	Black Material
Heavy Metal	
Cadmium (Cd) content	ND
Lead (Pb) content	ND
Mercury (Hg) content	ND
Chromium VI (Cr ⁶⁺) content	ND
Polybrominated Biphenyls (PBBs)	
Monobrominated Biphenyls (MonoBB)	ND
Dibrominated Biphenyls (DiBB)	ND
Tribrominated Biphenyls (TriBB)	ND
Tetrabrominated Biphenyls (TetraBB)	ND
Pentabrominated Biphenyls (PentaBB)	ND
Hexabrominated Biphenyls (HexaBB)	ND
Heptabrominated Biphenyls (HeptaBB)	ND
Octabrominated Biphenyls (OctaBB)	ND
Nonabrominated Biphenyls (NonaBB)	ND
Decabrominated Biphenyl (DecaBB)	ND
Polybrominated Diphenyl Ethers (PBDEs)	
Monobrominated Diphenyl Ethers (MonoBDE)	ND
Dibrominated Diphenyl Ethers (DiBDE)	ND
Tribrominated Diphenyl Ethers (TriBDE)	ND
Tetrabrominated Diphenyl Ethers (TetraBDE)	ND
Pentabrominated Diphenyl Ethers (PentaBDE)	ND
Hexabrominated Diphenyl Ethers (HexaBDE)	ND
Heptabrominated Diphenyl Ethers (HeptaBDE)	ND
Octabrominated Diphenyl Ethers (OctaBDE)	ND
Nonabrominated Diphenyl Ethers (NonaBDE)	ND
Decabrominated Diphenyl Ether (DecaBDE)	ND
Halogen Content	
Fluorine (F)	ND
Chlorine (Cl)	ND
Bromine (Br)	ND
Iodine (I)	ND

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

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

Date Sample Received : Jun 28, 2011

Test Period : Jun 28, 2011 to Jun 30, 2011

Test Conducted

(II) RoHS Requirement:

<u>Restricted Substances</u>	<u>Limits</u>
Cadmium (Cd) Content	0.01% (100ppm)
Lead (Pb) Content	0.1% (1000ppm)
Mercury (Hg) Content	0.1% (1000ppm)
Chromium VI (Cr ⁶⁺) Content	0.1% (1000ppm)
Polybrominated Biphenyls (PBBs)	0.1% (1000ppm)
Polybrominated Diphenyl Ehters (PBDEs)	0.1% (1000ppm)

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

(III) Test Method:

<u>Test Item</u>	<u>Test Method</u>	<u>Reporting Limit</u>
Cadmium (Cd) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Lead (Pb) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Mercury (Hg) content	With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Chromium VI (Cr ⁶⁺) content	With reference to IEC 62321 edition 1.0:2008 in annex C, by alkaline digestion and determined by UV-Vis spectrophotometer.	1 ppm

Number : TWNC00213350

Test Conducted

(III) Test Method:

<u>Test Item</u>	<u>Test Method</u>	<u>Reporting Limit</u>
Polybrominated Biphenyls (PBBs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm
Polybrominated Diphenyl Ethers (PBDEs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm
Halogen Content	With reference to EN 14582:2007 by calorimetric bomb with oxygen and determined by ion chromatography	50 ppm

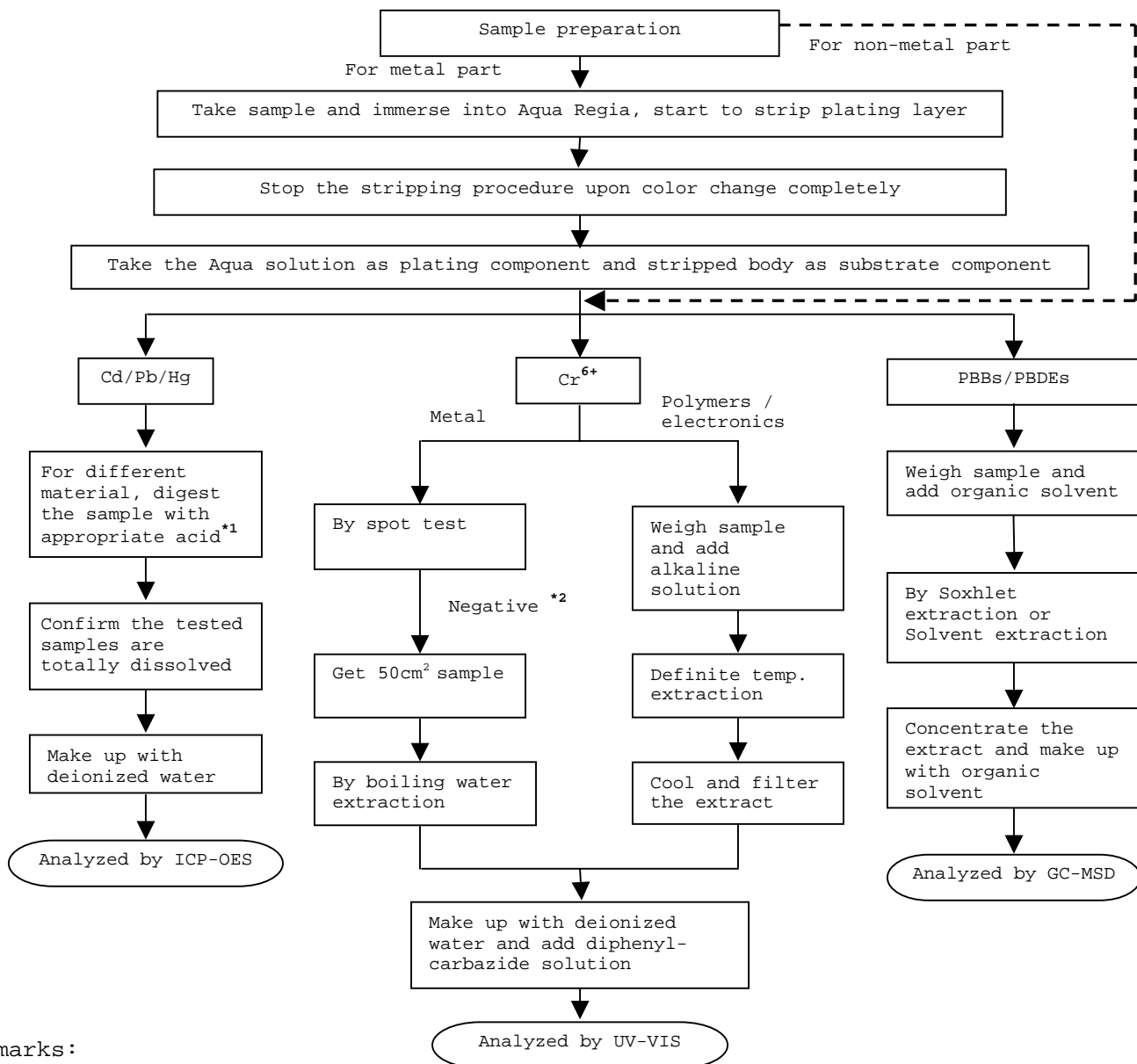
Remark: Reporting limit = Quantitation limit of analyte in sample

Test Conducted

(IV) Measurement Flowchart:

Test For Cd/Pb/Hg/Chromium (VI)/PBBS/PBDES Contents

Reference Standard: IEC 62321 edition 1.0:2008



Remarks:

*1: List Of Appropriate Acid:

Material	Acid Added For Digestion
Polymers	HNO ₃ , HCl, HF, H ₂ O ₂ , H ₃ BO ₃
Metals	HNO ₃ , HCl, HF
Electronics	HNO ₃ , HCl, H ₂ O ₂ , HBF ₄

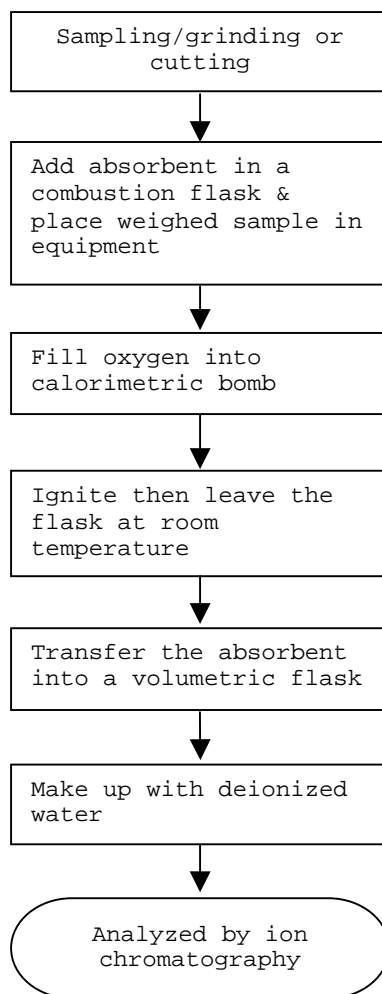
*2: If the result of spot test is positive, Chromium VI would be determined as detected.

Test Conducted

(IV) Measurement Flowchart:

Test For Halogen Content

Reference Standard : EN 14582



End Of Report

Test Conducted

Number : TWNC00213350

Photo





TEST REPORT

NUMBER: SHAH00296144

APPLICANT: LITTELFUSE, INC.
800 E. NORTHWEST HWY
ATTN: A. CESISTA/ K. BACILA

DATE: DEC 20, 2011

SAMPLE DESCRIPTION:

One(1) submitted sample said to be **White powder.**

Part Description : Snow white filler.

Part Number : 090184.

Date Sample Received : Dec.14, 2011.

Date Test Started : Dec.14, 2011.

TESTS CONDUCTED:

AS REQUESTED BY THE APPLICANT, FOR DETAILS REFER TO ATTACHED PAGE(S)

TO BE CONTINUED

PREPARED AND CHECKED BY:
FOR INTERTEK TESTING SERVICES
LTD., SHANGHAI

MYRA LV
CHEMICAL LAB SENIOR MANAGER

AUTHORIZED BY:
FOR INTERTEK TESTING SERVICES
LTD., SHANGHAI

STEPHEN TSANG
GENERAL MANAGER

TEST REPORT

NUMBER: SHAH00296144

TESTS CONDUCTED

1 (I) Test Result Summary :

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

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

Responsibility Of Chemist : Ken He

(II) Test Method:

<u>Testing Item</u>	<u>Testing Method</u>	<u>Reporting Limit</u>
Halogen Content	With reference to EN 14582:2007 by combustion flask with oxygen and determined by ion chromatography	50 ppm

Remark: Reporting limit = Quantitation limit of analyte in sample

TO BE CONTINUED

TEST REPORT

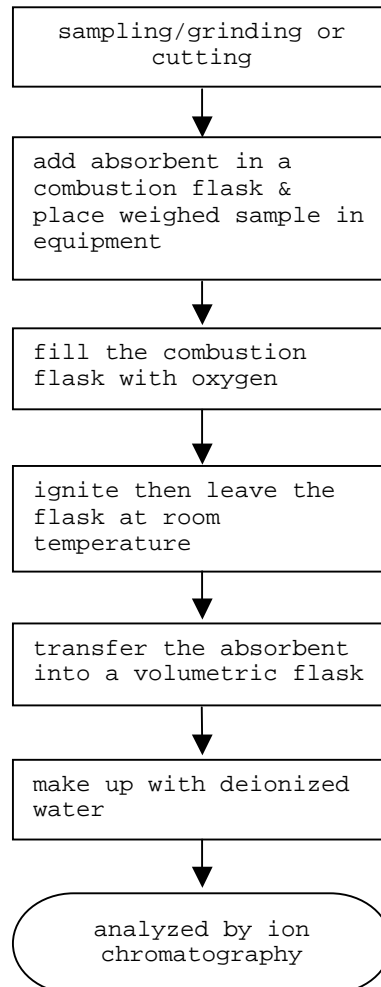
NUMBER: SHAH00296144

TESTS CONDUCTED

(III) Measurement Flowchart:

Test For Halogen Content

Reference Standard: EN 14582



TO BE CONTINUED

TEST REPORT

NUMBER: SHAH00296144

TESTS CONDUCTED

2 (I) Test Result Summary :

<u>Testing Item</u>	<u>Result (ppm)</u>
Heavy Metal	
Cadmium (Cd) content	ND
Lead (Pb) content	ND
Mercury (Hg) content	ND
Chromium VI (Cr ⁶⁺) content	ND
Polybrominated Biphenyls (PBBs)	
Monobrominated Biphenyls (MonoBB)	ND
Dibrominated Biphenyls (DiBB)	ND
Tribrominated Biphenyls (TriBB)	ND
Tetrabrominated Biphenyls (TetraBB)	ND
Pentabrominated Biphenyls (PentaBB)	ND
Hexabrominated Biphenyls (HexaBB)	ND
Heptabrominated Biphenyls (HeptaBB)	ND
Octabrominated Biphenyls (OctaBB)	ND
Nonabrominated Biphenyls (NonaBB)	ND
Decabrominated Biphenyl (DecaBB)	ND
Polybrominated Diphenyl Ethers (PBDEs)	
Monobrominated Diphenyl Ethers (MonoBDE)	ND
Dibrominated Diphenyl Ethers (DiBDE)	ND
Tribrominated Diphenyl Ethers (TriBDE)	ND
Tetrabrominated Diphenyl Ethers (TetraBDE)	ND
Pentabrominated Diphenyl Ethers (PentaBDE)	ND
Hexabrominated Diphenyl Ethers (HexaBDE)	ND
Heptabrominated Diphenyl Ethers (HeptaBDE)	ND
Octabrominated Diphenyl Ethers (OctaBDE)	ND
Nonabrominated Diphenyl Ethers (NonaBDE)	ND
Decabrominated Diphenyl Ether (DecaBDE)	ND

TO BE CONTINUED



TEST REPORT

NUMBER: SHAH00296144

TESTS CONDUCTED

Remarks: ppm = Parts per million = mg/kg
ND = Not detected

Responsibility Of Chemist : Dent Fang / Ken He

(II) RoHS Requirement:

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

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

TO BE CONTINUED

TEST REPORT

NUMBER: SHAH00296144

TESTS CONDUCTED

(III) Test Method:

<u>Testing Item</u>	<u>Testing Method</u>	<u>Reporting Limit</u>
Cadmium (Cd) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Lead (Pb) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Mercury (Hg) content	With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Chromium VI (Cr ⁶⁺) content	With reference to IEC 62321 edition 1.0:2008 in annex C, by alkaline digestion and determined by UV-Vis spectrophotometer.	1 ppm
Polybrominated Biphenyls (PBBs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm
Polybrominated Diphenyl Ethers (PBDEs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm

Remark: Reporting limit = Quantitation limit of analyte in sample

DATE SAMPLE RECEIVED : DEC.14, 2011

TESTING PERIOD : DEC.14, 2011 TO DEC.19, 2011

TO BE CONTINUED

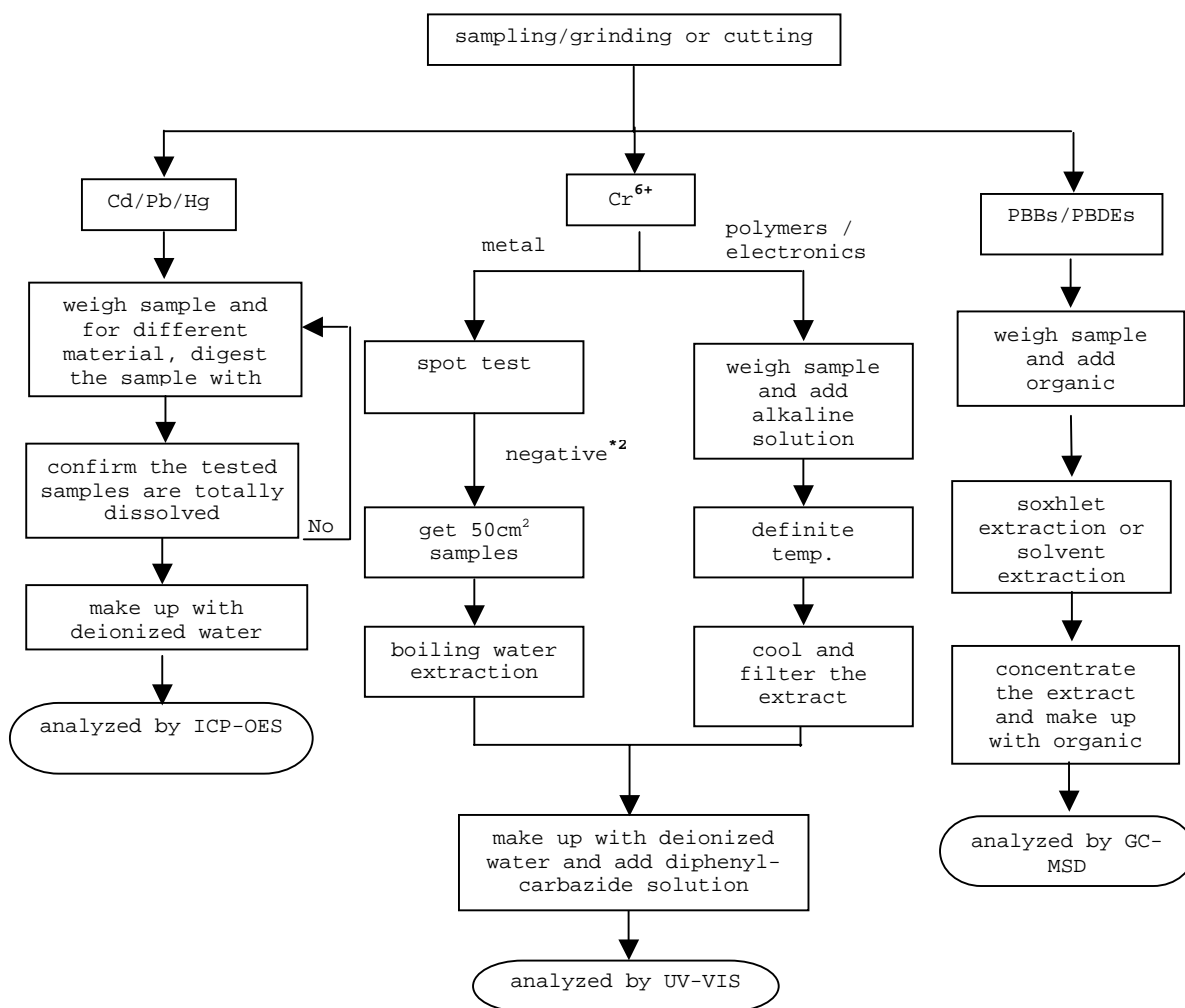
TEST REPORT

NUMBER: SHAH00296144

TESTS CONDUCTED

(IV) Measurement Flowchart:

Test For Cd/Pb/Hg/Chromium (VI)/PBBs/PBDEs Contents
 Reference Standard: IEC 62321 edition 1.0:2008



TO BE CONTINUED



TEST REPORT

NUMBER: SHAH00296144

TESTS CONDUCTED

REMARKS:

*1: List of appropriate acid:

<u>Material</u>	<u>Acid added for digestion</u>
Polymers	HNO ₃ , HCl, HF, H ₂ O ₂ , H ₃ BO ₃
Metals	HNO ₃ , HCl, HF
Electronics	HNO ₃ , HCl, H ₂ O ₂ , HBF ₄

*2: If the result of spot test is positive, Chromium VI would be determined as detected.

TO BE CONTINUED

TEST REPORT

NUMBER: SHAH00296144

TESTS CONDUCTED



END OF REPORT



Test Report

Number : TWNC00222563

Applicant: Littelfuse, S.A. de C.V.
Blvd. Fausto Z. Martinez #1800
Col. Magisterio Seccion 38 C.P.
26070 Piedra Negras, Coahuila,
Mexico

Date : Sep 07, 2011

Sample Description:

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

Part Description : Ribbon black

Part Number : 425723

Date Sample Received : Sep 05, 2011

Date Test Started : Sep 05, 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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Number : TWNC00222563

Test Conducted

(I) Test Result Summary :

<u>Test Item</u>	<u>Result (ppm)</u>
	<u>Black Plastic Film</u>
Heavy Metal	
Cadmium (Cd) content	ND
Lead (Pb) content	ND
Mercury (Hg) content	ND
Chromium VI (Cr ⁶⁺) content	ND
Polybrominated Biphenyls (PBBs)	
Monobrominated Biphenyls (MonoBB)	ND
Dibrominated Biphenyls (DiBB)	ND
Tribrominated Biphenyls (TriBB)	ND
Tetrabrominated Biphenyls (TetraBB)	ND
Pentabrominated Biphenyls (PentaBB)	ND
Hexabrominated Biphenyls (HexaBB)	ND
Heptabrominated Biphenyls (HeptaBB)	ND
Octabrominated Biphenyls (OctaBB)	ND
Nonabrominated Biphenyls (NonaBB)	ND
Decabrominated Biphenyl (DecaBB)	ND
Polybrominated Diphenyl Ethers (PBDEs)	
Monobrominated Diphenyl Ethers (MonoBDE)	ND
Dibrominated Diphenyl Ethers (DiBDE)	ND
Tribrominated Diphenyl Ethers (TriBDE)	ND
Tetrabrominated Diphenyl Ethers (TetraBDE)	ND
Pentabrominated Diphenyl Ethers (PentaBDE)	ND
Hexabrominated Diphenyl Ethers (HexaBDE)	ND
Heptabrominated Diphenyl Ethers (HeptaBDE)	ND
Octabrominated Diphenyl Ethers (OctaBDE)	ND
Nonabrominated Diphenyl Ethers (NonaBDE)	ND
Decabrominated Diphenyl Ether (DecaBDE)	ND
Halogen Content	
Fluorine (F)	ND
Chlorine (Cl)	ND
Bromine (Br)	ND
Iodine (I)	ND

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

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

Date Sample Received : Sep 05, 2011

Test Period : Sep 05, 2011 To Sep 07, 2011

Test Conducted

(II) RoHS Requirement:

<u>Restricted Substances</u>	<u>Limits</u>
Cadmium (Cd) Content	0.01% (100ppm)
Lead (Pb) Content	0.1% (1000ppm)
Mercury (Hg) Content	0.1% (1000ppm)
Chromium VI (Cr ⁶⁺) Content	0.1% (1000ppm)
Polybrominated Biphenyls (PBBs)	0.1% (1000ppm)
Polybrominated Diphenyl Ehters (PBDEs)	0.1% (1000ppm)

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

(III) Test Method:

<u>Test Item</u>	<u>Test Method</u>	<u>Reporting Limit</u>
Cadmium (Cd) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Lead (Pb) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Mercury (Hg) content	With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Chromium VI (Cr ⁶⁺) content	With reference to IEC 62321 edition 1.0:2008 in annex C, by alkaline digestion and determined by UV-Vis spectrophotometer.	1 ppm
Polybrominated Biphenyls (PBBs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm
Polybrominated Diphenyl Ethers (PBDEs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm
Halogen Content	With reference to EN 14582:2007 by calorimetric bomb with oxygen and determined by ion chromatography	50 ppm

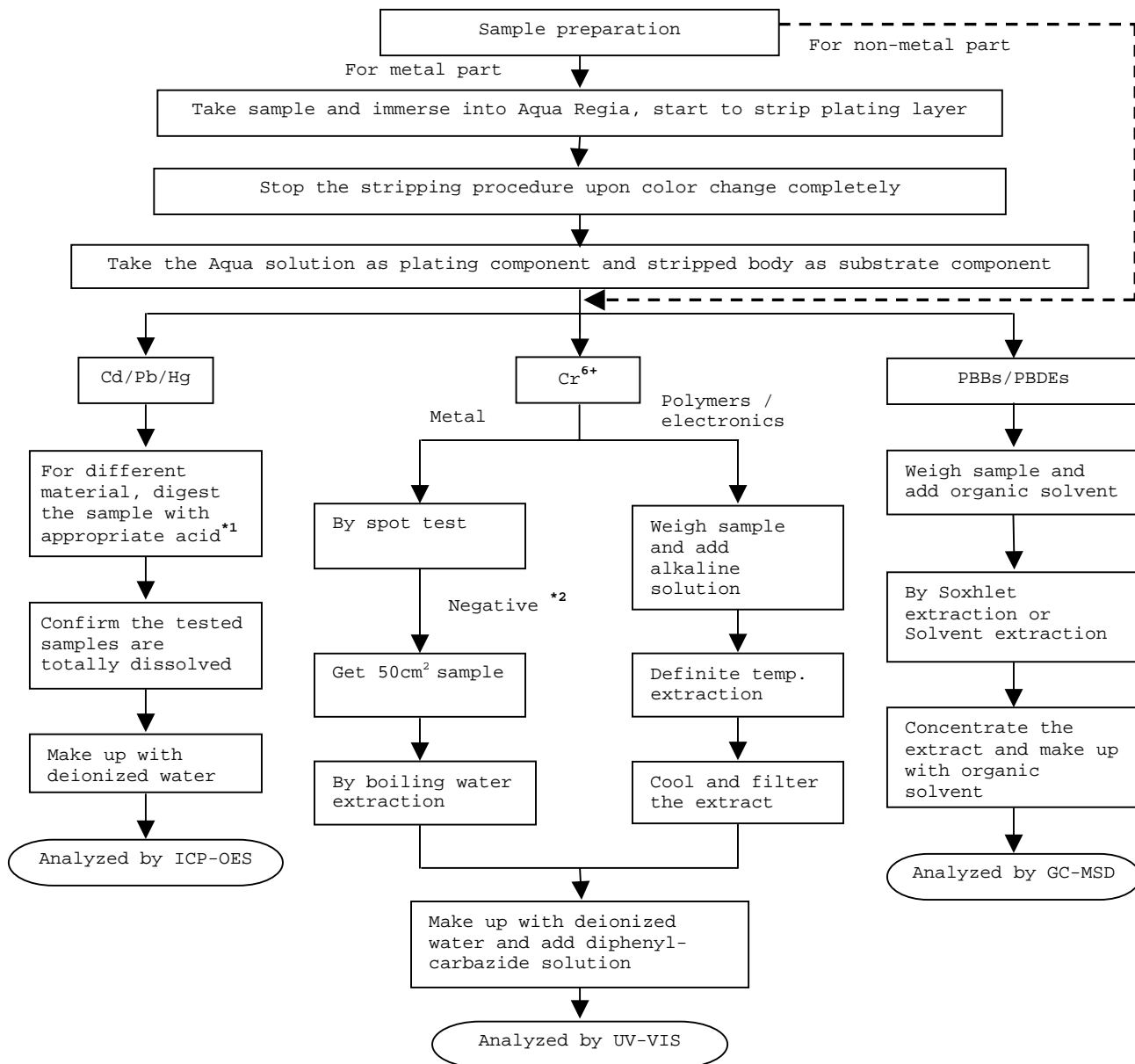
Remark: Reporting limit = Quantitation limit of analyte in sample

Test Conducted

(IV) Measurement Flowchart:

Test for Cd/Pb/Hg/Chromium (VI)/PBBS/PBDES Contents

Reference Standard: IEC 62321 edition 1.0:2008



Remarks:

*1: List of Appropriate Acid:

Material	Acid Added for Digestion
Polymers	HNO ₃ , HCl, HF, H ₂ O ₂ , H ₃ BO ₃
Metals	HNO ₃ , HCl, HF
Electronics	HNO ₃ , HCl, H ₂ O ₂ , HBF ₄

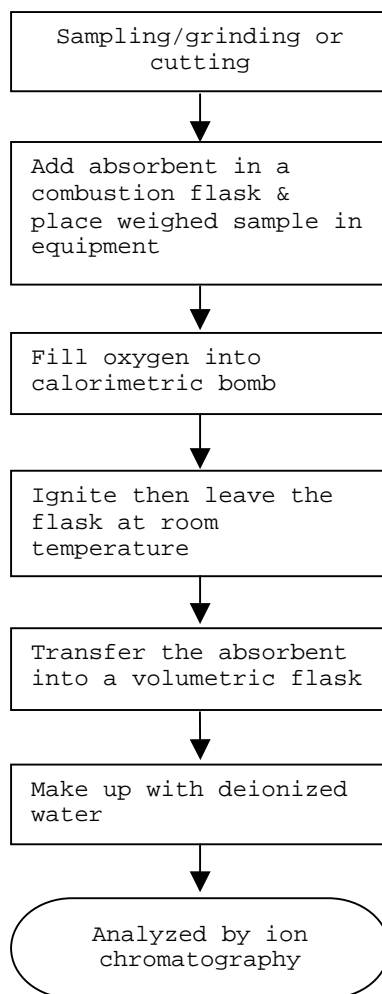
*2: If the result of spot test is positive, Chromium VI would be determined as detected.

Test Conducted

(IV) Measurement Flowchart:

Test for Halogen Content

Reference Standard : EN 14582



End of Report

Test Conducted

Number : TWNC00222563

Photo



TEST REPORT

APPLICANT

Littelfuse, S.A. de C.V.
Blvd. Fausto Z. Mtz. 1800, Col. Magisterio Sección 38, Piedras Negras, Coahuila, 26070
Ing. Mario Falcón

SAMPLE DESCRIPTION

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

Sample Description NP
22) No. Parte 087293 Serie FLQ
Item No. 23) No. Parte 090190 Serie KLKR/FLQ/APT

Country of Origin NP
Buyer's Name NP
Supplier's Name NP
Date sample received 2010-04-13
Testing period 2010-04-19 to 2009-05-22

TEST CONDUCTED

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

CONCLUSION

	Testing item	Conclusion	Failed component	Failed result
22	No. Parte 087293 Serie FLQ	Pass See Result summary	---	---
23	No. Parte 090190 Serie KLKR/FLQ/APT	Pass See Result summary	---	---

TEST CONDUCTED

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

- 22) No. Parte 087293 Serie FLQ
- 23) No. Parte 090190 Serie KLKR/FLQ/APT

TEST RESULT SUMMARY FOR RoHS DIRECTIVE :

TESTING ITEM	Ω RESULT (ppm)		Limit
	(22)	(23)	
Cadmium (Cd) content	ND	ND	0,01% (100 ppm)
Lead (Pb) content	ND	ND	0,1% (1000 ppm)
Mercury (Hg) content	ND	ND	0,1% (1000 ppm)
Chromium (VI) (Cr ⁶⁺)	2,152	ND	0,1% (1000 ppm)
POLYBROMINATED BIPHENYLS (PBBs)	ND	---	0,1% (1000 ppm)
Monobromobiphenyl (MonoBB)	ND	---	---
Dibromobiphenyl (DiBB)	ND	---	---
Tribromobiphenyl (TriBB)	ND	---	---
Tetrabromobiphenyl (TetraBB)	ND	---	---
Pentabromobiphenyl (PentaBB)	ND	---	---
Hexabromobiphenyl (HexaBB)	ND	---	---
Heptabromobiphenyl (HeptaBB)	ND	---	---
Octabromobiphenyl (OctaBB)	ND	---	---
Nonabromobiphenyl (NonaBB)	ND	---	---
Decabromobiphenyl (DecaBB)	ND	---	---
POLYBROMINATED DIPHENYL ETHERS (PBDEs)	ND	---	0,1% (1000 ppm)
Monobromodiphenyl (MonoBDE)	ND	---	---
Dibromodiphenyl (DiBDE)	ND	---	---
Tribromodiphenyl (TriBDE)	ND	---	---
Tetrabromodiphenyl (TetraBDE)	ND	---	---
Pentabromodiphenyl (PentaBDE)	ND	---	---
Hexabromodiphenyl (HexaBDE)	ND	---	---
Heptabromodiphenyl (HeptaBDE)	ND	---	---
Octabromodiphenyl (OctaBDE)	ND	---	---
Nonabromodiphenyl (NonaBDE)	ND	---	---
Decabromodiphenyl (DecaBDE)	ND	---	---

ppm = parts per million based on dry weight of sample.

$\mu\text{g}/\text{cm}^2$ = microgram per square centimeter.

mg/kg WITH 50cm^2 = milligram per kilogram with 50 square centimeter.

< = less than.

ND = Not detected.

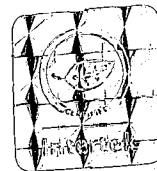
The above limits were quoted from 2002/95/EC and amendment 2005/618/EC for homogeneous material.

These Accreditations only apply for the methods listed in such. Not accredited under EMA Ω .

Prepared and checked by :

For Intertek

*Irma Lopez del
Coc de area*



Laboratory Manager

The Official Mexican Standard NOM-008-SCFI-1993 establishes like separator decimal the comma (,).

NOTE :DecaBDE IN POLYMERIC APPLICATIONS IS EXEMPTED ACCORDING TO
ROHS DIRECTIVE AMENDMENT 2005/717/EC.

=ACCORDING TO IEC 62321, A POSITIVE RESULT INDICATES THE PRESENCE OF
Cr(VI) COATING. IT IS THE Cr(VI) CONCENTRATION DETECTED IN THE
BOILING-WATER-EXTRACTION SOLUTION AND SHOULD NOT BE INTERPRETED AS
THE Cr(VI) CONCENTRATION IN THE COATING LAYER OF THE SAMPLE.

REMARK: AS REQUESTED BY THE APPLICANT, COATING WITH BASE MATERIAL OF
TESTED COMPONENTS OF THE SAMPLE MX10-0867-22 WERE TESTED TOGETHER.

REMARK: AS REQUESTED BY THE APPLICANT, COATING WITH BASE MATERIAL OF
TESTED COMPONENTS OF THE SAMPLE MX10-0867-23 WERE TESTED TOGETHER.



Test method :

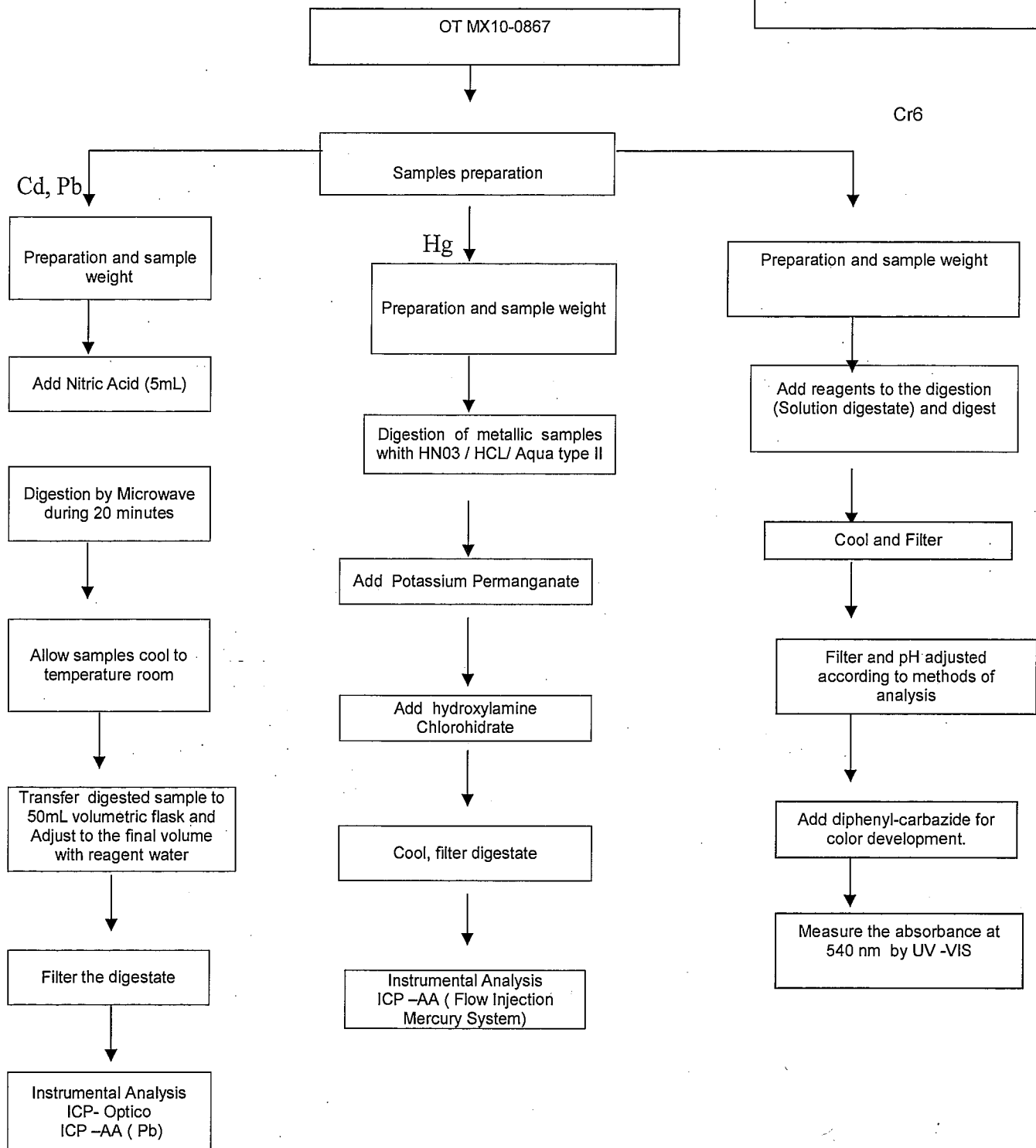
No. de Muestra	Testing item	Ω Testing method	Quality control Batch:	Analysis Date:	Analyzed By:	Reporting limit ppm
	Chromium (Cr ⁶⁺) content	With reference to USEPA 3060, by EPA 7196	BEQ160p5b	2010-04-24	MELA	2,0

No. de Muestra	Testing item	Ω Testing method	Quality control Batch:	Analysis Date:	Analyzed By:	Reporting limit ppm
	POLYBROMINATED BIPHENYLS (PBBs)	With reference to USEPA 3540C, by solvent extraction and determined by GC-MSD	2010-004440-P CL	2010-05-22	CONT	50
	POLYBROMINATED DIPHENYL ETHERS (PBDEs)	With reference to USEPA 3540C, by solvent extraction and determined by GC-MSD	2010-004440-P CL	2010-05-22	CONT	50

No. de Muestra	Testing item	Ω Testing method	Quality control Batch:	Analysis Date:	Analyzed By:	Reporting limit ppm
22	Lead (Pb) content	With reference to USEPA 3052MOD, by EPA 6010	MET2010-4p51	2010-04-22	JMR,DCL	4,717
23	Lead (Pb) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-4p49	2010-04-22	JMR,DCL	5,0

No. de Muestra	Testing item	Ω Testing method	Quality control Batch:	Analysis Date:	Analyzed By:	Reporting limit ppm
22	Cadmium(Cd) content	With reference to USEPA 3052MOD, by EPA 6010	MET2010-4p51	2010-04-22	JMR,DCL	1,887
23	Cadmium(Cd) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-4p49	2010-04-22	JMR,DCL	2,0

No. de Muestra	Testing item	Ω Testing method	Quality control Batch:	Analysis Date:	Analyzed By:	Reporting limit ppm
22	Mercury (Hg) content	With reference to USEPA 7471MOD, by EPA 7471	MET2010-4p46	2010-04-20	UBM	0,0781
23	Mercury (Hg) content	With reference to USEPA 7471MOD, by EPA 7471	MET2010-4p50	2010-04-20	UBM	0,083



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The results that appear in this report belong solely to (s) shows (s) analyzed (s).

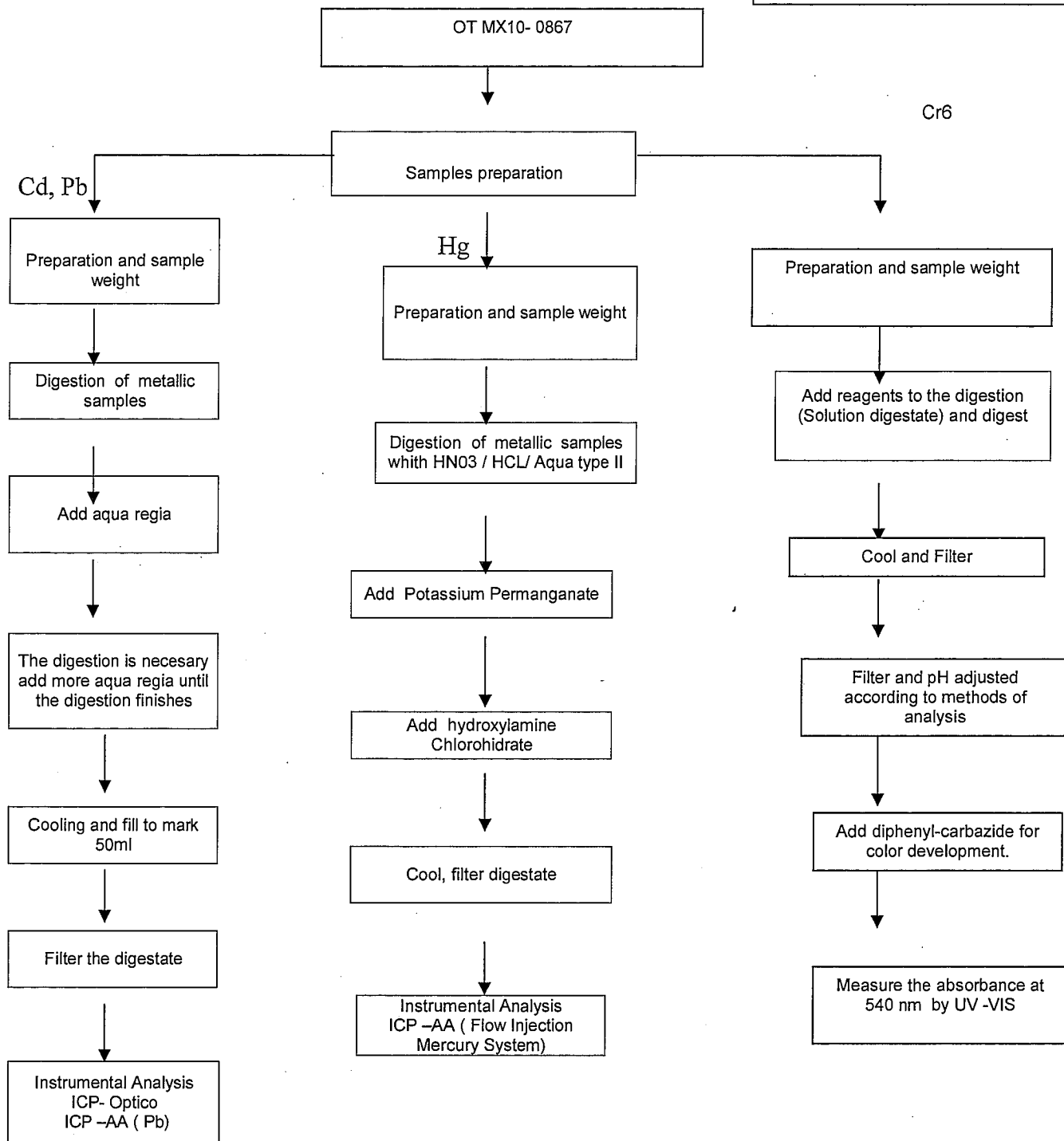
Intertek Testing Services de México, S.A. de C.V.

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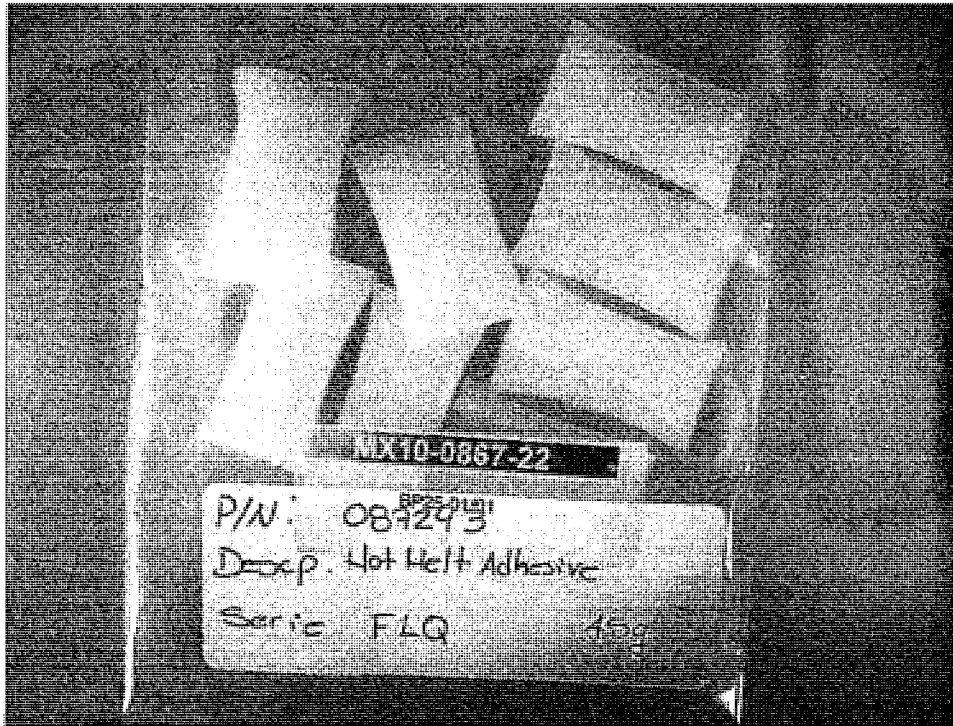
www.intertek.com

1ª. Emisión Junio 2005, 1ª Revisión Junio 26, 2009.

ILTA/003/GENS-F8



MX10-0867-22



MX10-0867-23

