



## ICP Test Report Certification Packet

Company name: Littelfuse, Inc.

Product Series: 5x20 Cartridge Fuse

Product #: 218xxxXP Series

Issue Date: December 06, 2013

It is hereby certified by Littelfuse, Inc. that there is neither RoHS (EU Directive 2002/95/EC, 2011/65/EU)-restricted substance nor such use, for materials to be used for unit parts, for packing/packaging materials, and for additives and the like in the manufacturing processes. In addition, it is hereby reported to you that the parts and sub-materials, the materials to be used for unit parts, the packing/packaging materials, and the additives and the like in the manufacturing processes, are all composed of the following components.

Issued by:



JENNY DINGLASAN

<Global EHS Specialist >

(1) Parts, sub-materials and unit parts

This document covers the 5x20 Fuse 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**

| <b>Total Parts</b> | <b>Raw Material Part Number</b> | <b>Raw Material Description</b> | <b>Page(s)</b> |
|--------------------|---------------------------------|---------------------------------|----------------|
| 1                  | C910541/C910510                 | Cap                             | 3-6            |
| 2                  | C909543 (C09529)                | Body – Soda Lime Glass tube     | 7-11           |
| 3                  | 11-0595<br>(082xxx-001)         | Element – Cu99.9MSn             | 12-15          |
| 4                  | 082xxx                          | Element – Ag Plated Copper      | 16-20          |
| 5                  | 687xxx-001                      | Element – Sn Plated Ag Cu       | 21-26          |
| 6                  | N/A                             | Tinned Wires                    | 27-34          |
| 7                  | YTW102<br>(692539-002)          | Solder Wire                     | 35-40          |
| 8                  | 3M 3779-PG<br>(087244)          | HMA – RoHS & Halogen            | 41-50          |
| 9                  | C030204                         | Overcap                         | 51-54          |
| 10                 | 934-077 (C030208)               | Overcap                         | 51-54          |
| 11                 | C030210                         | Overcap                         | 51-54          |
| 12                 | 648901                          | Ceramic Yarn                    | 55-61          |
| 13                 | 425901                          | Ink-Red                         | 62-72          |
| 14                 | 425902                          | Ink-Black                       | 73-83          |
| 15                 | 425903                          | Ink-Yellow                      | 84-94          |
| 16                 | 425904                          | Ink-Blue                        | 95-105         |
| 17                 | 425906                          | Ink-Brown                       | 106-116        |
| 18                 | 425907                          | Ink-Green                       | 117-127        |
| 19                 | 425909                          | Ink-Grey                        | 128-138        |
| 20                 | 425912                          | Ink-White                       | 139-149        |
| 21                 | EP608 (087355)                  | HMA-Glue (Epoxy Adhesive)       | 150-159        |

# TEST REPORT

NO.: A002R130403070-1R02

Date: Apr.08, 2013

Page 1 of 4

**Customer:** SuZhou FuHong Electronic Industrial Co., Ltd.

**Address:** NO. 89 WEI DU ROAD, WANGTING TOWN, XIANGCHENG DISTRICT, SUZHOU, CHINA

**Report on the submitted sample said to be**
**Sample name:** Copper shell

**Model:** /

**Item/Lot No.:** /

**Material:** /

**Buyer:** /

**Supplier:** /

**Manufacturer:** /

**Sample received date:** Apr.03, 2013

**Testing period:** From Apr.03, 2013 to Apr.08, 2013

## Testing Requested

As specified by client, to determine the Lead, Cadmium, Mercury &amp; Hexavalent Chromium content in the submitted sample in accordance with Directive 2011/65/EU (RoHS).

## Testing method:

| Testing Item     | Pretreatment method        | Measuring instrument | MQL        |
|------------------|----------------------------|----------------------|------------|
| Lead (Pb)        | IEC 62321: 2008, section 9 | ICP-OES              | 2mg/kg     |
| Cadmium (Cd)     | IEC 62321: 2008, section 9 | ICP-OES              | 2 mg/kg    |
| Mercury (Hg)     | IEC 62321: 2008, section 7 | ICP-OES              | 2 mg/kg    |
| Chromium (Cr VI) | IEC 62321: 2008, Annex B   | UV-VIS               | 0.02mg/kg* |

## Note:

-\* 0.02 mg/kg refers to the MQL of sample extraction liquid.

## Conclusion:

When tested as specified, the submitted sample complied with the requirements of Directive 2011/65/EU (RoHS).

\*\*\*\*\*FOR FURTHER DETAILS, PLEASE REFER TO THE FOLLOWING PAGE(S)\*\*\*\*\*

Signed for and on behalf of

Shenzhen AOV Testing Technology Co., Ltd, Kunshan Branch

 Project Leader: Maggie  
 Li Tingting, Maggie  
 Chemical Test Director

 Reviewed by: Weikin  
 Wang Wexin, Weikin  
 Technical Director

 Approved by: Mickey  
 Yuan Qi, Mickey  
 Lab Manager

# TEST REPORT

NO.: A002R130403070-1R02

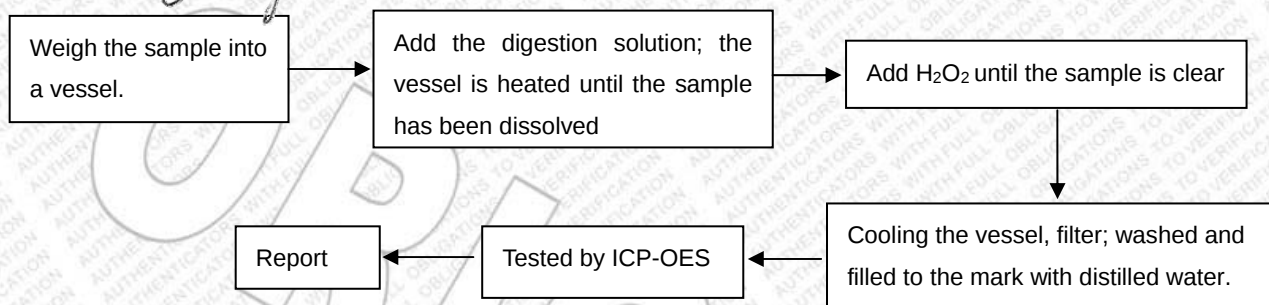
Date: Apr.08, 2013

Page 2 of 4

## Test Flow:

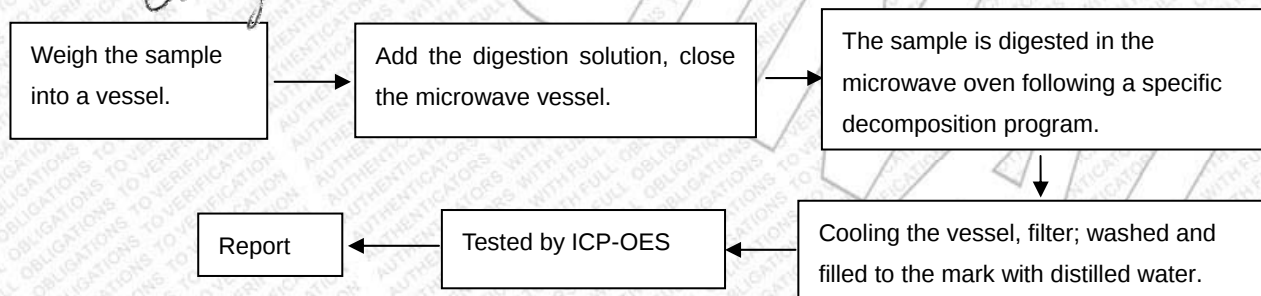
1. To Determine Lead, Cadmium Content: (Metal substrate)

Tested by: *Condy*



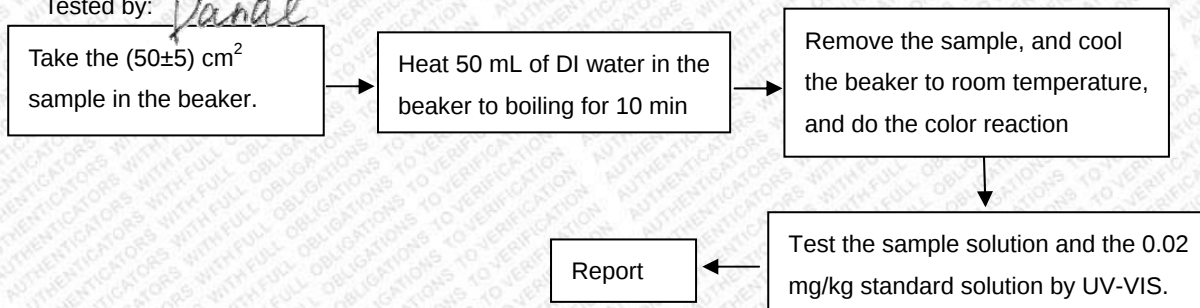
2. To Determine Mercury Content: (Metal substrate)

Tested by: *Condy*



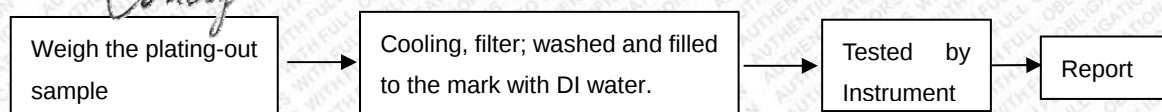
3. To Determine Hexavalent Chromium Content (boiling- water- extraction): (Metal substrate)

Tested by: *Danae*



4. To Determine Lead, Cadmium and Mercury Content: (Plating)

Tested by: *Condy*



# TEST REPORT

NO.: A002R130403070-1R02

Date: Apr.08, 2013

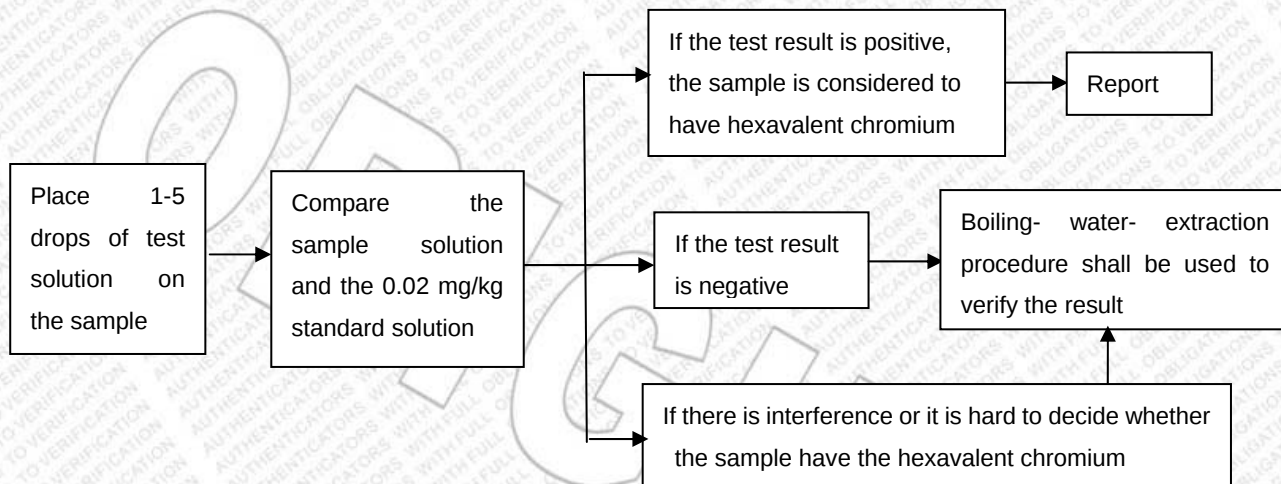
Page 3 of 4

5. To Determine Hexavalent Chromium Content in colorless and colored chromate coating on metals: (Plating)

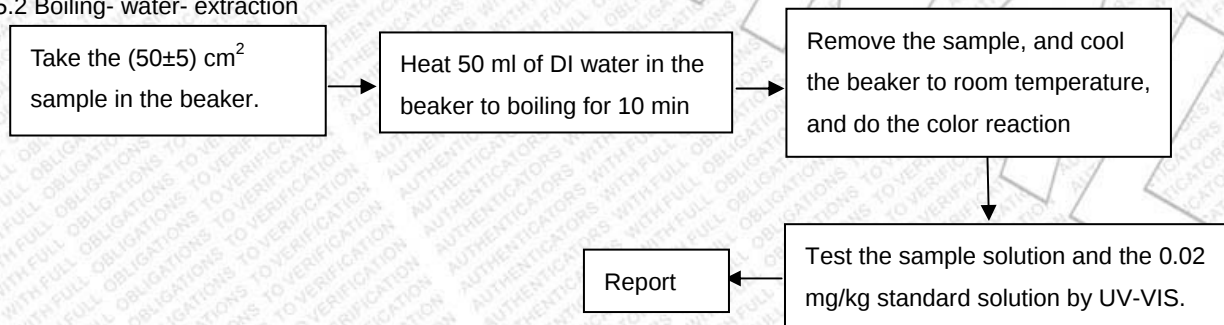
Tested by:

*Danale*

5.1 Spot-test



5.2 Boiling- water- extraction



## Sample Description:

| Code | Sample Description |
|------|--------------------|
| 1-1  | Substrate          |
| 1-2  | Plating            |

## Test Results:

| Item            | Unit  | RoHS Limit | Results  |          |
|-----------------|-------|------------|----------|----------|
|                 |       |            | 1-1      | 1-2**    |
| Lead (Pb)       | mg/kg | 1000       | 12.0     | N.D.     |
| Cadmium (Cd)    | mg/kg | 100        | 2.1      | N.D.     |
| Mercury (Hg)    | mg/kg | 1000       | N.D.     | N.D.     |
| Chromium (CrVI) | mg/kg | 1000       | Negative | Negative |

# TEST REPORT

NO.: A002R130403070-1R02

Date: Apr.08, 2013

Page 4 of 4

## Note:

-Specimens, which requested to determine Lead, Cadmium and Mercury Content, have been dissolved completely.

-N.D.=not detected(<MQL)

-MQL=Method Quantitation Limit

-Negative=Absence of Cr (VI);

-Positive=Presence of Cr (VI);

Uncertain= can not verify whether the sample have Hexavalent Chromium by spot-test.

(The tested sample should be further verified by boiling-water-extraction method if the spot test result is uncertain or negative.)

-\*\*The test is based on the following assumption: The sample plating is a single layer and each part is uniform. The test result maybe cannot stand for the physical truth of sample plating.

-Photo is included

Photograph of Sample



Copper shell

\*\*\*End of Report\*\*\*



## Test Report

No. CANEC1309150301

Date: 24 Jun 2013

Page 1 of 5

XIAMEN LICHUN ELECTRONIC ELEMENT CO.,LTD

42-2 XINGLIN WEST RD,361022,JIMEI DISTRICT,XIAMEN,FUJIAN,P.R.C

The following sample(s) was/were submitted and identified on behalf of the clients as : Soda lime glass tube

SGS Job No. : XM14644726EC - XM

Date of Sample Received : 18 Jun 2013

Testing Period : 18 Jun 2013 - 24 Jun 2013

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

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## Test Report

No. CANEC1309150301

Date: 24 Jun 2013

Page 2 of 5

Test Results :

### Test Part Description :

| Specimen No. | SGS Sample ID    | Description            |
|--------------|------------------|------------------------|
| 1            | CAN13-091503.001 | Transparent glass tube |

Remarks :

- (1) 1 mg/kg = 1 ppm = 0.0001%
- (2) MDL = Method Detection Limit
- (3) ND = Not Detected ( < MDL )
- (4) "-" = Not Regulated

### RoHS Directive 2011/65/EU

Test Method : With reference to IEC 62321:2008

- (1) Determination of Cadmium by ICP-OES.
- (2) Determination of Lead by ICP-OES.
- (3) Determination of Mercury by ICP-OES.
- (4) Determination of Hexavalent Chromium by Colorimetric Method using UV-Vis.
- (5) Determination of PBBs / PBDEs content by GC-MS.

| Test Item(s)               | Limit | Unit  | MDL | 001 |
|----------------------------|-------|-------|-----|-----|
| Cadmium (Cd)               | 100   | mg/kg | 2   | ND  |
| Lead (Pb)                  | 1,000 | mg/kg | 2   | 142 |
| Mercury (Hg)               | 1,000 | mg/kg | 2   | ND  |
| Hexavalent Chromium (CrVI) | 1,000 | mg/kg | 2   | ND  |
| Sum of PBBs                | 1,000 | mg/kg | -   | ND  |
| Monobromobiphenyl          | -     | mg/kg | 5   | ND  |
| Dibromobiphenyl            | -     | mg/kg | 5   | ND  |
| Tribromobiphenyl           | -     | mg/kg | 5   | ND  |
| Tetrabromobiphenyl         | -     | mg/kg | 5   | ND  |
| Pentabromobiphenyl         | -     | mg/kg | 5   | ND  |
| Hexabromobiphenyl          | -     | mg/kg | 5   | ND  |
| Heptabromobiphenyl         | -     | mg/kg | 5   | ND  |
| Octabromobiphenyl          | -     | mg/kg | 5   | ND  |
| Nonabromobiphenyl          | -     | mg/kg | 5   | ND  |
| Decabromobiphenyl          | -     | mg/kg | 5   | ND  |
| Sum of PBDEs               | 1,000 | mg/kg | -   | ND  |
| Monobromodiphenyl ether    | -     | mg/kg | 5   | ND  |

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## Test Report

No. CANEC1309150301

Date: 24 Jun 2013

Page 3 of 5

| <u>Test Item(s)</u>      | <u>Limit</u> | <u>Unit</u> | <u>MDL</u> | <u>001</u> |
|--------------------------|--------------|-------------|------------|------------|
| Dibromodiphenyl ether    | -            | mg/kg       | 5          | ND         |
| Tribromodiphenyl ether   | -            | mg/kg       | 5          | ND         |
| Tetrabromodiphenyl ether | -            | mg/kg       | 5          | ND         |
| Pentabromodiphenyl ether | -            | mg/kg       | 5          | ND         |
| Hexabromodiphenyl ether  | -            | mg/kg       | 5          | ND         |
| Heptabromodiphenyl ether | -            | mg/kg       | 5          | ND         |
| Octabromodiphenyl ether  | -            | mg/kg       | 5          | ND         |
| Nonabromodiphenyl ether  | -            | mg/kg       | 5          | ND         |
| Decabromodiphenyl ether  | -            | mg/kg       | 5          | ND         |

### Notes :

- (1) The maximum permissible limit is quoted from the directive 2011/65/EU, Annex II

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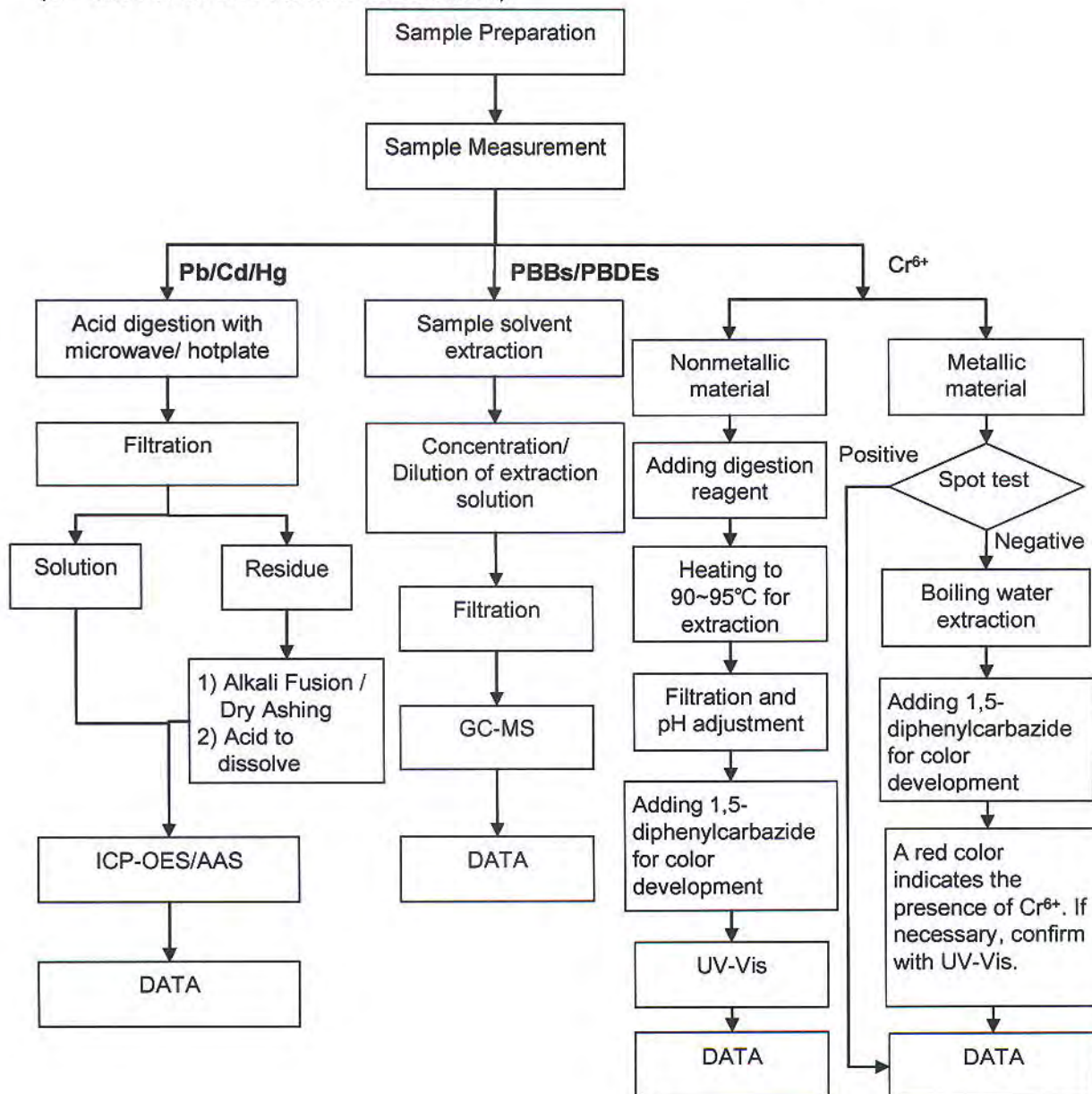
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## ATTACHMENTS

### RoHS Testing Flow Chart

- 1) Name of the person who made testing: Michael Tso / Cutey Yu
- 2) Name of the person in charge of testing: Adams Yu / Yolanda Wei
- 3) These samples were dissolved totally by pre-conditioning method according to below flow chart (Cr<sup>6+</sup> and PBBs/PBDEs test method excluded).



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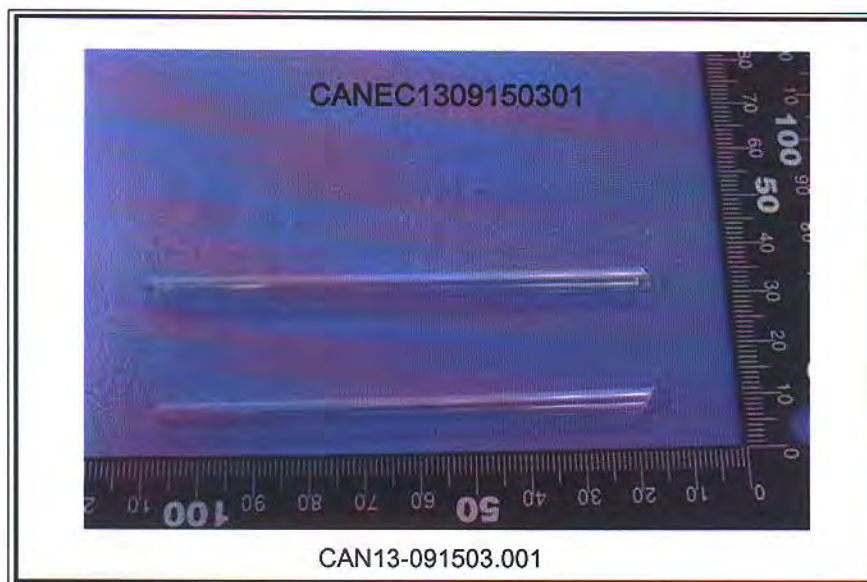
## Test Report

No. CANEC1309150301

Date: 24 Jun 2013

Page 5 of 5

Sample photo:



SGS authenticate the photo on original report only

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**Test Report**

Number: SHAH00361401

Applicant: LITTELFUSE,INC.  
800 E. NORTHWEST HWY  
Attn: A.DIVIETRO/D.UNTIEDT

Date: JAN 16, 2013

**Sample Description:**

One (1) submitted sample said to be **Grey Wire**.

Item Name : Wire Tin Plated Cu.

Part No. : Element.

\*\*\*\*\*  
**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



**Tests Conducted**
**( I ) Test Result Summary:**

| Testing Item                                                            | Result (ppm)      |
|-------------------------------------------------------------------------|-------------------|
|                                                                         | (1)               |
| <b>Heavy Metal</b>                                                      |                   |
| Cadmium (Cd) content                                                    | ND                |
| Lead (Pb) content                                                       | ND                |
| Mercury (Hg) content                                                    | ND                |
| Chromium VI (Cr <sup>6+</sup> ) content (mg/kg With 50cm <sup>2</sup> ) | Negative (< 0.02) |

| Testing Item                                                                      | Result (ppm)      |
|-----------------------------------------------------------------------------------|-------------------|
|                                                                                   | (2)               |
| <b>Heavy Metal</b>                                                                |                   |
| Cadmium (Cd) content / Plating                                                    | ND                |
| Lead (Pb) content / Plating                                                       | 60                |
| Mercury (Hg) content / Plating                                                    | ND                |
| Chromium VI (Cr <sup>6+</sup> ) content (mg/kg With 50cm <sup>2</sup> ) / Plating | Negative (< 0.02) |

Remarks: ppm = parts per million = mg/kg  
ND = not detected

@ = Due to the insufficient sample area, reduced total sample surface of 10 cm<sup>2</sup> was used and the dilution factor was adjusted accordingly.  
mg/kg with 50cm<sup>2</sup> = milligram per kilogram with 50 square centimetre

Tested components:

- (1)Substrate.
- (2)Plating.

Responsibility of Chemist: Dent Fang / Ken He

**( II ) RoHS Requirement:**

| Restricted substances                   | Limits         |
|-----------------------------------------|----------------|
| Cadmium (Cd) Content                    | 0.01% (100ppm) |
| Lead (Pb) Content                       | 0.1% (1000ppm) |
| Mercury (Hg) Content                    | 0.1% (1000ppm) |
| Chromium VI (Cr <sup>6+</sup> ) 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 2011/65/EU for homogeneous material.

**( III ) Test Method:**

| Testing item                            | Testing 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 <sup>6+</sup> ) 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 <sup>2</sup> |

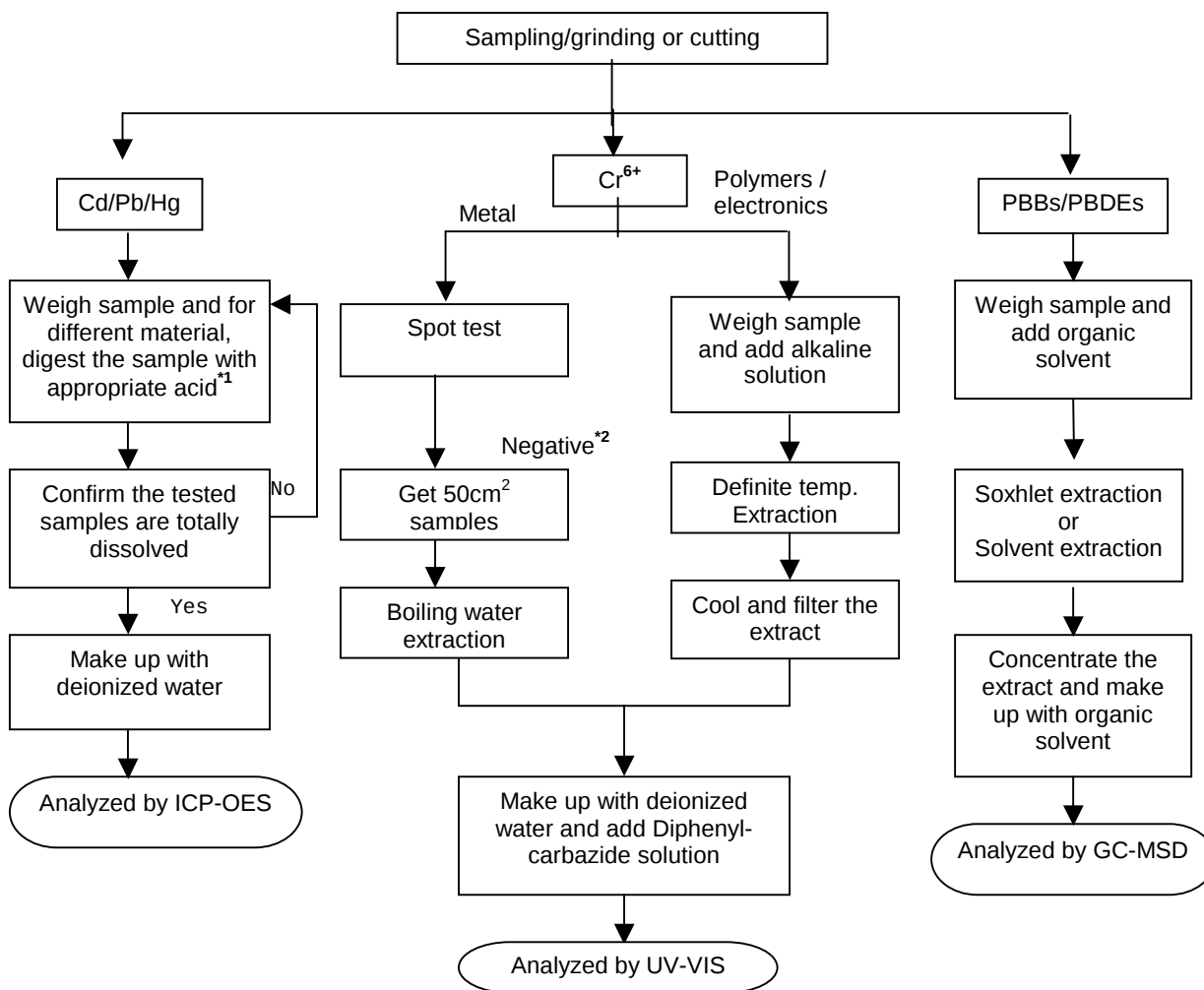
Remark: Reporting limit = Quantitation limit of analyze in sample

Date Sample Received: Jan.9, 2013

Testing Period: Jan.9, 2013 to Jan.14, 2013

\*\*\*\*\*  
To be continued

Tests Conducted  
(IV) MEASUREMENT FLOWCHART:  
Test for Cd/ Pb/ Hg/Cr (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 <sub>3</sub> ,HCl,HF,H <sub>2</sub> O <sub>2</sub> ,H <sub>3</sub> BO <sub>3</sub> |
| Metals      | HNO <sub>3</sub> ,HCL,HF                                                               |
| Electronics | HNO <sub>3</sub> ,HCL,H <sub>2</sub> O <sub>2</sub> ,HBF <sub>4</sub>                  |

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

\*\*\*\*\*

To be continued

Tests Conducted



\*\*\*\*\*  
End of report

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

Date: JAN 18, 2013

Sample Description:

Two(2) pieces of submitted samples said to be :

**(1) Mixed all kinds of metal substrates.**

**(2) Mixed all kinds of plating layers.**

Item Name

: Silver Plated & Pure Silver Wires.

Item No.

: (B-1) 101.014 -, ----

– silver plated copper wire – Cu, Ag--%

(B-2) 101.0131.----

– pure silver wire – Ag 1000

(B-3) 101.0123.0---

– silver plated purest nickel wire – Ni99.98%, Ag1%

(B-4) 101.0182.0---

– silver-copper alloy plated copper plated iron nickel alloy wire

– ElconD, AgCu5%

(B-5) 101.0120.0---

– silver plated constantan wire – CuNi44, Ag5%

(B-6) 101.0151.0---

– silver plated copper - nickel 44 alloy wire

– CuNi44, Ag10%

(B-7) 1050--31.-----

– pure silver strips – Ag 1000 pure

Country Of Origin

: Germany.

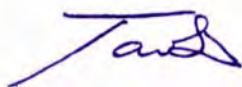
Tests Conducted:

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



## Tests Conducted

## (A) Test result of RoHS Directive:

| <u>Testing item</u>                                                                                                         | <u>Result</u> |
|-----------------------------------------------------------------------------------------------------------------------------|---------------|
|                                                                                                                             | (1)           |
| Cadmium (Cd) content (mg/kg)                                                                                                | ND            |
| Lead (Pb) content (mg/kg)                                                                                                   | ND            |
| Mercury (Hg) content (mg/kg)                                                                                                | ND            |
| Chromium <sub>2</sub> (VI)(Cr <sup>6+</sup> ) result (by boiling water extraction on metal) (mg/kg with 50cm <sup>2</sup> ) | ND            |

| <u>Testing item</u>                                                                                                                  | <u>Result</u> |
|--------------------------------------------------------------------------------------------------------------------------------------|---------------|
|                                                                                                                                      | (2)           |
| Cadmium (Cd) content (mg/kg) /Plating                                                                                                | ND            |
| Lead (Pb) content (mg/kg) /Plating                                                                                                   | ND            |
| Mercury (Hg) content (mg/kg) /Plating                                                                                                | ND            |
| Chromium <sub>2</sub> (VI)(Cr <sup>6+</sup> ) result (by boiling water extraction on metal) (mg/kg with 50cm <sup>2</sup> ) /Plating | ND            |

Remark: mg/kg with 50cm<sup>2</sup> = milligram per kilogram with 50 square centimeter  
ND = not detected

## (B) RoHS Requirement:

| <u>Restricted substances</u>      | <u>Limits</u>     |
|-----------------------------------|-------------------|
| Cadmium (Cd)                      | 0.01% (100 mg/kg) |
| Lead (Pb)                         | 0.1% (1000 mg/kg) |
| Mercury (Hg)                      | 0.1% (1000 mg/kg) |
| Chromium (VI) (Cr <sup>6+</sup> ) | 0.1% (1000 mg/kg) |

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

## (C) 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, by acid digestion until the tested sample was totally dissolved, and determined by ICP-OES. | 2 mg/kg                                                |
| Lead (Pb) content                                     | With reference to IEC 62321 Edition 1.0: 2008, by acid digestion until the tested sample was totally dissolved, and determined by ICP-OES. | 2 mg/kg                                                |
| Mercury (Hg) content                                  | With reference to IEC 62321 Edition 1.0: 2008, by acid digestion until the tested sample was totally dissolved, and determined by ICP-OES. | 2 mg/kg                                                |
| Chromium (VI) (Cr <sup>6+</sup> ) content (for metal) | With reference to IEC 62321 Edition 1.0: 2008, by boiling water extraction and determined by UV-VIS Spectrophotometer.                     | 0.02mg/kg with 50cm <sup>2</sup> (in testing solution) |

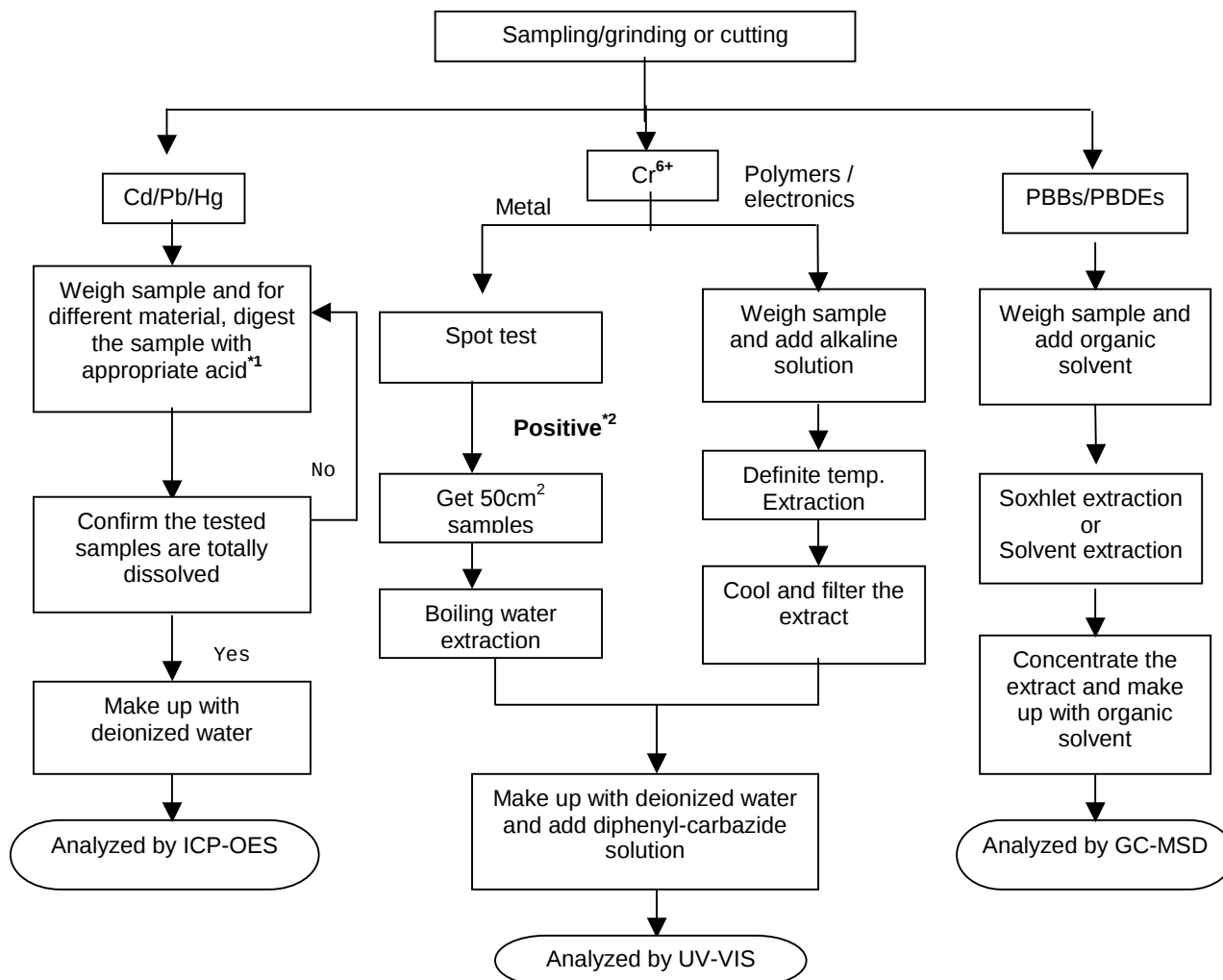
Date sample received: Jan.14, 2013  
Testing period: Jan.14, 2013 To Jan.17, 2013

\*\*\*\*\*

To Be Continued

Tests Conducted  
(D) Measurement flowchart:

Test for Cd/Pb/Hg/Cr (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 <sub>3</sub> , HCL, HF, H <sub>2</sub> O <sub>2</sub> , H <sub>3</sub> BO <sub>3</sub> |
| Metals      | HNO <sub>3</sub> , HCL, HF                                                                 |
| Electronics | HNO <sub>3</sub> , HCL, H <sub>2</sub> O <sub>2</sub> , HBF <sub>4</sub>                   |

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

To Be Continued

Tests Conducted



To Be Continued

Tests Conducted



End Of Report

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**Test Report**

Number: SHAH00364112

Applicant: LITTELFUSE, INC.  
800 E. NORTHWEST HWY  
Attn: A.DIVIETRO/D.UNTIEDT

Date: JAN 30, 2013

**Sample Description:**

One(1) submitted sample said to be **Grey Wire.**

Item Name : Element.

Part No. : Wire Sn Plated AgCu (687279-001).

**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



## Tests Conducted

## (I) Test Result Summary:

| Testing Item                                                            | Result (ppm)      |
|-------------------------------------------------------------------------|-------------------|
| <b>Heavy Metal</b>                                                      | (1)               |
| Cadmium (Cd) content                                                    | ND                |
| Lead (Pb) content                                                       | 10                |
| Mercury (Hg) content                                                    | ND                |
| Chromium VI (Cr <sup>6+</sup> ) content (mg/kg With 50cm <sup>2</sup> ) | Negative (< 0.02) |

| Testing Item                                                                      | Result (ppm)      |
|-----------------------------------------------------------------------------------|-------------------|
| <b>Heavy Metal</b>                                                                | (2)               |
| Cadmium (Cd) content / Plating                                                    | ND                |
| Lead (Pb) content / Plating                                                       | 70                |
| Mercury (Hg) content / Plating                                                    | ND                |
| Chromium VI (Cr <sup>6+</sup> ) content (mg/kg With 50cm <sup>2</sup> ) / Plating | Negative (< 0.02) |

Remarks: ppm = parts per million = mg/kg  
ND = not detected

mg/kg with 50cm<sup>2</sup> = milligram per kilogram with 50 square centimetre  
Negative = A negative test result indicated positive observation was not found at the time of testing.

## Tested components:

- (1) Substrate.
- (2) Plating.

Responsibility of Chemist: Dent Fang / Ken He

## (II) RoHS Requirement:

| Restricted substances                   | Limits         |
|-----------------------------------------|----------------|
| Cadmium (Cd) Content                    | 0.01% (100ppm) |
| Lead (Pb) Content                       | 0.1% (1000ppm) |
| Mercury (Hg) Content                    | 0.1% (1000ppm) |
| Chromium VI (Cr <sup>6+</sup> ) 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 2011/65/EU for homogeneous material.

## (III) Test Method:

| Testing item                            | Testing 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 <sup>6+</sup> ) 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 <sup>2</sup> |

Remark: Reporting limit = Quantitation limit of analyze in sample

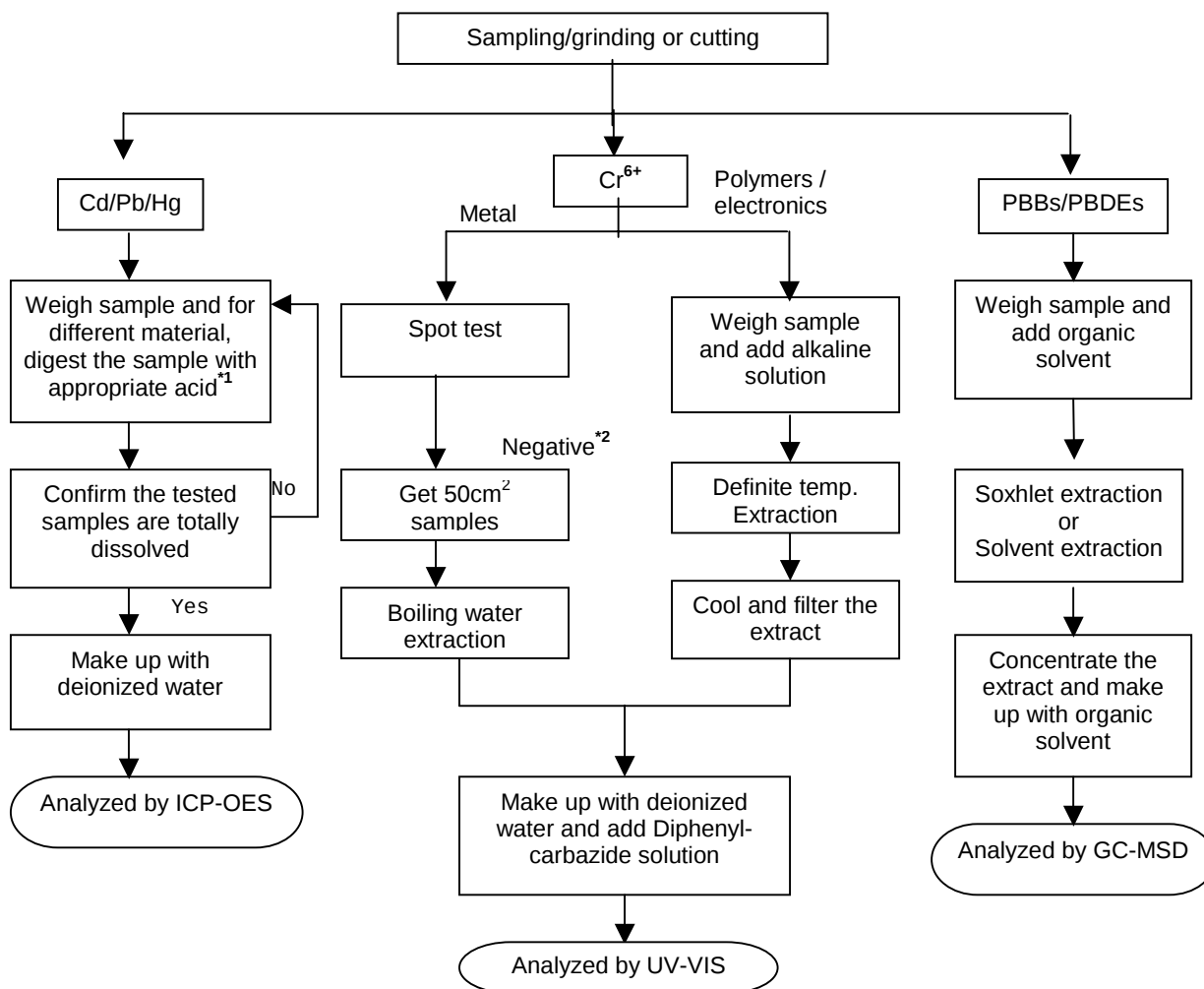
Date Sample Received: Jan.24, 2013

Testing Period: Jan.24, 2013 To Jan.30, 2013

\*\*\*\*\*

To be continued

Tests Conducted  
(IV) MEASUREMENT FLOWCHART:  
Test for Cd/ Pb/ Hg/Cr (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 <sub>3</sub> ,HCl,HF,H <sub>2</sub> O <sub>2</sub> ,H <sub>3</sub> BO <sub>3</sub> |
| Metals      | HNO <sub>3</sub> ,HCL,HF                                                               |
| Electronics | HNO <sub>3</sub> ,HCL,H <sub>2</sub> O <sub>2</sub> ,HBF <sub>4</sub>                  |

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

\*\*\*\*\*

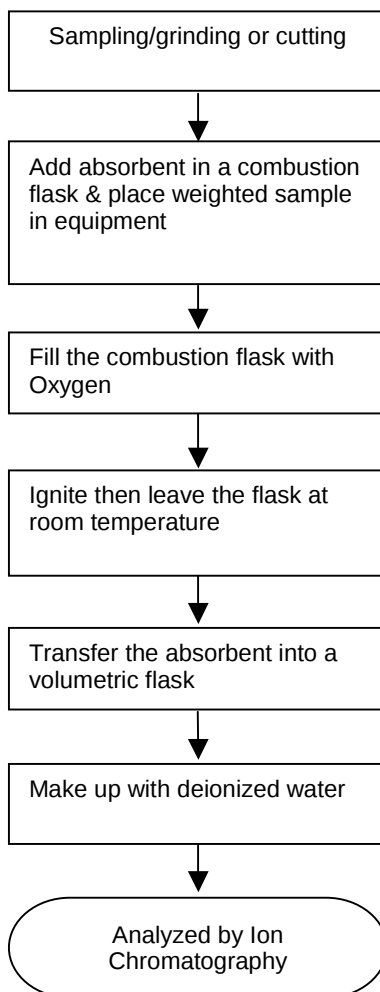
To be continued

Tests Conducted

(V) MEASUREMENT FLOWCHART:

Test for Halogen content

REFERENCE STANDARD: EN 14582



\*\*\*\*\*

To be continued

Tests Conducted



To be continued

Tests Conducted



\*\*\*\*\*  
End of report

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## Test Report

Number : TWNC00296620

Applicant: Elschukom Elektroschutzkomponentenbau  
GmbH  
Gewerbestrasse 87, D-98669 Veilsdorf,  
Germany

Date : Jan 30, 2013

### Sample Description:

One (1) group of submitted samples said to be :  
Sample Description : Tin plated Wires  
Style / Item No. : Please see page two to three.  
Country of Origin : Germany  
Date Sample Received : Jan 23, 2013  
Date Test Started : Jan 23, 2013

### 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



Page 1 of 8

### Intertek Testing Services Taiwan Ltd.

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

全國公證檢驗股份有限公司

11492 台北市內湖區瑞光路 423 號 8 樓

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

## Test Report

Number : TWNC00296620

### Sample Description:

Style / Item No. : (A-1)101--271.0---

- tin plated copper wire - Cu, Sn--%

(A-2)101--283.0---

- tin plated, copper plated copper nickel alloy wire

- Elcon30, Sn--%

(A-3)101--272.0---

- tin plated, copper plated steel wire - ElconF, Sn--%

(A-4)101--281.0---

- tin plated, copper plated iron nickel alloy wire

- ElconD, Sn--%

(A-5)101--221.0---

- tin plated copper nickel alloy wire - CuNi44, Sn--%

(A-6)101--24-.0---

- tin plated, silver plated copper wire - Cu, Ag--%, Sn--%

(A-7)101--257.0---

- tin plated brass wire - Cu80Zn20, Sn--%

Authorized by:  
On Behalf of Intertek Testing Services  
Taiwan Limited



K. Y. Liang  
Director



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

## Test Report

Number : TWNC00296620

### Sample Description:

Style / Item No. : (A-9)101--234.0---

- tin plated silver copper alloy wire
- AgCu90, Sn--%(ElCu90, Sn--%)

(A-10)101--255.----

- tin plated copper zinc alloy wire - Cu70Zn30, Sn--%

(A-11)101--229.----

- tin plated copper nickel alloy wire - CuNi12, Sn--%

(A-12)101--235.----

- tin plated silver copper alloy wire - Ag72Cu28, Sn--%

(A-13)101--231.----

- tin plated silver wire - Ag1000, Sn--%

(A-14)101--236.----

- tin plated silver copper alloy wire
- Ag45Cu55, Sn--%(AgCu55, Sn)

(A-15)101--266.----

- tin plated silver copper alloy wire
- AgCu70, Sn--%(ElCu70, Sn)

(A-16)101--238.----

- tin plated silver copper alloy wire
- AgCu80, Sn--%(Elcu80, Sn)

(A-17)101--228.0---

- tin plated tungsten wire - W, Sn

Authorized by:  
On Behalf of Intertek Testing Services  
Taiwan Limited



K. Y. Liang  
Director



Page 3 of 8

### Intertek Testing Services Taiwan Ltd.

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

## Test Conducted

## (I) Test Result Summary:

| <u>Test Item</u>                        | <u>Unit</u>                   | <u>Test Method</u>                                                                                         | <u>Result</u>                        | <u>RL</u> |
|-----------------------------------------|-------------------------------|------------------------------------------------------------------------------------------------------------|--------------------------------------|-----------|
|                                         |                               |                                                                                                            | <u>Mixed all kinds of metal wire</u> |           |
| <b>Heavy Metal</b>                      |                               |                                                                                                            |                                      |           |
| Cadmium (Cd) content                    | ppm                           | With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.                       | ND                                   | 2         |
| Lead (Pb) content                       | ppm                           | With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.                       | 37                                   | 2         |
| Mercury (Hg) content                    | ppm                           | With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.                       | ND                                   | 2         |
| Chromium VI (Cr <sup>6+</sup> ) content | mg/kg with 50 cm <sup>2</sup> | With reference to IEC 62321: 2008, by boiling water extraction and determined by UV-Vis Spectrophotometer. | Negative (#)                         | 0.02      |

Remarks: ppm = parts per million based on weight of tested sample = mg/kg  
ND = Not detected  
RL = Reporting Limit, Quantitation limit of analyte in sample  
mg/kg with 50cm<sup>2</sup> = milligram per kilogram with 50 square centimeter  
Negative = A negative test result indicated positive observation was not found at the time of Test. When the spot test showed a negative result, the boiling water extraction procedure shall be used to verify the result.  
# = Due to the insufficient sample area, reduced total sample surface of 10 cm<sup>2</sup> was used and the dilution factor was adjusted accordingly.

Responsibility of Chemist: Kevin Liu/ Irene Chiou

Date Sample Received : Jan 23, 2013  
Test Period : Jan 23, 2013 To Jan 29, 2013

## Test Conducted

## (II) RoHS Limits:

| <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 <sup>6+</sup> ) content | 0.1% (1000ppm) |

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

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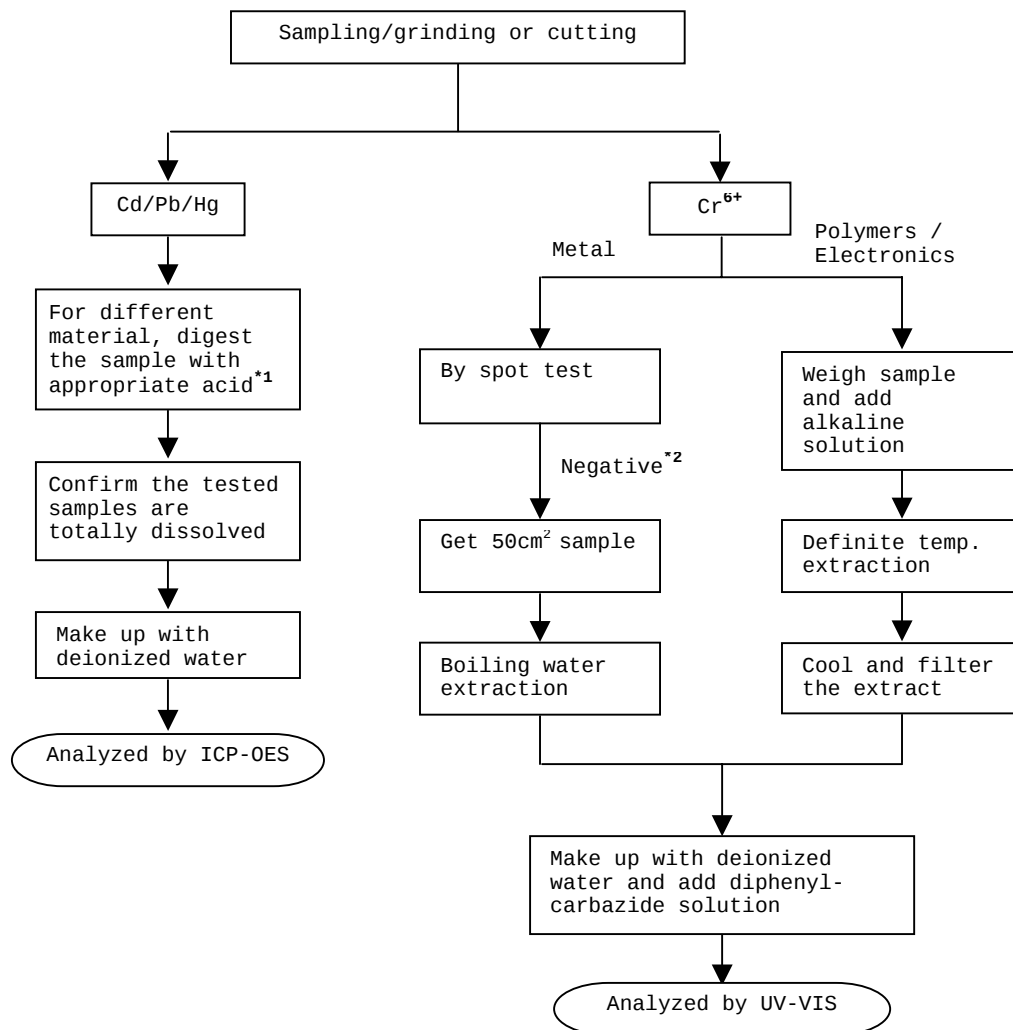


## Test Conducted

## (Ⅲ) Measurement Flowchart:

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

Reference Standard : IEC 62321 edition 1.0:2008





Number : TWNC00296620

## Test Conducted

### Remarks:

#### \*1: List of Appropriate Acid:

| Material    | Acid Added for Digestion                                                                   |
|-------------|--------------------------------------------------------------------------------------------|
| Polymers    | HNO <sub>3</sub> , HCl, HF, H <sub>2</sub> O <sub>2</sub> , H <sub>3</sub> BO <sub>3</sub> |
| Metals      | HNO <sub>3</sub> , HCl, HF                                                                 |
| Electronics | HNO <sub>3</sub> , HCl, H <sub>2</sub> O <sub>2</sub> , HBF <sub>4</sub>                   |

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

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End of Report

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Page 7 of 8

### Intertek Testing Services Taiwan Ltd.

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

Number : TWNC00296620

Test Conducted

Photo



## Test Report

No. SHAEC1317518847

Date: 06 Sep 2013

Page 1 of 6

ZHEJIANG ASIA GENERAL SOLDERING&BRAZING MATERIAL CO., LTD

XIHU INDUSTRIAL PARK, SANDUN, HANGZHOU CITY, ZHEJIANG, PROVINCE, CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as : LEAD-FREE SOLDER WIRE

SGS Job No. : SP13-026309 - SH  
 Model No. : YTW102 (692539-002)  
 Composition : Sn2.0CuRE  
 Date of Sample Received : 03 Sep 2013  
 Testing Period : 03 Sep 2013 - 06 Sep 2013  
 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.



JJ Fan  
 Approved Signatory

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## Test Report

No. SHAEC1317518847

Date: 06 Sep 2013

Page 2 of 6

Test Results :

### Test Part Description :

| Specimen No. | SGS Sample ID    | Description        |
|--------------|------------------|--------------------|
| 1            | SHA13-175188.040 | Silvery metal wire |

Remarks :

- (1) 1 mg/kg = 1 ppm = 0.0001%
- (2) MDL = Method Detection Limit
- (3) ND = Not Detected ( < MDL )
- (4) "-" = Not Regulated

### RoHS Directive 2011/65/EU

- Test Method :
- (1) With reference to IEC 62321-5:2013, determination of Cadmium by ICP-OES.
  - (2) With reference to IEC 62321-5:2013, determination of Lead by ICP-OES.
  - (3) With reference to IEC 62321-4:2013, determination of Mercury by ICP-OES.
  - (4) With reference to IEC 62321:2008, determination of Hexavalent Chromium by spot test / Colorimetric Method using UV-Vis.
  - (5) With reference to IEC 62321:2008, determination of PBBs and PBDEs by GC-MS.

| Test Item(s)                 | Limit | Unit  | MDL | 040      |
|------------------------------|-------|-------|-----|----------|
| Cadmium (Cd)                 | 100   | mg/kg | 2   | ND       |
| Lead (Pb)                    | 1000  | mg/kg | 2   | 140      |
| Mercury (Hg)                 | 1000  | mg/kg | 2   | ND       |
| Hexavalent Chromium (Cr(VI)) | -     | -     | ◇   | Negative |
| Sum of PBBs                  | 1000  | mg/kg | -   | ND       |
| Monobromobiphenyl            | -     | mg/kg | 5   | ND       |
| Dibromobiphenyl              | -     | mg/kg | 5   | ND       |
| Tribromobiphenyl             | -     | mg/kg | 5   | ND       |
| Tetrabromobiphenyl           | -     | mg/kg | 5   | ND       |
| Pentabromobiphenyl           | -     | mg/kg | 5   | ND       |
| Hexabromobiphenyl            | -     | mg/kg | 5   | ND       |
| Heptabromobiphenyl           | -     | mg/kg | 5   | ND       |
| Octabromobiphenyl            | -     | mg/kg | 5   | ND       |
| Nonabromobiphenyl            | -     | mg/kg | 5   | ND       |
| Decabromobiphenyl            | -     | mg/kg | 5   | ND       |
| Sum of PBDEs                 | 1000  | mg/kg | -   | ND       |
| Monobromodiphenyl ether      | -     | mg/kg | 5   | ND       |

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## Test Report

No. SHAEC1317518847

Date: 06 Sep 2013

Page 3 of 6

| <u>Test Item(s)</u>      | <u>Limit</u> | <u>Unit</u> | <u>MDL</u> | <u>040</u> |
|--------------------------|--------------|-------------|------------|------------|
| Dibromodiphenyl ether    | -            | mg/kg       | 5          | ND         |
| Tribromodiphenyl ether   | -            | mg/kg       | 5          | ND         |
| Tetrabromodiphenyl ether | -            | mg/kg       | 5          | ND         |
| Pentabromodiphenyl ether | -            | mg/kg       | 5          | ND         |
| Hexabromodiphenyl ether  | -            | mg/kg       | 5          | ND         |
| Heptabromodiphenyl ether | -            | mg/kg       | 5          | ND         |
| Octabromodiphenyl ether  | -            | mg/kg       | 5          | ND         |
| Nonabromodiphenyl ether  | -            | mg/kg       | 5          | ND         |
| Decabromodiphenyl ether  | -            | mg/kg       | 5          | ND         |

### Notes :

(1) The maximum permissible limit is quoted from directive 2011/65/EU, Annex II

(2) ◇Spot-test:

Negative = Absence of Cr(VI) coating, Positive = Presence of Cr(VI) 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 Cr(VI) coating

Positive = Presence of Cr(VI) coating; the detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm<sup>2</sup> sample surface area.

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

### Halogen

Test Method : With reference to EN 14582: 2007, analysis was performed by Ion Chromatograph (IC).

| <u>Test Item(s)</u> | <u>Unit</u> | <u>MDL</u> | <u>040</u> |
|---------------------|-------------|------------|------------|
| Fluorine (F)        | mg/kg       | 50         | ND         |
| Chlorine (Cl)       | mg/kg       | 50         | 354        |
| Bromine (Br)        | mg/kg       | 50         | ND         |
| Iodine (I)          | mg/kg       | 50         | ND         |

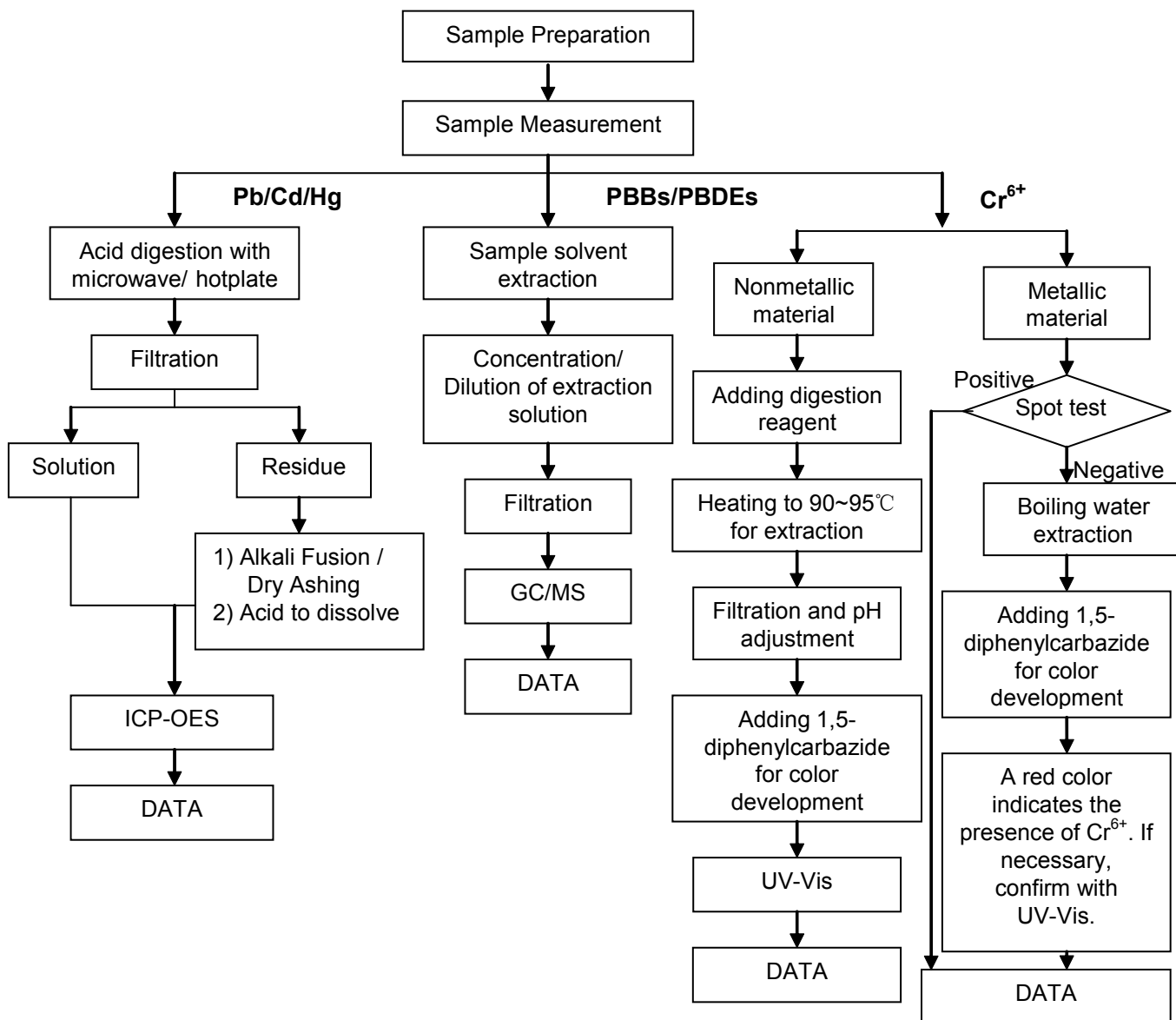
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## ATTACHMENTS

### RoHS Testing Flow Chart

- 1) Name of the person who made testing: Jan Shi/Star Wang/Shara Wang/Gary Xu
- 2) Name of the person in charge of testing: Jeff Zhang/George Xu/ Jessy Huang
- 3) These samples were dissolved totally by pre-conditioning method according to below flow chart. ( $\text{Cr}^{6+}$  and PBBs/PBDEs test method excluded)

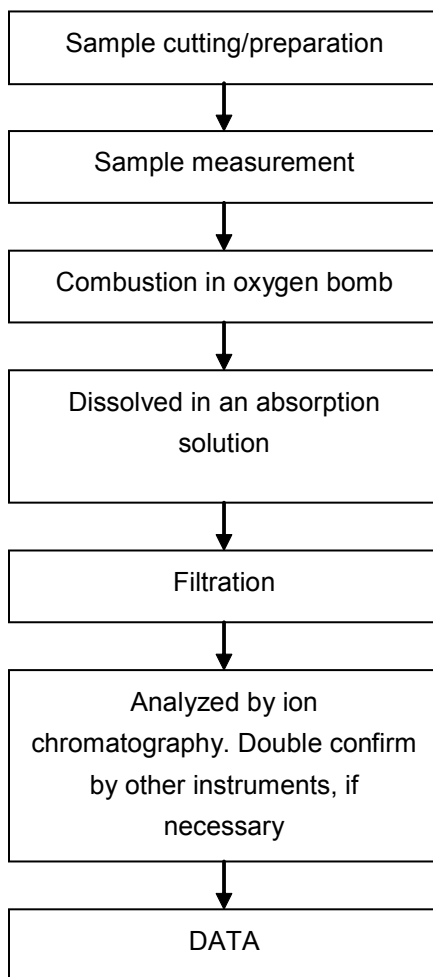


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## Halogen Testing (oxygen bomb) Flow Chart

1) Name of the person who made testing: Sisily Yin

2) Name of the person in charge of testing: Linda Li



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## Test Report

No. SHAEC1317518847

Date: 06 Sep 2013

Page 6 of 6

Sample photo:



SGS authenticate the photo on original report only

\*\*\* End of Report \*\*\*

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**Test Report**

Number : TWNC00297547

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

Date : Feb 20, 2013

**Sample Description:**

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

Part Description : ADHESIVE  
Part Number : 087244  
Date Sample Received : Feb 06, 2013  
Date Test Started : Feb 06, 2013

**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



Page 1 of 10

**Intertek Testing Services Taiwan Ltd.**

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

全國公證檢驗股份有限公司

11492 台北市內湖區瑞光路 423 號 8 樓

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

## Test Conducted

## (I) Test Result Summary:

| <u>Test Item</u>                        | <u>Unit</u> | <u>Test Method</u>                                                                                                                 | <u>Result</u>                        | <u>RL</u> |
|-----------------------------------------|-------------|------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-----------|
|                                         |             |                                                                                                                                    | <u>Light<br/>yellow<br/>adhesive</u> |           |
| Heavy Metal                             |             |                                                                                                                                    |                                      |           |
| Cadmium (Cd) Content                    | ppm         | With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.                                               | ND                                   | 2         |
| Lead (Pb) Content                       | ppm         | With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.                                               | ND                                   | 2         |
| Mercury (Hg) Content                    | ppm         | With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.                                               | ND                                   | 2         |
| Chromium VI (Cr <sup>6+</sup> ) Content | ppm         | With reference to IEC 62321: 2008, by alkaline digestion and determined by UV-Vis Spectrophotometer.                               | ND                                   | 1         |
| Polybrominated Biphenyls (PBBs)         |             |                                                                                                                                    |                                      |           |
| Monobrominated Biphenyls (MonoBB)       | ppm         | With reference to IEC 62321: 2008, by solvent extraction and determined by GC-MS and further HPLC-DAD confirmation when necessary. | ND                                   | 5         |
| Dibrominated Biphenyls (DiBB)           | ppm         |                                                                                                                                    | ND                                   | 5         |
| Tribrominated Biphenyls (TriBB)         | ppm         |                                                                                                                                    | ND                                   | 5         |
| Tetrabrominated Biphenyls (TetraBB)     | ppm         |                                                                                                                                    | ND                                   | 5         |
| Pentabrominated Biphenyls (PentaBB)     | ppm         |                                                                                                                                    | ND                                   | 5         |
| Hexabrominated Biphenyls (HexaBB)       | ppm         |                                                                                                                                    | ND                                   | 5         |
| Heptabrominated Biphenyls (HeptaBB)     | ppm         |                                                                                                                                    | ND                                   | 5         |
| Octabrominated Biphenyls (OctaBB)       | ppm         |                                                                                                                                    | ND                                   | 5         |
| Nonabrominated Biphenyls (NonaBB)       | ppm         |                                                                                                                                    | ND                                   | 5         |
| Decabrominated Biphenyl (DecaBB)        | ppm         |                                                                                                                                    | ND                                   | 5         |



Test Conducted

| Test Item                                  | Unit | Test Method                                                                                                                        | Result                | RL |
|--------------------------------------------|------|------------------------------------------------------------------------------------------------------------------------------------|-----------------------|----|
|                                            |      |                                                                                                                                    | Light yellow adhesive |    |
| Polybrominated Diphenyl Ethers (PBDEs)     |      |                                                                                                                                    |                       |    |
| Monobrominated Diphenyl Ethers (MonoBDE)   | ppm  | With reference to IEC 62321: 2008, by solvent extraction and determined by GC-MS and further HPLC-DAD confirmation when necessary. | ND                    | 5  |
| Dibrominated Diphenyl Ethers (DiBDE)       | ppm  |                                                                                                                                    | ND                    | 5  |
| Tribrominated Diphenyl Ethers (TriBDE)     | ppm  |                                                                                                                                    | ND                    | 5  |
| Tetrabrominated Diphenyl Ethers (TetraBDE) | ppm  |                                                                                                                                    | ND                    | 5  |
| Pentabrominated Diphenyl Ethers (PentaBDE) | ppm  |                                                                                                                                    | ND                    | 5  |
| Hexabrominated Diphenyl Ethers (HexaBDE)   | ppm  |                                                                                                                                    | ND                    | 5  |
| Heptabrominated Diphenyl Ethers (HeptaBDE) | ppm  |                                                                                                                                    | ND                    | 5  |
| Octabrominated Diphenyl Ethers (OctaBDE)   | ppm  |                                                                                                                                    | ND                    | 5  |
| Nonabrominated Diphenyl Ethers (NonaBDE)   | ppm  |                                                                                                                                    | ND                    | 5  |
| Decabrominated Diphenyl Ether (DecaBDE)    | ppm  |                                                                                                                                    | ND                    | 5  |
| Phthalates                                 |      |                                                                                                                                    |                       |    |
| Di(2-ethylhexyl) Phthalate (DEHP)          | ppm  | With reference to EN 14372: 2004, by solvent extraction and determined by GC-MS.                                                   | ND                    | 50 |
| Dibutyl Phthalate (DBP)                    | ppm  |                                                                                                                                    | ND                    | 50 |
| Benzyl Butyl Phthalate (BBP)               | ppm  |                                                                                                                                    | ND                    | 50 |
| Halogen Content                            |      |                                                                                                                                    |                       |    |
| Fluorine (F)                               | ppm  | With reference to EN 14582:2007 by calorimetric bomb with oxygen and determined by Ion Chromatograph.                              | ND                    | 50 |
| Chlorine (Cl)                              | ppm  |                                                                                                                                    | ND                    | 50 |
| Bromine (Br)                               | ppm  |                                                                                                                                    | ND                    | 50 |
| Iodine (I)                                 | ppm  |                                                                                                                                    | ND                    | 50 |
| Others                                     |      |                                                                                                                                    |                       |    |
| Hexabromo cyclododecane (HBCDD)            | ppm  | With reference to USEPA 3540C, by solvent extraction and determined by GC-MS.                                                      | ND                    | 10 |





Number : TWNC00297547

Test Conducted

Remarks: ppm = parts per million based on weight of tested sample = mg/kg  
ND = Not detected  
RL = Reporting Limit, Quantitation limit of analyte in sample

Responsibility of Chemist: Kevin Liu/ Irene Chiou/ Vico Lin

Date Sample Received : Feb 06, 2013

Test Period : Feb 06, 2013 to Feb 18, 2013

(II) Limit:

RoHS Limit

| <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 <sup>6+</sup> ) content | 0.1% (1000ppm) |
| Polybrominated Biphenyls (PBBs)         | 0.1% (1000ppm) |
| Polybrominated Diphenyl Ehters (PBDEs)  | 0.1% (1000ppm) |

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



Page 4 of 10

**Intertek Testing Services Taiwan Ltd.**

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

全國公證檢驗股份有限公司

11492 台北市內湖區瑞光路 423 號 8 樓

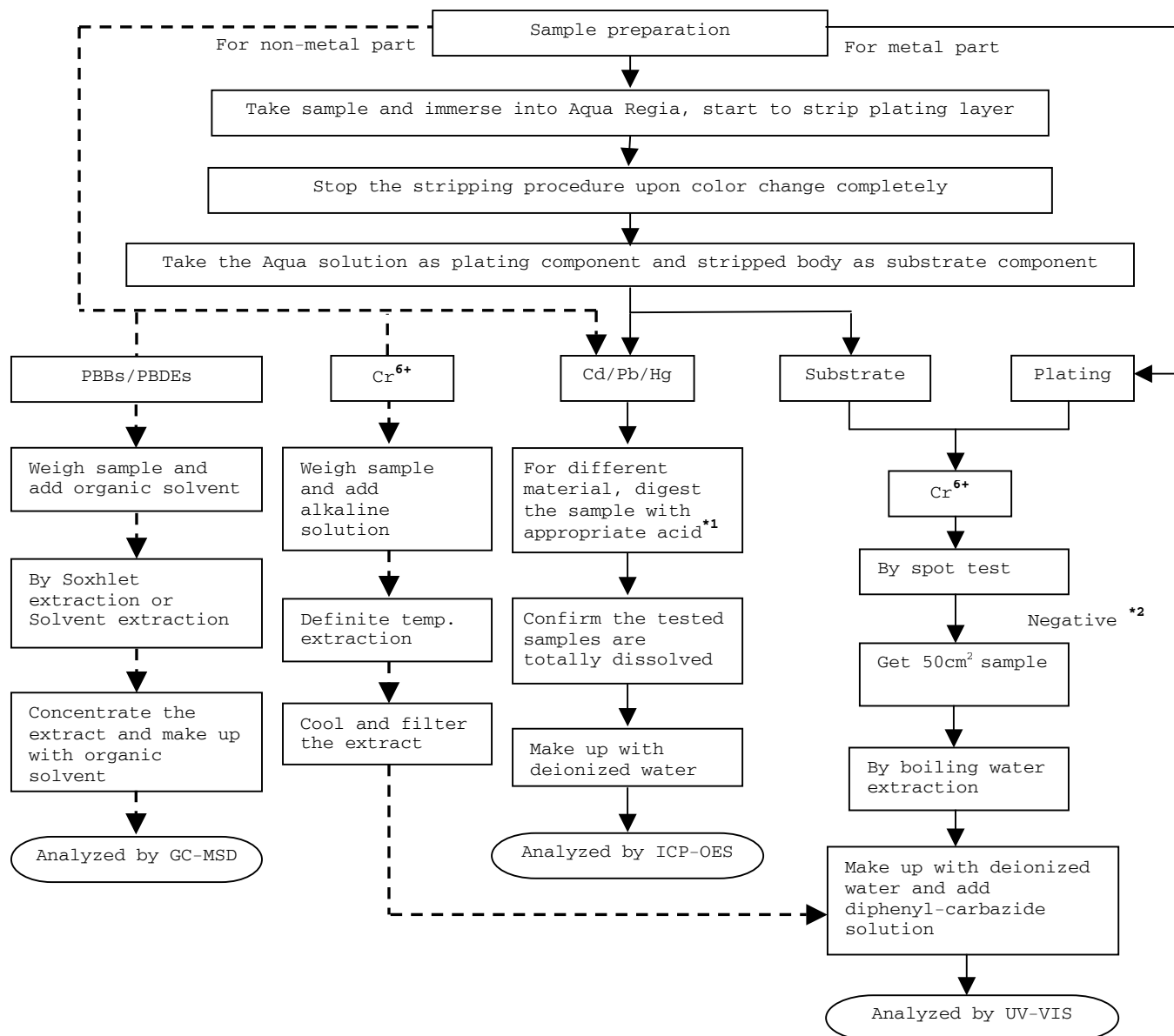
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

## Test Conducted

## (IV) Measurement Flowchart:

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

Reference Standard: IEC 62321 edition 1.0:2008



Number : TWNC00297547

Test Conducted

Remarks:

\*1: List of Appropriate Acid:

| Material    | Acid Added for Digestion                                                                   |
|-------------|--------------------------------------------------------------------------------------------|
| Polymers    | HNO <sub>3</sub> , HCl, HF, H <sub>2</sub> O <sub>2</sub> , H <sub>3</sub> BO <sub>3</sub> |
| Metals      | HNO <sub>3</sub> , HCl, HF                                                                 |
| Electronics | HNO <sub>3</sub> , HCl, H <sub>2</sub> O <sub>2</sub> , HBF <sub>4</sub>                   |

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



Page 6 of 10

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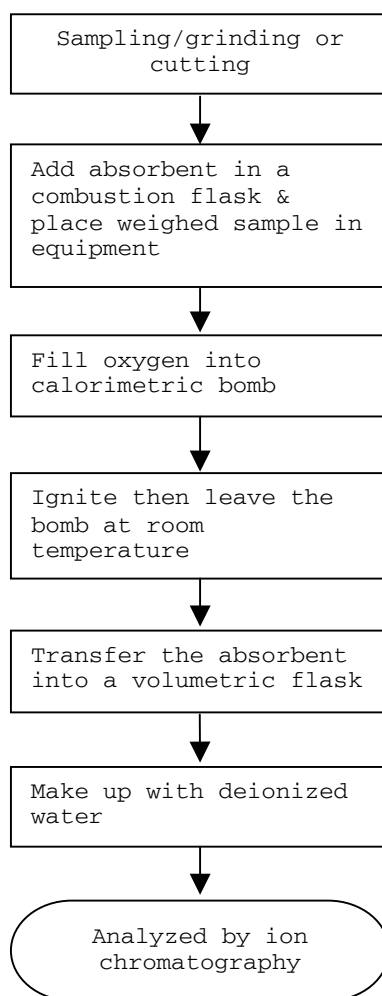
11492 台北市內湖區瑞光路 423 號 8 樓

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

Test Conducted

## (IV) Measurement Flowchart:

Test for Halogen Content  
Reference Standard: EN 14582

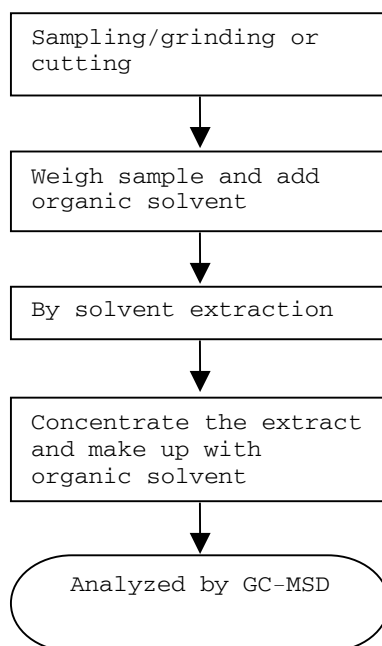


Test Conducted

## (IV) Measurement Flowchart:

Test For Phthalates Contents

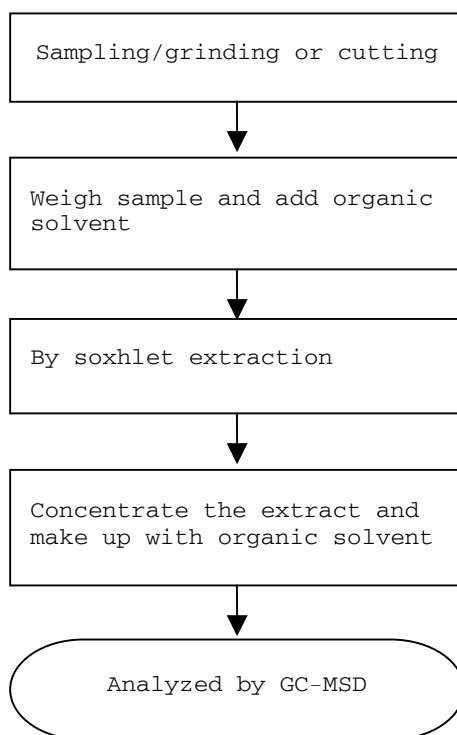
Reference Method: EN 14372: 2004



Test Conducted

## (IV) Measurement Flowchart:

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



End of Report

*This report is made solely on the basis of your instructions and/or information and materials supplied by you. It is not intended to be a recommendation for any particular course of action. Intertek does not accept a duty of care or any other responsibility to any person other than the Client in respect of this report and only accepts liability to the Client insofar as is expressly contained in the terms and conditions governing Intertek's provision of services to you. Intertek makes no warranties or representations either express or implied with respect to this report save as provided for in those terms and conditions. We have aimed to conduct the Review on a diligent and careful basis and we do not accept any liability to you for any loss arising out of or in connection with this report, in contract, tort, by statute or otherwise, except in the event of our gross negligence or wilful misconduct.*



Number : TWNC00297547

Test Conducted

**Photo**



## TEST REPORT

NO.: A002R130403070-2R02

Date: Apr.08, 2013

Page 1 of 4

Customer: SuZhou FuHong Electronic Industrial Co., Ltd.

Address: NO. 89 WEI DU ROAD, WANGTING TOWN, XIANGCHENG DISTRICT, SUZHOU, CHINA

Report on the submitted sample said to be

Sample name: Lead wire copper shell

Model: /

Item/Lot No.: /

Material: /

Buyer: /

Supplier: /

Manufacturer: /

Sample received date: Apr.03, 2013

Testing period: From Apr.03, 2013 to Apr.08, 2013

### Testing Requested

As specified by client, to determine the Lead, Cadmium, Mercury & Hexavalent Chromium content in the submitted sample in accordance with Directive 2011/65/EU (RoHS).

### Testing method:

| Testing Item     | Pretreatment method        | Measuring instrument | MQL        |
|------------------|----------------------------|----------------------|------------|
| Lead (Pb)        | IEC 62321: 2008, section 9 | ICP-OES              | 2mg/kg     |
| Cadmium (Cd)     | IEC 62321: 2008, section 9 | ICP-OES              | 2 mg/kg    |
| Mercury (Hg)     | IEC 62321: 2008, section 7 | ICP-OES              | 2 mg/kg    |
| Chromium (Cr VI) | IEC 62321: 2008, Annex B   | UV-VIS               | 0.02mg/kg* |

### Note:

-\* 0.02 mg/kg refers to the MQL of sample extraction liquid.

### Conclusion:

When tested as specified, the submitted sample complied with the requirements of Directive 2011/65/EU (RoHS).

\*\*\*\*\*FOR FURTHER DETAILS, PLEASE REFER TO THE FOLLOWING PAGE(S)\*\*\*\*\*

Signed for and on behalf of  
Shenzhen AOV Testing Technology Co., Ltd, Kunshan Branch

Project Leader:

*Maggie*  
Li Tingting, Maggie  
Chemical Test Director

Reviewed by:

*Weikin*  
Wang Wexin, Weikin  
Technical Director

Approved by:

*Mickey*  
Yuan Qi, Mickey  
Lab Manager

# TEST REPORT

NO.: A002R130403070-2R02

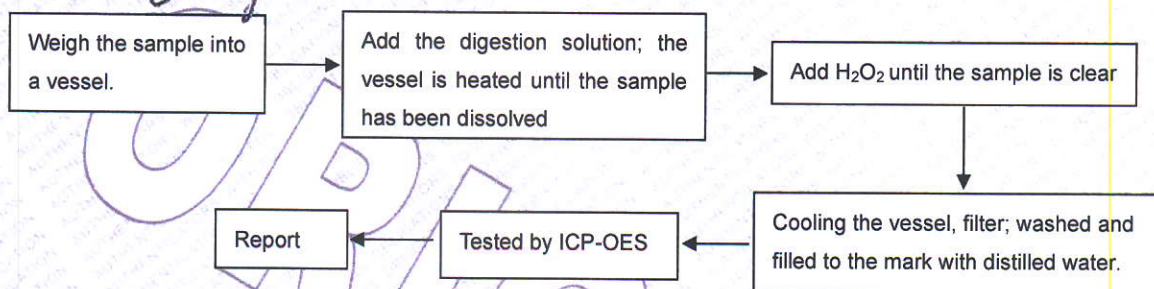
Date: Apr.08, 2013

Page 2 of 4

## Test Flow:

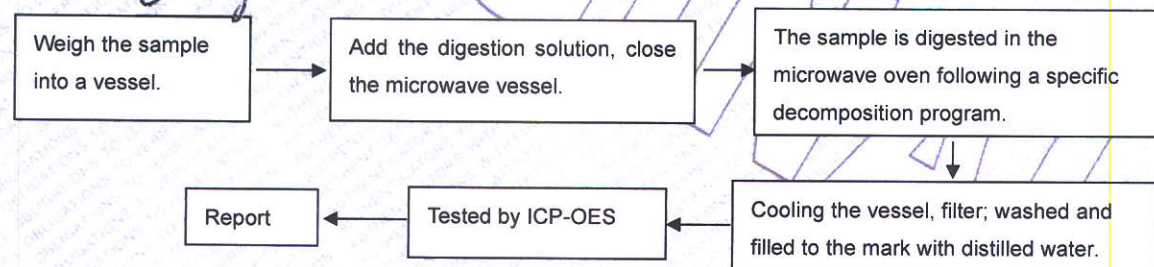
1. To Determine Lead, Cadmium Content: (Metal substrate)

Tested by: *Condy*



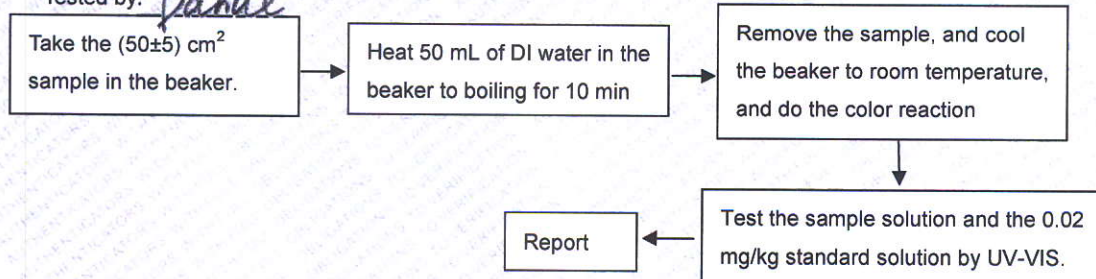
2. To Determine Mercury Content: (Metal substrate)

Tested by: *Condy*



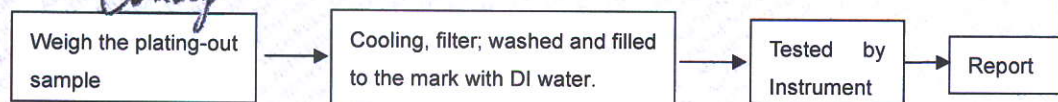
3. To Determine Hexavalent Chromium Content (boiling- water- extraction): (Metal substrate)

Tested by: *Danae*



4. To Determine Lead, Cadmium and Mercury Content: (Plating)

Tested by: *Condy*



## TEST REPORT

NO.: A002R130403070-2R02

Date: Apr.08, 2013

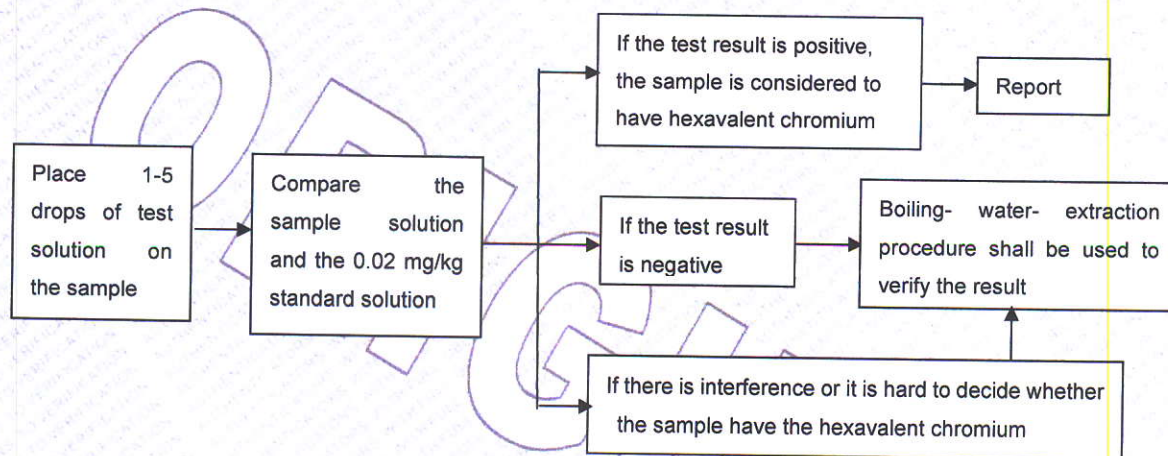
Page 3 of 4

5. To Determine Hexavalent Chromium Content in colorless and colored chromate coating on metals: (Plating)

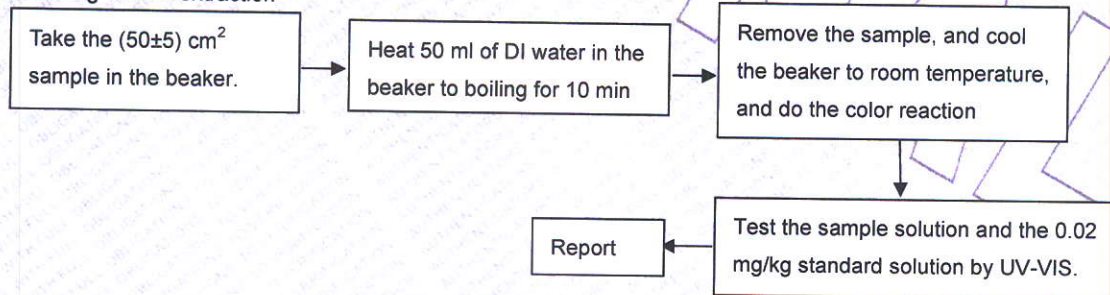
Tested by:

5.1 Spot-test

*Danai*



### 5.2 Boiling- water- extraction



### Sample Description:

| Code | Sample Description  | Code | Sample Description     |
|------|---------------------|------|------------------------|
| 2-1  | Lead wire substrate | 2-3  | Copper shell substrate |
| 2-2  | Lead wire Plating   | 2-4  | Copper shell Plating   |

### Test Results:

| Item            | Unit  | RoHS Limit | Result   |          |          |          |
|-----------------|-------|------------|----------|----------|----------|----------|
|                 |       |            | 2-1      | 2-2**    | 2-3      | 2-4**    |
| Lead (Pb)       | mg/kg | 1000       | N.D.     | N.D.     | N.D.     | N.D.     |
| Cadmium (Cd)    | mg/kg | 100        | N.D.     | N.D.     | N.D.     | N.D.     |
| Mercury (Hg)    | mg/kg | 1000       | N.D.     | N.D.     | N.D.     | N.D.     |
| Chromium (CrVI) | mg/kg | 1000       | Negative | Negative | Negative | Negative |

## TEST REPORT

NO.: A002R130403070-2R02

Date: Apr.08, 2013

Page 4 of 4

**Note:**

-Specimens, which requested to determine Lead, Cadmium and Mercury Content, have been dissolved completely.

-N.D.=not detected(<MQL)

-MQL=Method Quantitation Limit

-Negative=Absence of Cr (VI);

-Positive=Presence of Cr (VI);

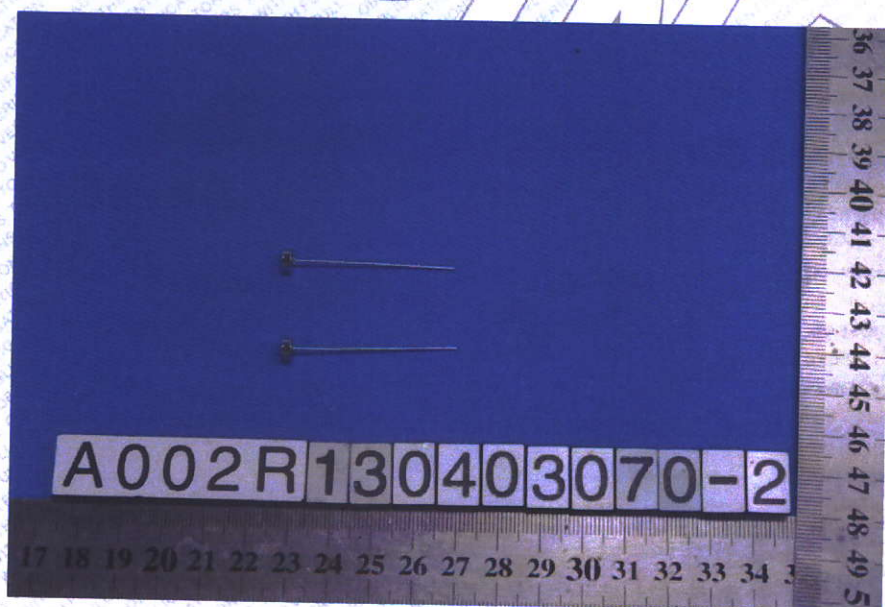
Uncertain= can not verify whether the sample have Hexavalent Chromium by spot-test.

(The tested sample should be further verified by boiling-water-extraction method if the spot test result is uncertain or negative.)

-\*\*The test is based on the following assumption: The sample plating is a single layer and each part is uniform. The test result maybe cannot stand for the physical truth of sample plating.

-Photo is included

Photograph of Sample



Lead wire copper shell

\*\*\*End of Report\*\*\*





**Test Report**

Number: SHAH00361375

Applicant: LITTELFUSE,INC.  
800 E. NORTHWEST HWY  
Attn: A.DIVIETRO/D.UNTIEDT

Date: JAN 16, 2013

**Sample Description:**

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

Item Name : Glass Yarn.

Part No. : 648901.

**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



## Tests Conducted

## 1 (I) Test Result Summary:

| Testing Item                                  | Result (ppm) |
|-----------------------------------------------|--------------|
| <b>Heavy Metal</b>                            |              |
| Cadmium (Cd) content                          | ND           |
| Lead (Pb) content                             | ND           |
| Mercury (Hg) content                          | ND           |
| Chromium VI (Cr <sup>6+</sup> ) content       | ND           |
| <b>Polybrominated Biphenyls (PBBs)</b>        |              |
| 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           |
| <b>Polybrominated Diphenyl Ethers (PBDEs)</b> |              |
| 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           |

Remarks: ppm = parts per million = mg/kg  
ND = not detected

Responsibility of Chemist: Dent Fang / Leaf Liu

## (II) RoHS Requirement:

| Restricted substances                   | Limits         |
|-----------------------------------------|----------------|
| Cadmium (Cd) Content                    | 0.01% (100ppm) |
| Lead (Pb) Content                       | 0.1% (1000ppm) |
| Mercury (Hg) Content                    | 0.1% (1000ppm) |
| Chromium VI (Cr <sup>6+</sup> ) 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 2011/65/EU for homogeneous material.

\*\*\*\*\*  
To Be Continued

Tests Conducted

(III) Test Method:

| Testing item                            | Testing 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 <sup>6+</sup> ) 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

\*\*\*\*\*

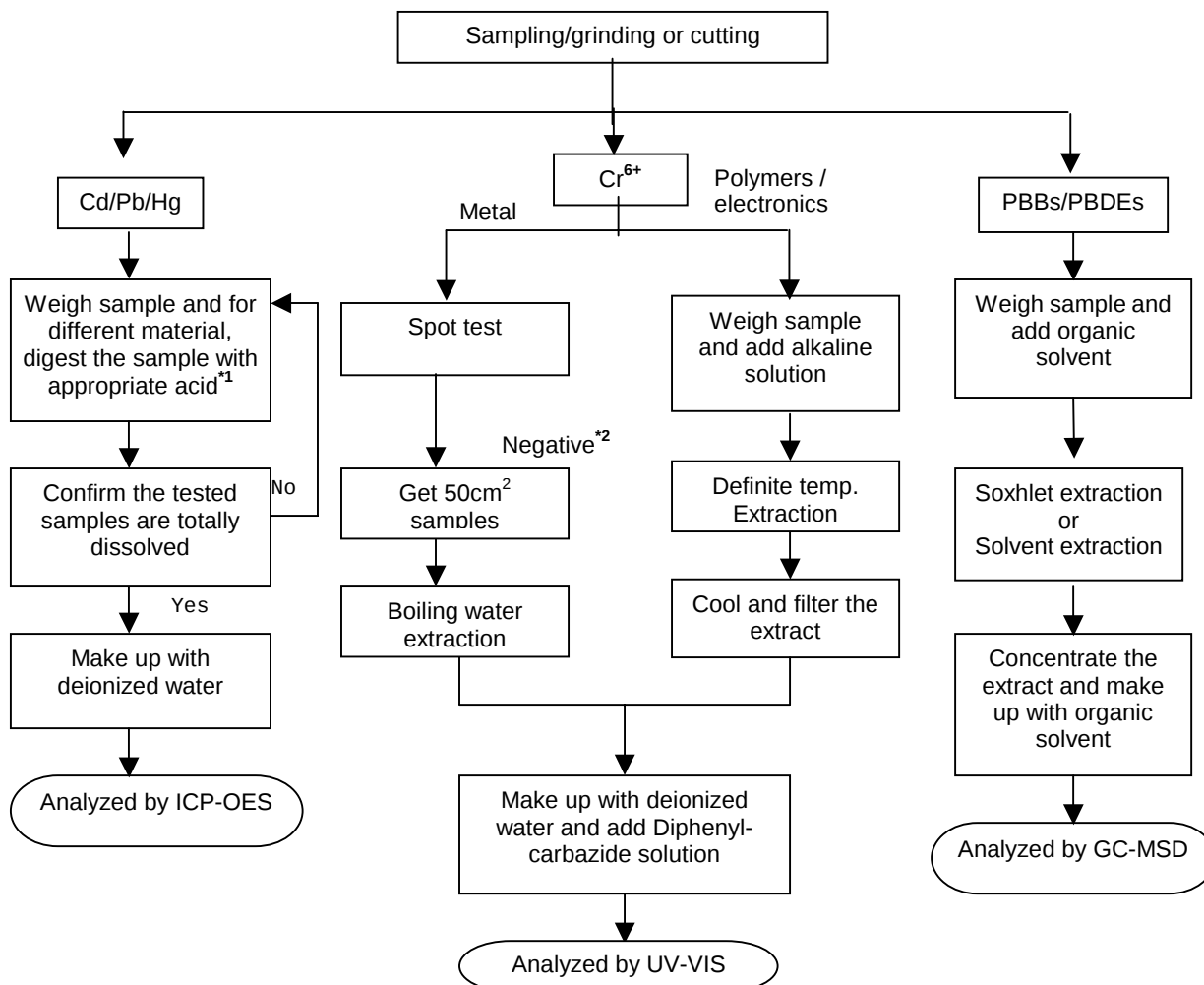
To Be Continued

Tests Conducted

(IV) MEASUREMENT FLOWCHART:

Test for Cd/ Pb/ Hg/Cr (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 <sub>3</sub> ,HCl,HF,H <sub>2</sub> O <sub>2</sub> ,H <sub>3</sub> BO <sub>3</sub> |
| Metals      | HNO <sub>3</sub> ,HCL,HF                                                               |
| Electronics | HNO <sub>3</sub> ,HCL,H <sub>2</sub> O <sub>2</sub> ,HBF <sub>4</sub>                  |

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

\*\*\*\*\*

To Be Continued

**Test Report**

Number: SHAH00361375

## Tests Conducted

2 Halogen content

## ( I ) Test result summary:

| <u>Testing item</u> | <u>Result (ppm)</u> |
|---------------------|---------------------|
| Fluorine (F)        | 350                 |
| Chlorine (Cl)       | 150                 |
| Bromine (Br)        | ND                  |
| Iodine (I)          | ND                  |

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

Responsibility of chemist: Grave Wang

## ( 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

Date sample received: Jan.8, 2013

Testing period: Jan.8, 2013 To Jan.14, 2013

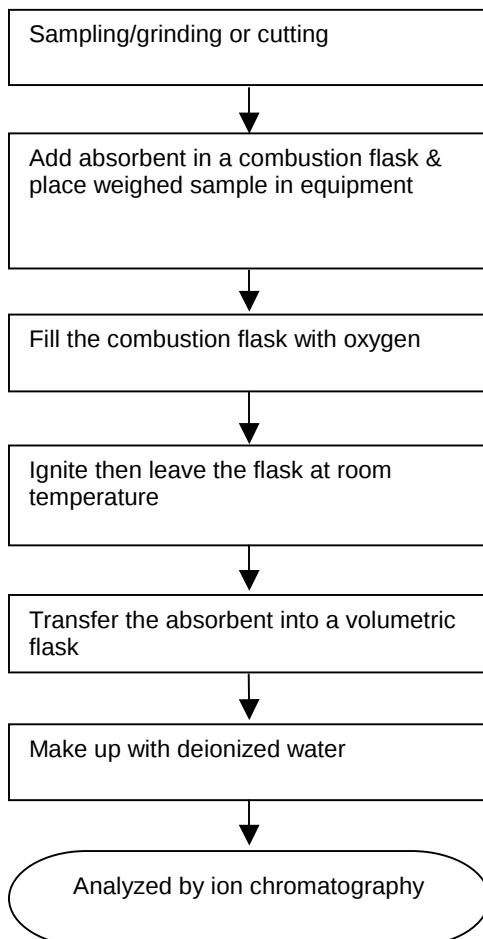
\*\*\*\*\*  
To Be Continued

Tests Conducted

(III) MEASUREMENT FLOWCHART:

Test for halogen content

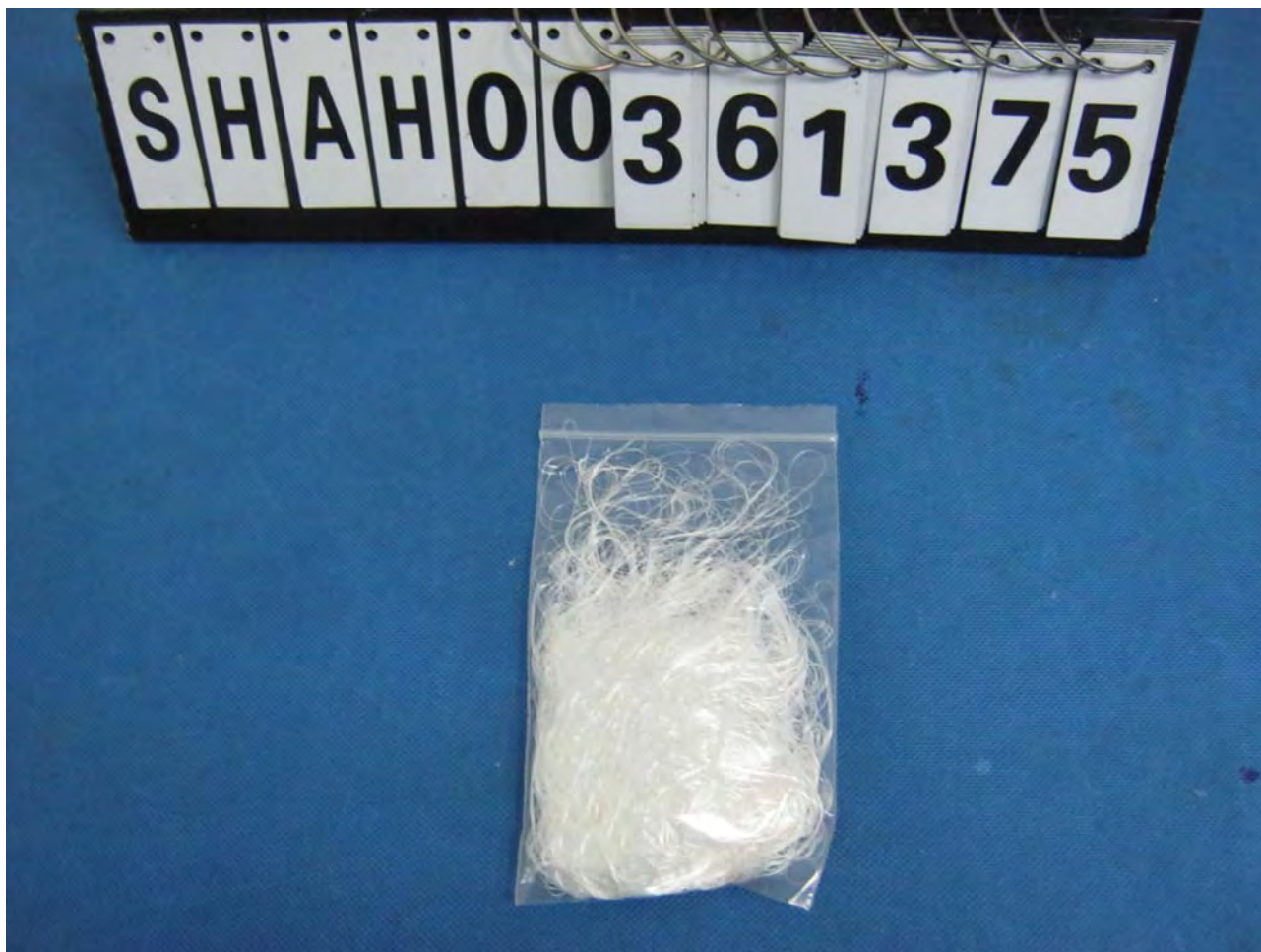
REFERENCE STANDARD: EN 14582



\*\*\*\*\*

To Be Continued

Tests Conducted



\*\*\*\*\*  
End Of Report

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**Test Report**

**Number: 131000457SHA-007**

Applicant: LITTELFUSE, INC.  
800 E. NORTHWEST HWY  
DES PLAINES, IL 60016  
ATTN: J. CABILAN / A. CESISTA JR

Date: Oct. 29, 2013

**Sample Description:**

One (1) submitted sample said to be: **Red ink**  
Part Description : INK - RED  
Part Number : 425901

\*\*\*\*\*

**Tests conducted:**

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

\*\*\*\*\*

**Conclusion:**

| <u>Tested sample</u> | <u>Standard</u>                                                                                                                           | <u>Result</u> |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Submitted sample     | With reference to test method of IEC 62321 Edition 1.0: 2008<br>and maximum concentration limits quoted from RoHS Directive<br>2011/65/EU | Pass          |

\*\*\*\*\*

To be continued

Prepared and check by:  
For Intertek Testing Services Ltd., Shanghai

Authorized by:  
For Intertek testing services Ltd., Shanghai

\_\_\_\_\_  
Joy Zhou

\_\_\_\_\_  
Jonny Jing  
Manager

**Tests Conducted**
**1. RoHS testing and Halogen content**
**(I) Test Result Summary:**

| Testing Item                                  | Result (ppm) |
|-----------------------------------------------|--------------|
| <b>Heavy Metal</b>                            |              |
| Cadmium (Cd) content                          | ND           |
| Lead (Pb) content                             | ND           |
| Mercury (Hg) content                          | ND           |
| Chromium VI (Cr <sup>6+</sup> ) content       | ND           |
| <b>Polybrominated Biphenyls (PBBs)</b>        |              |
| 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           |
| <b>Polybrominated Diphenyl Ethers (PBDEs)</b> |              |
| 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           |
| <b>Halogen Content</b>                        |              |
| Fluorine (F)                                  | ND           |
| Chlorine (Cl)                                 | 850          |
| Bromine (Br)                                  | ND           |
| Iodine (I)                                    | ND           |

Remarks: ppm = parts per million = mg/kg  
ND = not detected

Responsibility of Chemist: Dent Fang / Leaf Liu

\*\*\*\*\*

To be continued

**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 <sup>6+</sup> ) 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 2011/65/EU 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 <sup>6+</sup> ) 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 combustion flask with oxygen and determined by Ion Chromatography                                                            | 50 ppm                 |

Remark: Reporting limit = Quantitation Limit of Analyze in Sample

\*\*\*\*\*

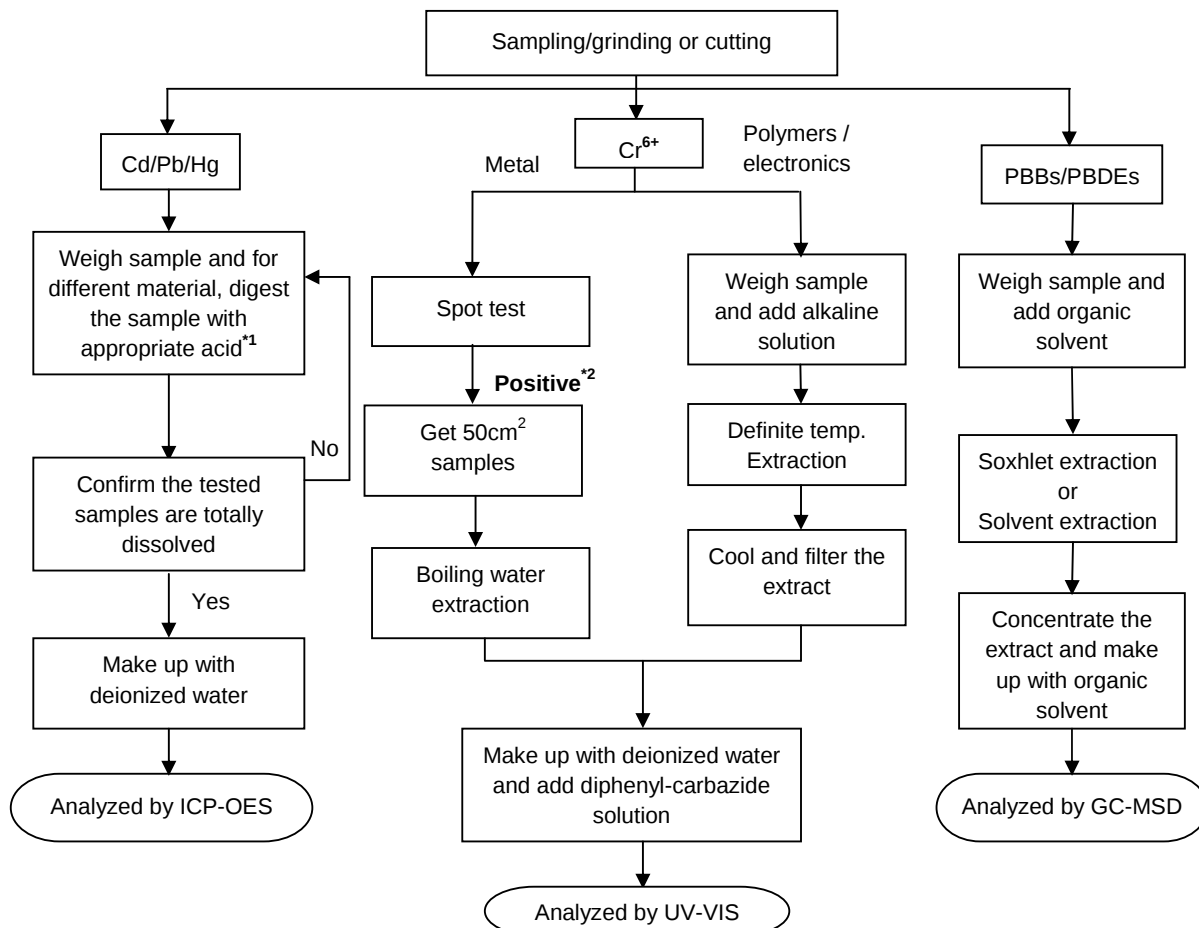
To be continued

Tests Conducted

(IV) Measurement Flowchart:

Test for Cd/ Pb/ Hg/Cr (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 <sub>3</sub> ,HCl,HF,H <sub>2</sub> O <sub>2</sub> ,H <sub>3</sub> BO <sub>3</sub> |
| Metals      | HNO <sub>3</sub> ,HCL,HF                                                               |
| Electronics | HNO <sub>3</sub> ,HCL,H <sub>2</sub> O <sub>2</sub> ,HBF <sub>4</sub>                  |

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

\*\*\*\*\*

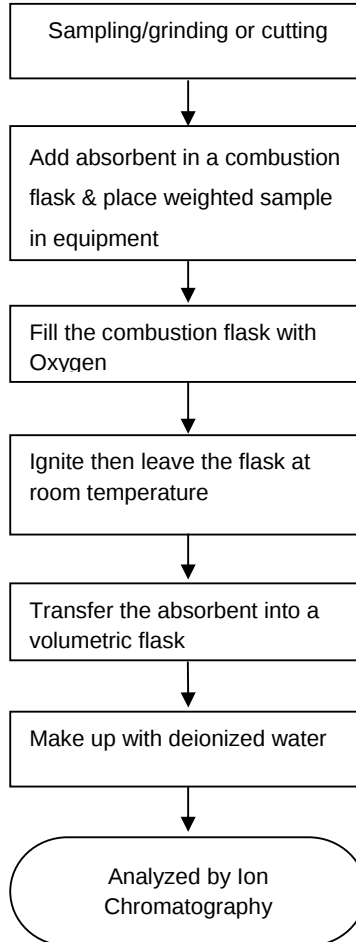
To be continued

Tests Conducted

(V) Measurement flowchart:

Test or Halogen content

Reference standard: EN 14582



\*\*\*\*\*

To be continued



**Test Report**

**Number: 131000457SHA-007**

Tests Conducted

2. Phthalate content test

With reference to EN 14372 by Gas Chromatography-Mass Spectrometry (GC-MS) analysis.

| <u>Tested Compound</u>            | <u>Result (% w/w)</u> | <u>Client' requirement (% w/w)</u> |
|-----------------------------------|-----------------------|------------------------------------|
| Di-butyl phthalate (DBP)          | ND                    | -                                  |
| Di(2-ethyl hexyl) phthalate(DEHP) | ND                    | -                                  |
| Benzyl butyl phthalate (BBP)      | ND                    | -                                  |
| Sum of three phthalates           | ND                    | 0.1                                |
| Di-iso-butyl phthalate (DIBP)     | ND                    | 0.1                                |

Remark : Detection Limit = 0.01%(w/w)

ND = Not Detected

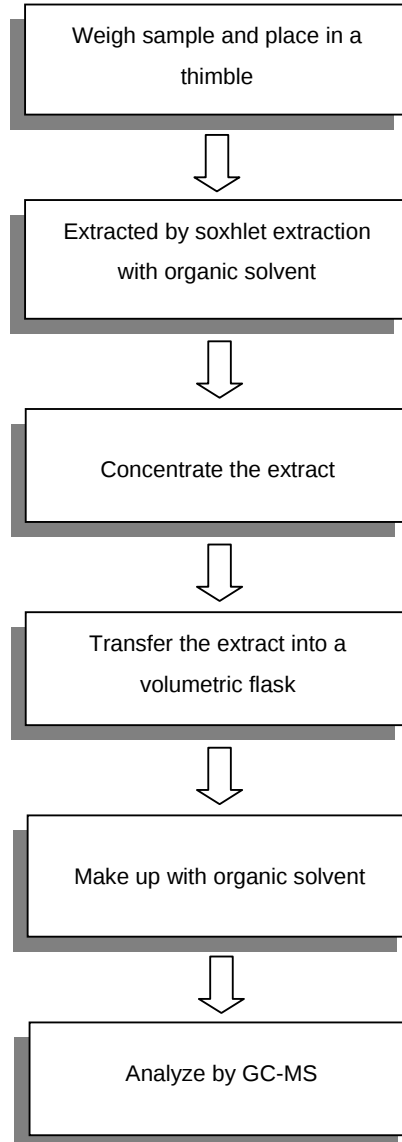
\*\*\*\*\*

To be continued

Tests Conducted

Measurement flowchart:

Test for **phthalate** content



\*\*\*\*\*  
To be continued



**Test Report**

**Number: 131000457SHA-007**

Tests Conducted

3. HBCDD content

( I )Test result summary:

| <u>Testing item</u>            | <u>Result (ppm)</u> |
|--------------------------------|---------------------|
| HBCDD (hexabromocyclododecane) | ND                  |

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

( II ) Test method:

| <u>Testing item</u>            | <u>Testing method</u>                                                         | <u>Reporting limit</u> |
|--------------------------------|-------------------------------------------------------------------------------|------------------------|
| HBCDD (hexabromocyclododecane) | With reference to US EPA 3540C, by solvent extraction and determined by GC-MS | 10 ppm                 |

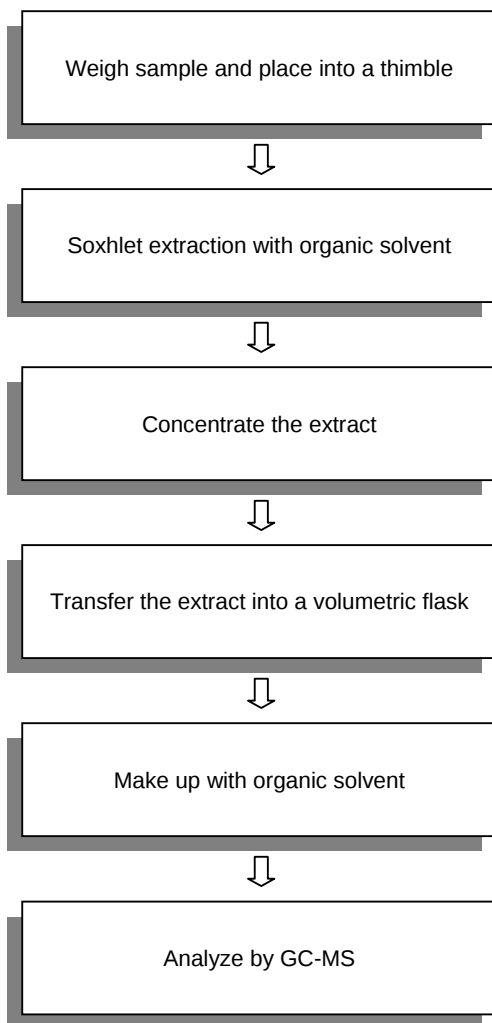
\*\*\*\*\*

To be continued

Tests Conducted

Measurement flowchart:

Test for HBCDD (hexabromocyclododecane) content



\*\*\*\*\*

To be continued



**Test Report**

**Number: 131000457SHA-007**

Tests Conducted

**4. Total Antimony (Sb) Content**

As per client's request, acid digestion method was used and total Antimony content was determined by Inductively Coupled Argon Plasma Spectrometry.

Result: <10ppm

Remark: ppm = parts per million = mg/kg

Date sample received: Oct. 16, 2013

Testing period: Oct. 16, 2013 To Oct. 29, 2013

\*\*\*\*\*

To be continued

Tests Conducted



Picture was provided by applicant

\*\*\*\*\*

**End of report**

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**Test Report**

**Number: 131000457SHA-001**

Applicant: LITTELFUSE, INC.  
800 E. NORTHWEST HWY  
DES PLAINES, IL 60016  
ATTN: J. CABILAN / A. CESISTA JR

Date: Oct. 29, 2013

**Sample Description:**

One (1) submitted sample said to be: **Black ink**  
Part Description : INK - BLACK  
Part Number : 425902

\*\*\*\*\*

**Tests conducted:**

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

\*\*\*\*\*

**Conclusion:**

| <u>Tested sample</u> | <u>Standard</u>                                                                                                                           | <u>Result</u> |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Submitted sample     | With reference to test method of IEC 62321 Edition 1.0: 2008<br>and maximum concentration limits quoted from RoHS Directive<br>2011/65/EU | Pass          |

\*\*\*\*\*

To be continued

Prepared and check by:  
For Intertek Testing Services Ltd., Shanghai

Authorized by:  
For Intertek testing services Ltd., Shanghai

\_\_\_\_\_  
Joy Zhou

\_\_\_\_\_  
Jonny Jing  
Manager

**Tests Conducted**
**1. RoHS testing and Halogen content**
**(I) Test Result Summary:**

| Testing Item                                  | Result (ppm) |
|-----------------------------------------------|--------------|
| <b>Heavy Metal</b>                            |              |
| Cadmium (Cd) content                          | ND           |
| Lead (Pb) content                             | ND           |
| Mercury (Hg) content                          | ND           |
| Chromium VI (Cr <sup>6+</sup> ) content       | ND           |
| <b>Polybrominated Biphenyls (PBBs)</b>        |              |
| 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           |
| <b>Polybrominated Diphenyl Ethers (PBDEs)</b> |              |
| 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           |
| <b>Halogen Content</b>                        |              |
| Fluorine (F)                                  | ND           |
| Chlorine (Cl)                                 | 100          |
| Bromine (Br)                                  | ND           |
| Iodine (I)                                    | ND           |

Remarks: ppm = parts per million = mg/kg  
ND = not detected

Responsibility of Chemist: Dent Fang / Leaf Liu

\*\*\*\*\*

To be continued

**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 <sup>6+</sup> ) 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 2011/65/EU 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 <sup>6+</sup> ) 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 combustion flask with oxygen and determined by Ion Chromatography                                                            | 50 ppm                 |

Remark: Reporting limit = Quantitation Limit of Analyze in Sample

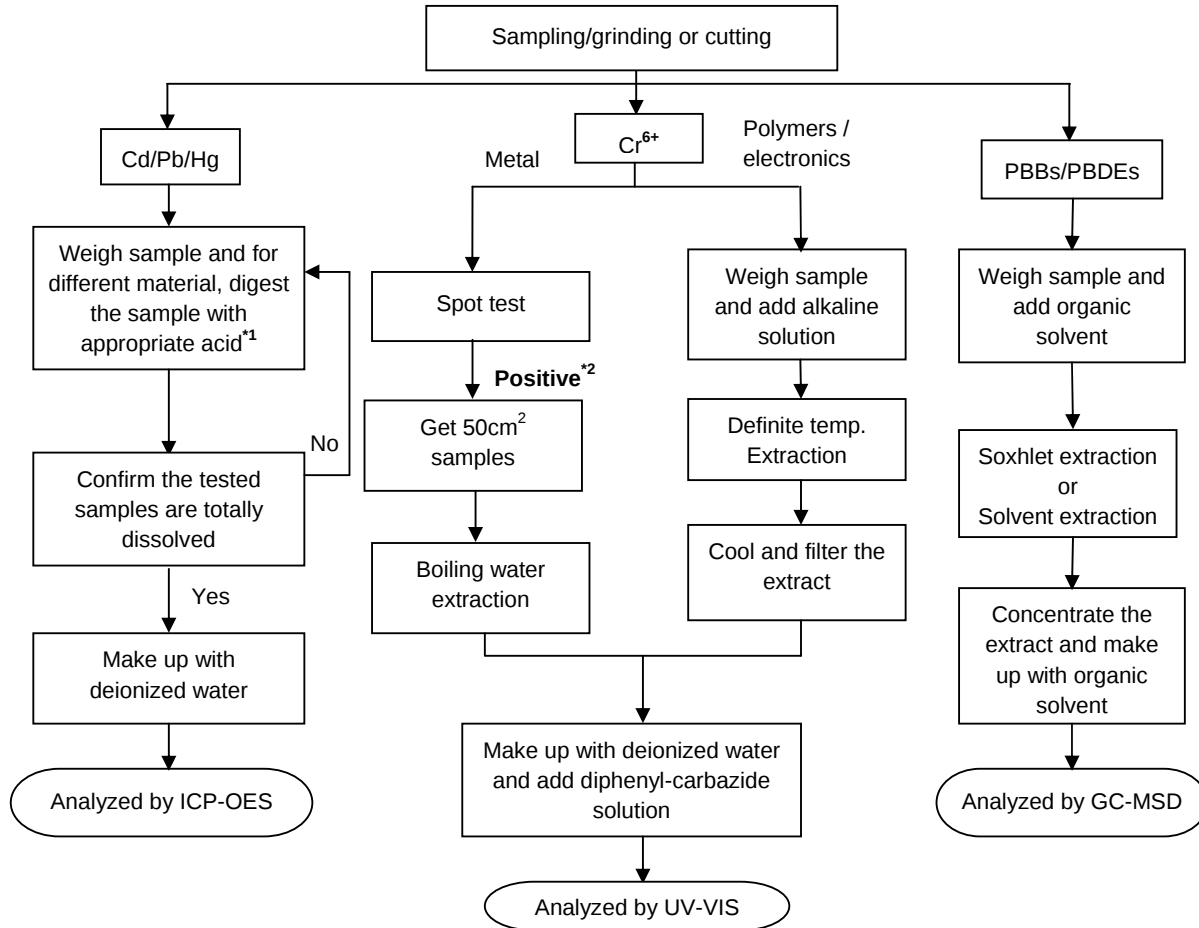
\*\*\*\*\*  
To be continued

Tests Conducted

(IV) Measurement Flowchart:

Test for Cd/ Pb/ Hg/Cr (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 <sub>3</sub> ,HCl,HF,H <sub>2</sub> O <sub>2</sub> ,H <sub>3</sub> BO <sub>3</sub> |
| Metals      | HNO <sub>3</sub> ,HCL,HF                                                               |
| Electronics | HNO <sub>3</sub> ,HCL,H <sub>2</sub> O <sub>2</sub> ,HBF <sub>4</sub>                  |

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

\*\*\*\*\*

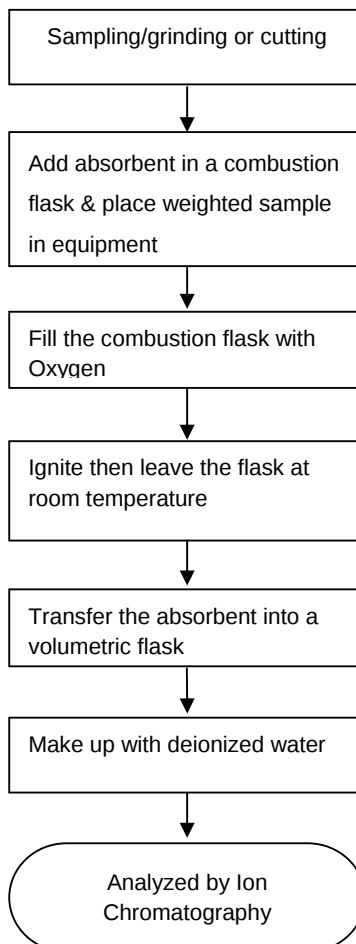
To be continued

Tests Conducted

(V) Measurement flowchart:

Test or Halogen content

Reference standard: EN 14582



\*\*\*\*\*

To be continued



**Test Report**

**Number: 131000457SHA-001**

Tests Conducted

2. Phthalate content test

With reference to EN 14372 by Gas Chromatography-Mass Spectrometry (GC-MS) analysis.

| <u>Tested Compound</u>            | <u>Result (% w/w)</u> | <u>Client' requirement (% w/w)</u> |
|-----------------------------------|-----------------------|------------------------------------|
| Di-butyl phthalate (DBP)          | ND                    | -                                  |
| Di(2-ethyl hexyl) phthalate(DEHP) | ND                    | -                                  |
| Benzyl butyl phthalate (BBP)      | ND                    | -                                  |
| Sum of three phthalates           | ND                    | 0.1                                |
| Di-iso-butyl phthalate (DIBP)     | ND                    | 0.1                                |

Remark : Detection Limit = 0.01%(w/w)

ND = Not Detected

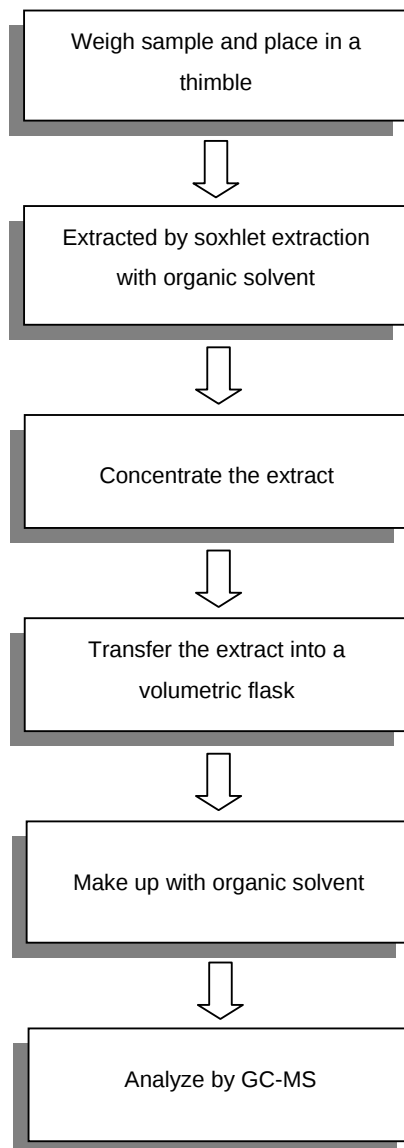
\*\*\*\*\*

To be continued

Tests Conducted

Measurement flowchart:

Test for **phthalate** content



\*\*\*\*\*

To be continued



**Test Report**

Number: 131000457SHA-001

Tests Conducted

3. HBCDD content

( I )Test result summary:

| <u>Testing item</u>            | <u>Result (ppm)</u> |
|--------------------------------|---------------------|
| HBCDD (hexabromocyclododecane) | ND                  |

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

(II) Test method:

| <u>Testing item</u>            | <u>Testing method</u>                                                         | <u>Reporting limit</u> |
|--------------------------------|-------------------------------------------------------------------------------|------------------------|
| HBCDD (hexabromocyclododecane) | With reference to US EPA 3540C, by solvent extraction and determined by GC-MS | 10 ppm                 |

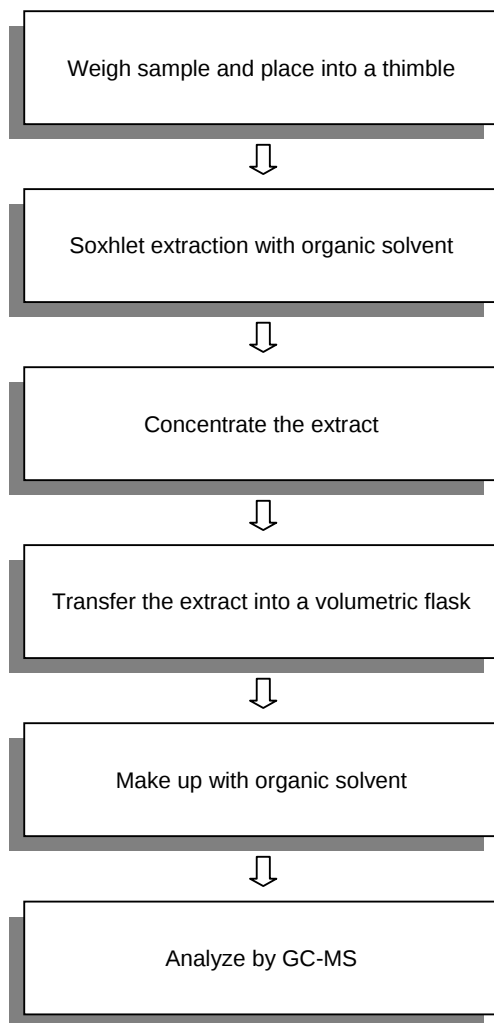
\*\*\*\*\*

To be continued

Tests Conducted

Measurement flowchart:

Test for HBCDD (hexabromocyclododecane) content



\*\*\*\*\*

To be continued



**Test Report**

**Number: 131000457SHA-001**

Tests Conducted

4. Total Antimony (Sb) Content

As per client's request, acid digestion method was used and total Antimony content was determined by Inductively Coupled Argon Plasma Spectrometry.

Result: <10ppm

Remark: ppm = parts per million = mg/kg

Date sample received: Oct. 16, 2013

Testing period: Oct. 16, 2013 To Oct. 29, 2013

\*\*\*\*\*

To be continued

Tests Conducted



Picture was provided by applicant

\*\*\*\*\*

**End of report**

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**Test Report**

**Number: 131000457SHA-009**

Applicant: LITTELFUSE, INC.  
800 E. NORTHWEST HWY  
DES PLAINES, IL 60016  
ATTN: J. CABILAN / A. CESISTA JR

Date: Oct. 29, 2013

**Sample Description:**

One (1) submitted sample said to be: **Yellow ink**  
Part Description : INK - YELLOW  
Part Number : 425903

**Tests conducted:**

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

**Conclusion:**

| <u>Tested sample</u> | <u>Standard</u>                                                                                                                     | <u>Result</u> |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Submitted sample     | With reference to test method of IEC 62321 Edition 1.0: 2008 and maximum concentration limits quoted from RoHS Directive 2011/65/EU | Pass          |

To be continued

Prepared and check by:  
For Intertek Testing Services Ltd., Shanghai

Authorized by:  
For Intertek testing services Ltd., Shanghai

Joy Zhou

Jonny Jing  
Manager

**Tests Conducted**
**1. RoHS testing and Halogen content**
**(I) Test Result Summary:**

| Testing Item                                  | Result (ppm) |
|-----------------------------------------------|--------------|
| <b>Heavy Metal</b>                            |              |
| Cadmium (Cd) content                          | ND           |
| Lead (Pb) content                             | ND           |
| Mercury (Hg) content                          | ND           |
| Chromium VI (Cr <sup>6+</sup> ) content       | ND           |
| <b>Polybrominated Biphenyls (PBBs)</b>        |              |
| 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           |
| <b>Polybrominated Diphenyl Ethers (PBDEs)</b> |              |
| 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           |
| <b>Halogen Content</b>                        |              |
| Fluorine (F)                                  | ND           |
| Chlorine (Cl)                                 | 7050         |
| Bromine (Br)                                  | ND           |
| Iodine (I)                                    | ND           |

Remarks: ppm = parts per million = mg/kg

ND = not detected

Responsibility of Chemist: Dent Fang / Leaf Liu

\*\*\*\*\*

To be continued

**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 <sup>6+</sup> ) 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 2011/65/EU 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 <sup>6+</sup> ) 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 combustion flask with oxygen and determined by Ion Chromatography                                                            | 50 ppm                 |

Remark: Reporting limit = Quantitation Limit of Analyze in Sample

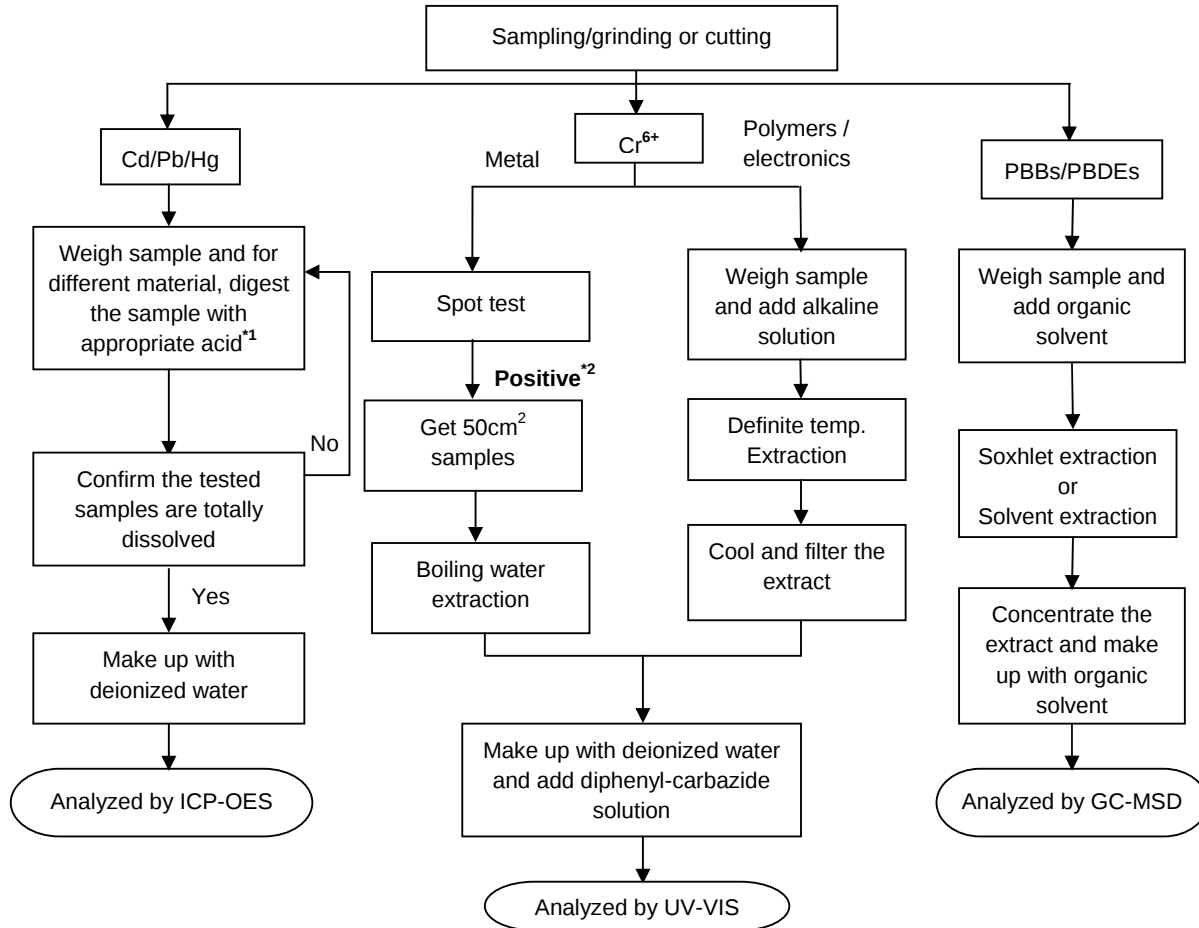
\*\*\*\*\*  
To be continued

Tests Conducted

(IV) Measurement Flowchart:

Test for Cd/ Pb/ Hg/Cr (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 <sub>3</sub> ,HCl,HF,H <sub>2</sub> O <sub>2</sub> ,H <sub>3</sub> BO <sub>3</sub> |
| Metals      | HNO <sub>3</sub> ,HCL,HF                                                               |
| Electronics | HNO <sub>3</sub> ,HCL,H <sub>2</sub> O <sub>2</sub> ,HBF <sub>4</sub>                  |

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

\*\*\*\*\*

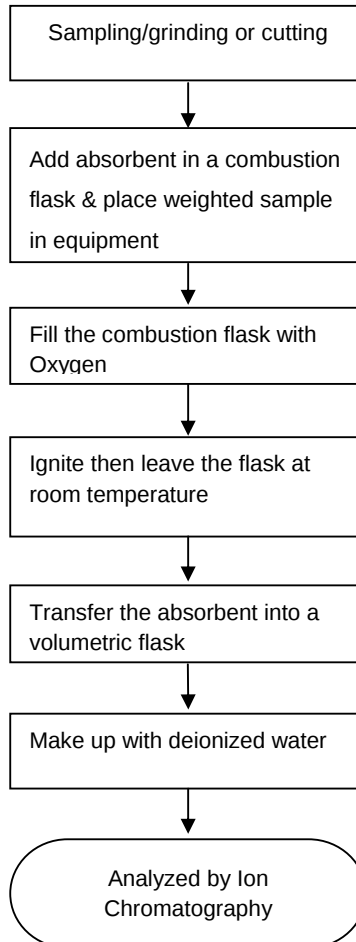
To be continued

Tests Conducted

(V) Measurement flowchart:

Test or Halogen content

Reference standard: EN 14582



\*\*\*\*\*

To be continued



**Test Report**

**Number: 131000457SHA-009**

Tests Conducted

2. Phthalate content test

With reference to EN 14372 by Gas Chromatography-Mass Spectrometry (GC-MS) analysis.

| <u>Tested Compound</u>            | <u>Result (% w/w)</u> | <u>Client' requirement (% w/w)</u> |
|-----------------------------------|-----------------------|------------------------------------|
| Di-butyl phthalate (DBP)          | ND                    | -                                  |
| Di(2-ethyl hexyl) phthalate(DEHP) | ND                    | -                                  |
| Benzyl butyl phthalate (BBP)      | ND                    | -                                  |
| Sum of three phthalates           | ND                    | 0.1                                |
| Di-iso-butyl phthalate (DIBP)     | ND                    | 0.1                                |

Remark : Detection Limit = 0.01%(w/w)

ND = Not Detected

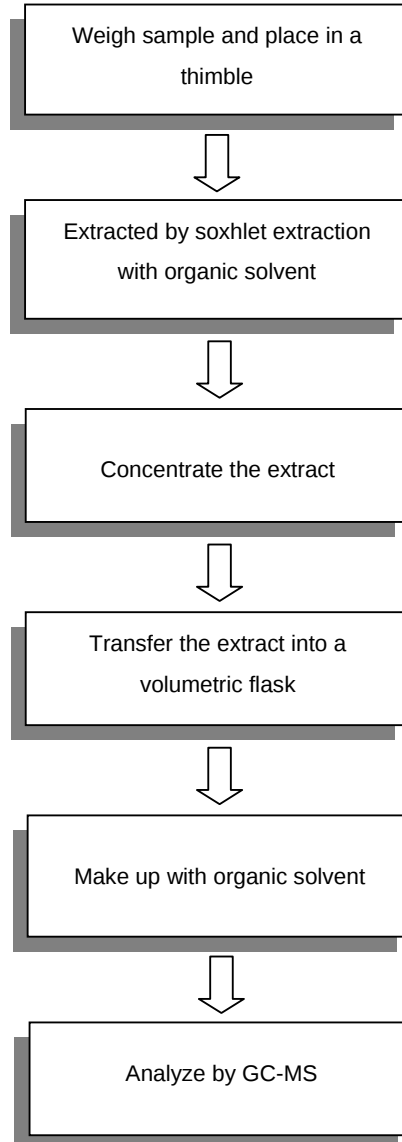
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To be continued

Tests Conducted

Measurement flowchart:

Test for **phthalate** content



\*\*\*\*\*  
To be continued



**Test Report**

Number: 131000457SHA-009

Tests Conducted

3. HBCDD content

( I )Test result summary:

| <u>Testing item</u>            | <u>Result (ppm)</u> |
|--------------------------------|---------------------|
| HBCDD (hexabromocyclododecane) | ND                  |

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

(II) Test method:

| <u>Testing item</u>            | <u>Testing method</u>                                                         | <u>Reporting limit</u> |
|--------------------------------|-------------------------------------------------------------------------------|------------------------|
| HBCDD (hexabromocyclododecane) | With reference to US EPA 3540C, by solvent extraction and determined by GC-MS | 10 ppm                 |

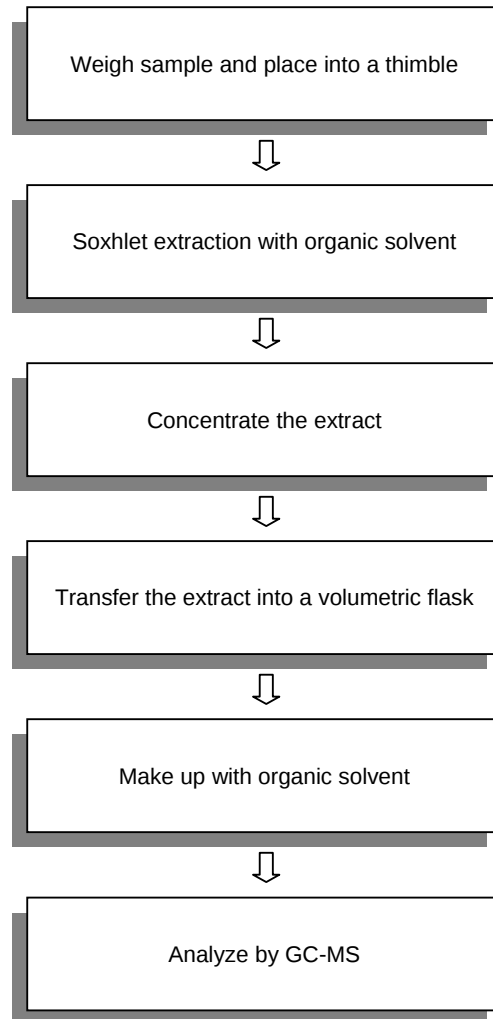
\*\*\*\*\*

To be continued

Tests Conducted

Measurement flowchart:

Test for HBCDD (hexabromocyclododecane) content



\*\*\*\*\*

To be continued



**Test Report**

**Number: 131000457SHA-009**

Tests Conducted

**4. Total Antimony (Sb) Content**

As per client's request, acid digestion method was used and total Antimony content was determined by Inductively Coupled Argon Plasma Spectrometry.

Result: <10ppm

Remark: ppm = parts per million = mg/kg

Date sample received: Oct. 16, 2013

Testing period: Oct. 16, 2013 To Oct. 29, 2013

\*\*\*\*\*

To be continued

Tests Conducted



Picture was provided by applicant

\*\*\*\*\*

**End of report**

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**Test Report**

**Number: 131000457SHA-002**

Applicant: LITTELFUSE, INC.  
800 E. NORTHWEST HWY  
DES PLAINES, IL 60016  
ATTN: J. CABILAN / A. CESISTA JR

Date: Oct. 29, 2013

**Sample Description:**

One (1) submitted sample said to be: **Blue ink**  
Part Description : INK - BLUE  
Part Number : 425904

\*\*\*\*\*

**Tests conducted:**

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

\*\*\*\*\*

**Conclusion:**

| <u>Tested sample</u> | <u>Standard</u>                                                                                                                           | <u>Result</u> |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Submitted sample     | With reference to test method of IEC 62321 Edition 1.0: 2008<br>and maximum concentration limits quoted from RoHS Directive<br>2011/65/EU | Pass          |

\*\*\*\*\*

To be continued

Prepared and check by:  
For Intertek Testing Services Ltd., Shanghai

Authorized by:  
For Intertek testing services Ltd., Shanghai

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Joy Zhou

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Jonny Jing  
Manager

**Tests Conducted**
**1. RoHS testing and Halogen content**
**(I) Test Result Summary:**

| Testing Item                                  | Result (ppm) |
|-----------------------------------------------|--------------|
| <b>Heavy Metal</b>                            |              |
| Cadmium (Cd) content                          | ND           |
| Lead (Pb) content                             | ND           |
| Mercury (Hg) content                          | ND           |
| Chromium VI (Cr <sup>6+</sup> ) content       | ND           |
| <b>Polybrominated Biphenyls (PBBs)</b>        |              |
| 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           |
| <b>Polybrominated Diphenyl Ethers (PBDEs)</b> |              |
| 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           |
| <b>Halogen Content</b>                        |              |
| Fluorine (F)                                  | ND           |
| Chlorine (Cl)                                 | 300          |
| Bromine (Br)                                  | ND           |
| Iodine (I)                                    | ND           |

Remarks: ppm = parts per million = mg/kg

ND = not detected

Responsibility of Chemist: Dent Fang / Leaf Liu

\*\*\*\*\*

To be continued

**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 <sup>6+</sup> ) 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 2011/65/EU 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 <sup>6+</sup> ) 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 combustion flask with oxygen and determined by Ion Chromatography                                                            | 50 ppm                 |

Remark: Reporting limit = Quantitation Limit of Analyze in Sample

\*\*\*\*\*

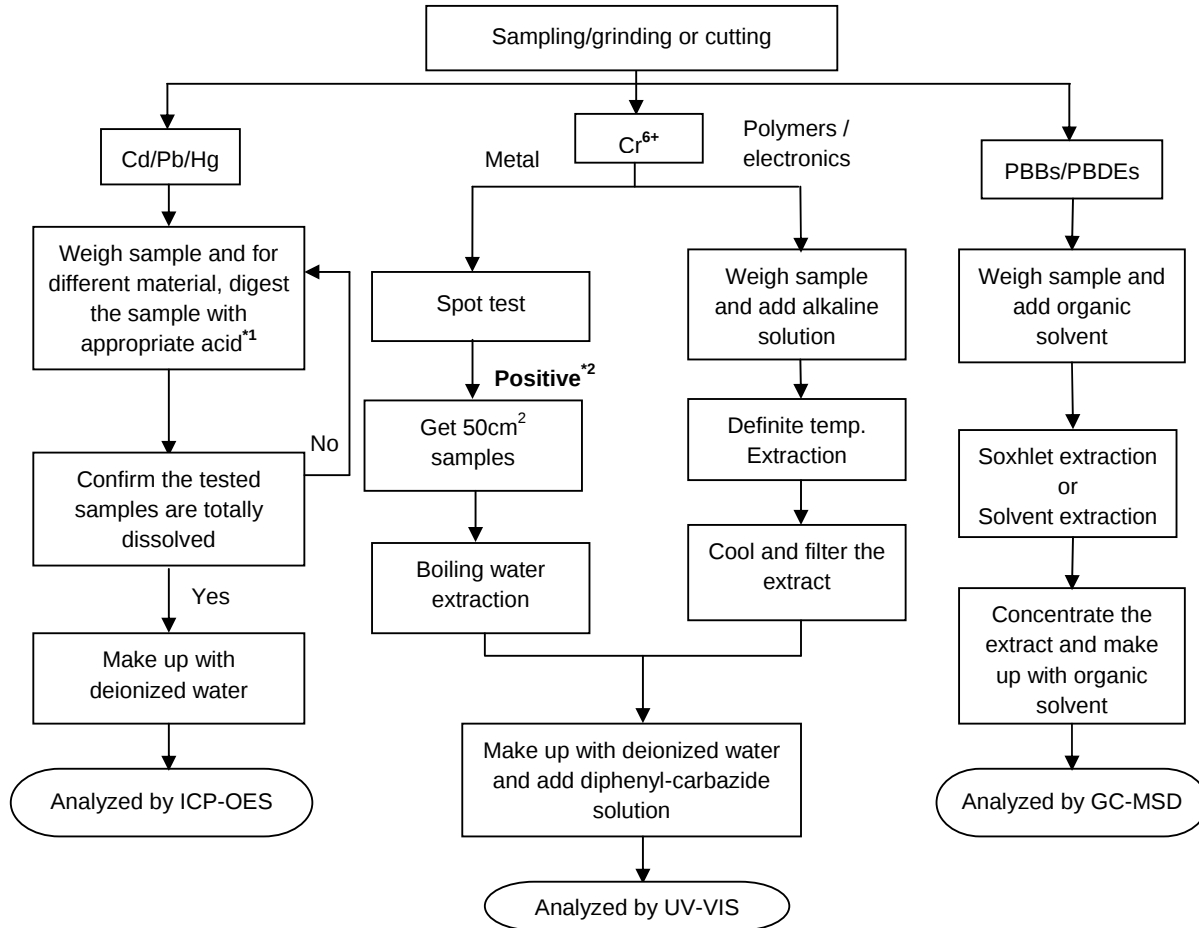
To be continued

Tests Conducted

(IV) Measurement Flowchart:

Test for Cd/ Pb/ Hg/Cr (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 <sub>3</sub> ,HCl,HF,H <sub>2</sub> O <sub>2</sub> ,H <sub>3</sub> BO <sub>3</sub> |
| Metals      | HNO <sub>3</sub> ,HCL,HF                                                               |
| Electronics | HNO <sub>3</sub> ,HCL,H <sub>2</sub> O <sub>2</sub> ,HBF <sub>4</sub>                  |

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

\*\*\*\*\*

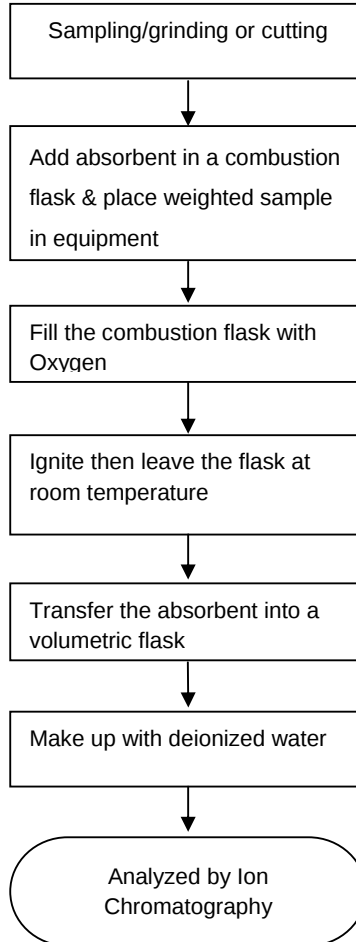
To be continued

Tests Conducted

(V) Measurement flowchart:

Test or Halogen content

Reference standard: EN 14582



\*\*\*\*\*

To be continued



**Test Report**

**Number: 131000457SHA-002**

Tests Conducted

2. Phthalate content test

With reference to EN 14372 by Gas Chromatography-Mass Spectrometry (GC-MS) analysis.

| <u>Tested Compound</u>            | <u>Result (% w/w)</u> | <u>Client' requirement (% w/w)</u> |
|-----------------------------------|-----------------------|------------------------------------|
| Di-butyl phthalate (DBP)          | ND                    | -                                  |
| Di(2-ethyl hexyl) phthalate(DEHP) | ND                    | -                                  |
| Benzyl butyl phthalate (BBP)      | ND                    | -                                  |
| Sum of three phthalates           | ND                    | 0.1                                |
| Di-iso-butyl phthalate (DIBP)     | ND                    | 0.1                                |

Remark : Detection Limit = 0.01%(w/w)

ND = Not Detected

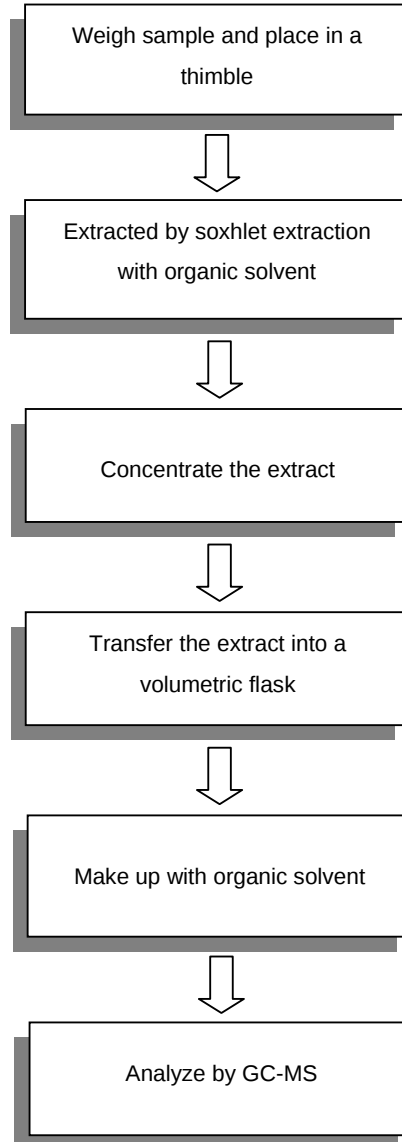
\*\*\*\*\*

To be continued

Tests Conducted

Measurement flowchart:

Test for **phthalate** content



\*\*\*\*\*  
To be continued



**Test Report**

Number: 131000457SHA-002

Tests Conducted

3. HBCDD content

( I )Test result summary:

| <u>Testing item</u>            | <u>Result (ppm)</u> |
|--------------------------------|---------------------|
| HBCDD (hexabromocyclododecane) | ND                  |

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

(II) Test method:

| <u>Testing item</u>            | <u>Testing method</u>                                                         | <u>Reporting limit</u> |
|--------------------------------|-------------------------------------------------------------------------------|------------------------|
| HBCDD (hexabromocyclododecane) | With reference to US EPA 3540C, by solvent extraction and determined by GC-MS | 10 ppm                 |

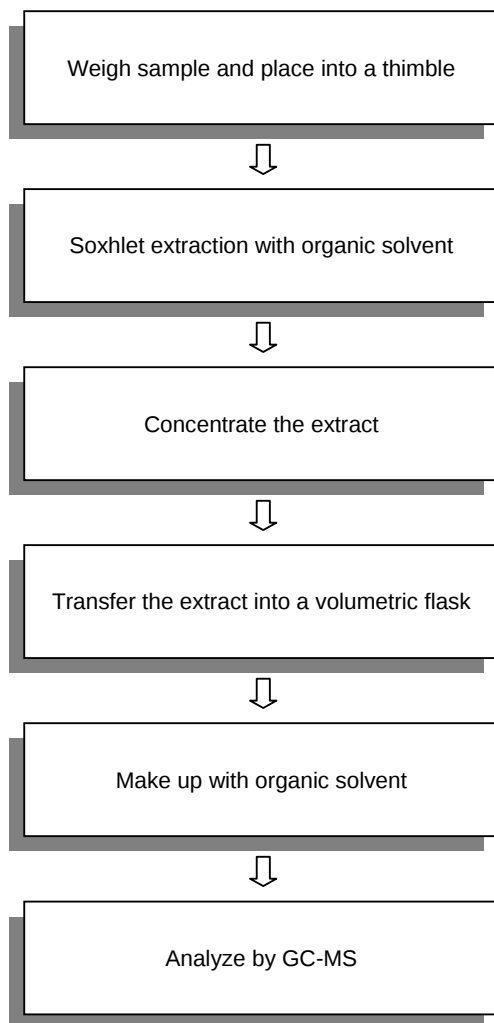
\*\*\*\*\*

To be continued

Tests Conducted

Measurement flowchart:

Test for HBCDD (hexabromocyclododecane) content



\*\*\*\*\*

To be continued



**Test Report**

**Number: 131000457SHA-002**

Tests Conducted

4. Total Antimony (Sb) Content

As per client's request, acid digestion method was used and total Antimony content was determined by Inductively Coupled Argon Plasma Spectrometry.

Result: <10ppm

Remark: ppm = parts per million = mg/kg

Date sample received: Oct. 16, 2013

Testing period: Oct. 16, 2013 To Oct. 29, 2013

\*\*\*\*\*

To be continued

Tests Conducted



Picture was provided by applicant

\*\*\*\*\*

**End of report**

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**Test Report**

**Number: 131000457SHA-003**

Applicant: LITTELFUSE, INC.  
800 E. NORTHWEST HWY  
DES PLAINES, IL 60016  
ATTN: J. CABILAN / A. CESISTA JR

Date: Oct. 29, 2013

**Sample Description:**

One (1) submitted sample said to be: **Brown ink**  
Part Description : INK - BROWN  
Part Number : 425906

\*\*\*\*\*

**Tests conducted:**

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

\*\*\*\*\*

**Conclusion:**

| <u>Tested sample</u> | <u>Standard</u>                                                                                                                           | <u>Result</u> |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Submitted sample     | With reference to test method of IEC 62321 Edition 1.0: 2008<br>and maximum concentration limits quoted from RoHS Directive<br>2011/65/EU | Pass          |

\*\*\*\*\*

To be continued

Prepared and check by:  
For Intertek Testing Services Ltd., Shanghai

Authorized by:  
For Intertek testing services Ltd., Shanghai

\_\_\_\_\_  
Joy Zhou

\_\_\_\_\_  
Jonny Jing  
Manager

**Tests Conducted**
**1. RoHS testing and Halogen content**
**(I) Test Result Summary:**

| Testing Item                                  | Result (ppm) |
|-----------------------------------------------|--------------|
| <b>Heavy Metal</b>                            |              |
| Cadmium (Cd) content                          | ND           |
| Lead (Pb) content                             | ND           |
| Mercury (Hg) content                          | ND           |
| Chromium VI (Cr <sup>6+</sup> ) content       | ND           |
| <b>Polybrominated Biphenyls (PBBs)</b>        |              |
| 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           |
| <b>Polybrominated Diphenyl Ethers (PBDEs)</b> |              |
| 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           |
| <b>Halogen Content</b>                        |              |
| Fluorine (F)                                  | ND           |
| Chlorine (Cl)                                 | 9800         |
| Bromine (Br)                                  | ND           |
| Iodine (I)                                    | ND           |

Remarks: ppm = parts per million = mg/kg

ND = not detected

Responsibility of Chemist: Dent Fang / Leaf Liu

\*\*\*\*\*

To be continued

**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 <sup>6+</sup> ) 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 2011/65/EU 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 <sup>6+</sup> ) 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 combustion flask with oxygen and determined by Ion Chromatography                                                            | 50 ppm                 |

Remark: Reporting limit = Quantitation Limit of Analyze in Sample

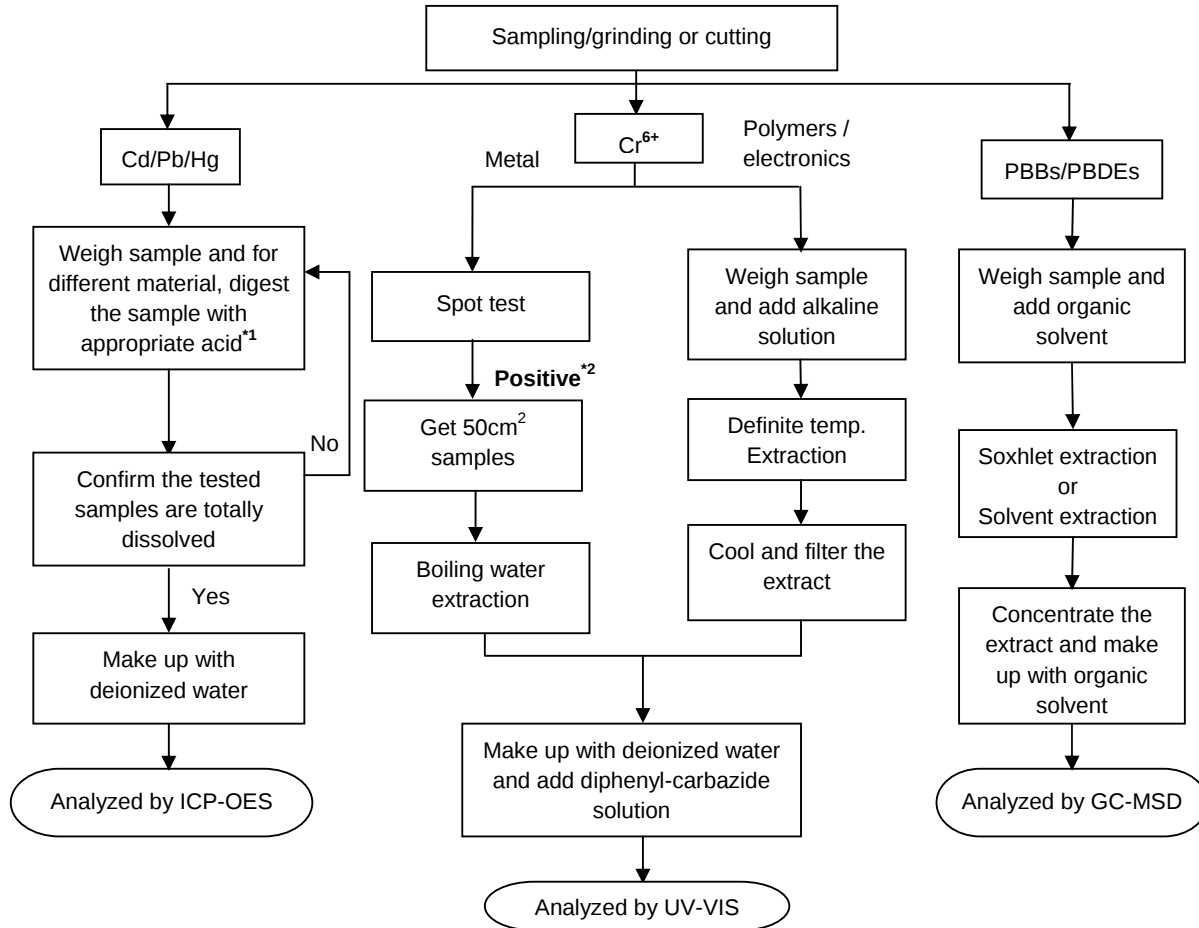
\*\*\*\*\*  
To be continued

Tests Conducted

(IV) Measurement Flowchart:

Test for Cd/ Pb/ Hg/Cr (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 <sub>3</sub> ,HCl,HF,H <sub>2</sub> O <sub>2</sub> ,H <sub>3</sub> BO <sub>3</sub> |
| Metals      | HNO <sub>3</sub> ,HCL,HF                                                               |
| Electronics | HNO <sub>3</sub> ,HCL,H <sub>2</sub> O <sub>2</sub> ,HBF <sub>4</sub>                  |

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

\*\*\*\*\*

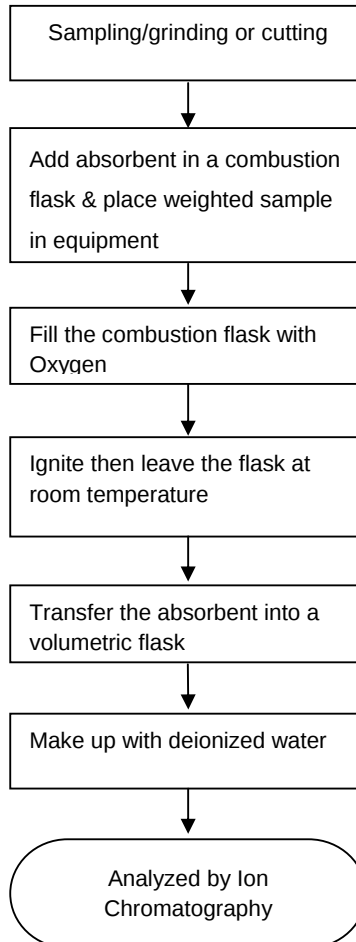
To be continued

Tests Conducted

(V) Measurement flowchart:

Test or Halogen content

Reference standard: EN 14582



\*\*\*\*\*

To be continued



**Test Report**

**Number: 131000457SHA-003**

Tests Conducted

2. Phthalate content test

With reference to EN 14372 by Gas Chromatography-Mass Spectrometry (GC-MS) analysis.

| <u>Tested Compound</u>            | <u>Result (% w/w)</u> | <u>Client' requirement (% w/w)</u> |
|-----------------------------------|-----------------------|------------------------------------|
| Di-butyl phthalate (DBP)          | ND                    | -                                  |
| Di(2-ethyl hexyl) phthalate(DEHP) | ND                    | -                                  |
| Benzyl butyl phthalate (BBP)      | ND                    | -                                  |
| Sum of three phthalates           | ND                    | 0.1                                |
| Di-iso-butyl phthalate (DIBP)     | ND                    | 0.1                                |

Remark : Detection Limit = 0.01%(w/w)

ND = Not Detected

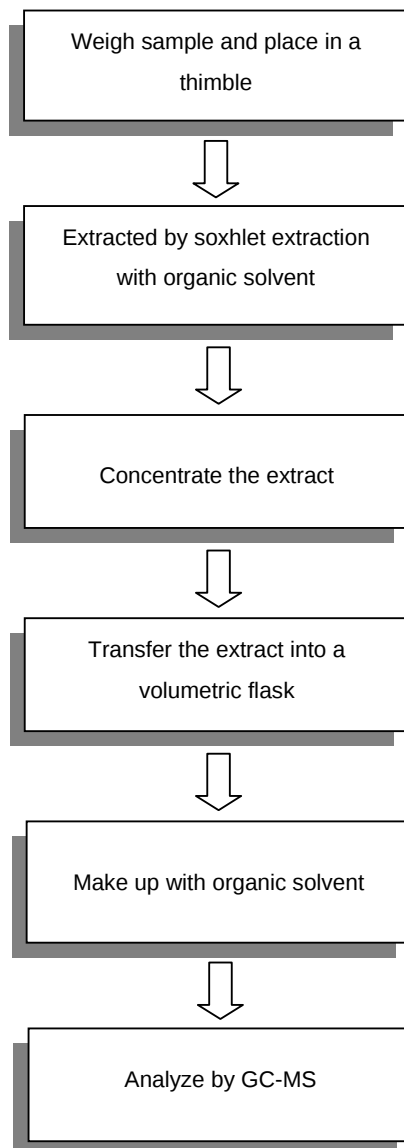
\*\*\*\*\*

To be continued

Tests Conducted

Measurement flowchart:

Test for **phthalate** content



\*\*\*\*\*

To be continued



**Test Report**

**Number: 131000457SHA-003**

Tests Conducted

3. HBCDD content

( I )Test result summary:

| <u>Testing item</u>            | <u>Result (ppm)</u> |
|--------------------------------|---------------------|
| HBCDD (hexabromocyclododecane) | ND                  |

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

( II ) Test method:

| <u>Testing item</u>            | <u>Testing method</u>                                                         | <u>Reporting limit</u> |
|--------------------------------|-------------------------------------------------------------------------------|------------------------|
| HBCDD (hexabromocyclododecane) | With reference to US EPA 3540C, by solvent extraction and determined by GC-MS | 10 ppm                 |

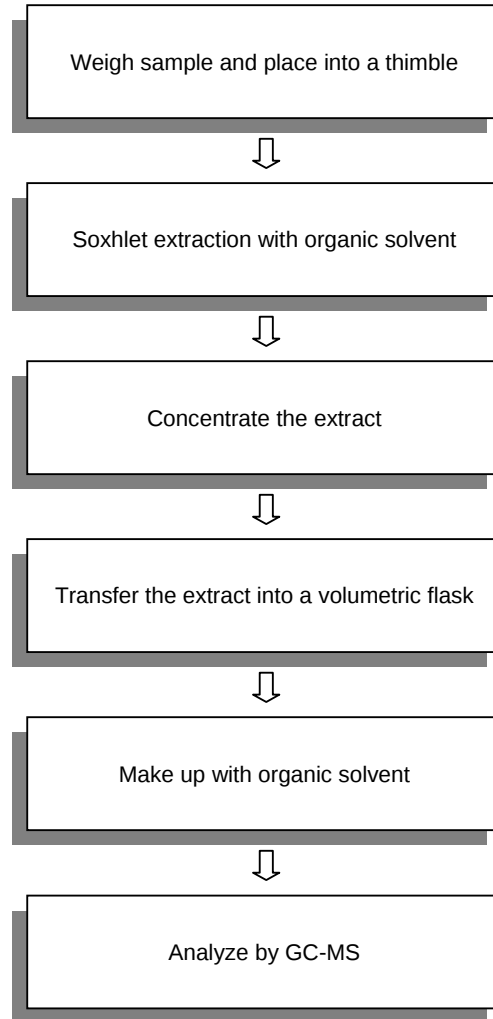
\*\*\*\*\*

To be continued

Tests Conducted

Measurement flowchart:

Test for HBCDD (hexabromocyclododecane) content



\*\*\*\*\*

To be continued



**Test Report**

**Number: 131000457SHA-003**

Tests Conducted

4. Total Antimony (Sb) Content

As per client's request, acid digestion method was used and total Antimony content was determined by Inductively Coupled Argon Plasma Spectrometry.

Result: <10ppm

Remark: ppm = parts per million = mg/kg

Date sample received: Oct. 16, 2013

Testing period: Oct. 16, 2013 To Oct. 29, 2013

\*\*\*\*\*

To be continued

## Test Report

**Number: 131000457SHA-003**

## Tests Conducted



Picture was provided by applicant

\*\*\*\*\*

**End of report**

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**Test Report**

**Number: 131000457SHA-004**

Applicant: LITTELFUSE, INC.  
800 E. NORTHWEST HWY  
DES PLAINES, IL 60016  
ATTN: J. CABILAN / A. CESISTA JR

Date: Oct. 29, 2013

**Sample Description:**

One (1) submitted sample said to be: **Green ink**  
Part Description : INK - GREEN  
Part Number : 425907

\*\*\*\*\*

**Tests conducted:**

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

\*\*\*\*\*

**Conclusion:**

| <u>Tested sample</u> | <u>Standard</u>                                                                                                                           | <u>Result</u> |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Submitted sample     | With reference to test method of IEC 62321 Edition 1.0: 2008<br>and maximum concentration limits quoted from RoHS Directive<br>2011/65/EU | Pass          |

\*\*\*\*\*

To be continued

Prepared and check by:  
For Intertek Testing Services Ltd., Shanghai

Authorized by:  
For Intertek testing services Ltd., Shanghai

\_\_\_\_\_  
Joy Zhou

\_\_\_\_\_  
Jonny Jing  
Manager

**Tests Conducted**
**1. RoHS testing and Halogen content**
**(I) Test Result Summary:**

| Testing Item                                  | Result (ppm) |
|-----------------------------------------------|--------------|
| <b>Heavy Metal</b>                            |              |
| Cadmium (Cd) content                          | ND           |
| Lead (Pb) content                             | ND           |
| Mercury (Hg) content                          | ND           |
| Chromium VI (Cr <sup>6+</sup> ) content       | ND           |
| <b>Polybrominated Biphenyls (PBBs)</b>        |              |
| 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           |
| <b>Polybrominated Diphenyl Ethers (PBDEs)</b> |              |
| 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           |
| <b>Halogen Content</b>                        |              |
| Fluorine (F)                                  | ND           |
| Chlorine (Cl)                                 | 700          |
| Bromine (Br)                                  | ND           |
| Iodine (I)                                    | ND           |

Remarks: ppm = parts per million = mg/kg  
ND = not detected

Responsibility of Chemist: Dent Fang / Leaf Liu

\*\*\*\*\*

To be continued

**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 <sup>6+</sup> ) 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 2011/65/EU 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 <sup>6+</sup> ) 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 combustion flask with oxygen and determined by Ion Chromatography                                                            | 50 ppm                 |

Remark: Reporting limit = Quantitation Limit of Analyze in Sample

\*\*\*\*\*

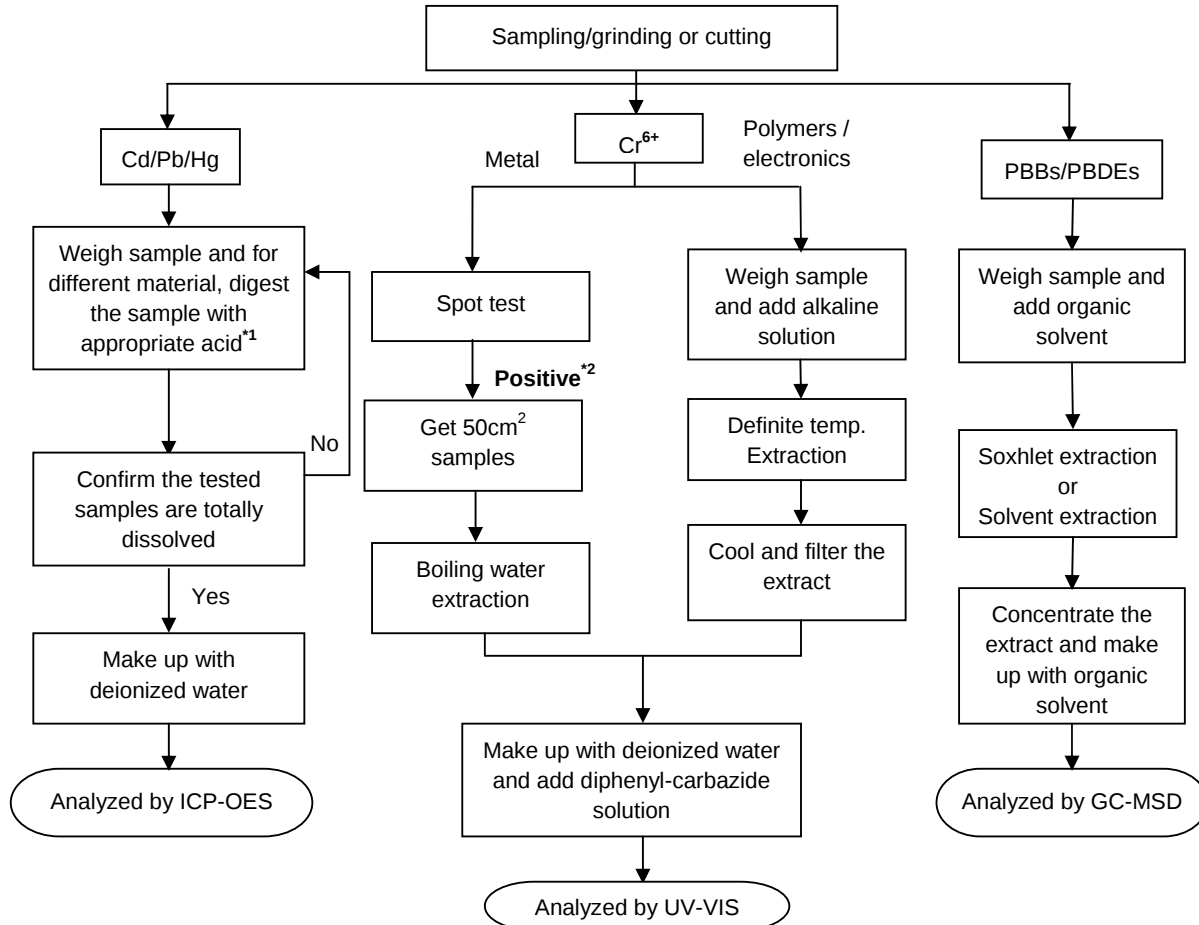
To be continued

Tests Conducted

(IV) Measurement Flowchart:

Test for Cd/ Pb/ Hg/Cr (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 <sub>3</sub> ,HCl,HF,H <sub>2</sub> O <sub>2</sub> ,H <sub>3</sub> BO <sub>3</sub> |
| Metals      | HNO <sub>3</sub> ,HCL,HF                                                               |
| Electronics | HNO <sub>3</sub> ,HCL,H <sub>2</sub> O <sub>2</sub> ,HBF <sub>4</sub>                  |

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

\*\*\*\*\*

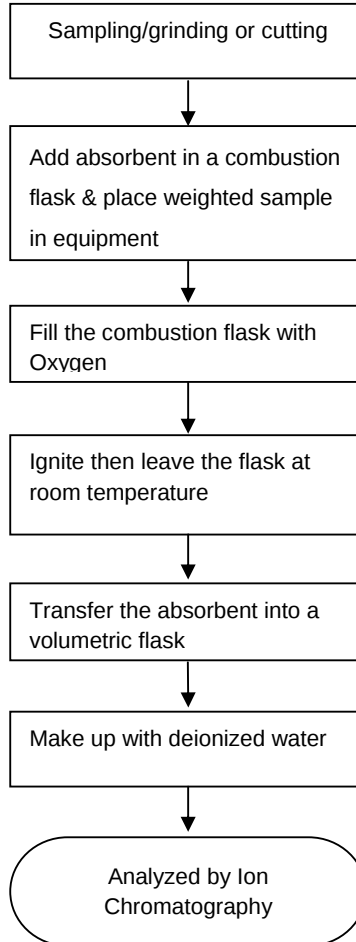
To be continued

Tests Conducted

(V) Measurement flowchart:

Test or Halogen content

Reference standard: EN 14582



\*\*\*\*\*

To be continued



**Test Report**

**Number: 131000457SHA-004**

Tests Conducted

2. Phthalate content test

With reference to EN 14372 by Gas Chromatography-Mass Spectrometry (GC-MS) analysis.

| <u>Tested Compound</u>            | <u>Result (% w/w)</u> | <u>Client' requirement (% w/w)</u> |
|-----------------------------------|-----------------------|------------------------------------|
| Di-butyl phthalate (DBP)          | ND                    | -                                  |
| Di(2-ethyl hexyl) phthalate(DEHP) | ND                    | -                                  |
| Benzyl butyl phthalate (BBP)      | ND                    | -                                  |
| Sum of three phthalates           | ND                    | 0.1                                |
| Di-iso-butyl phthalate (DIBP)     | ND                    | 0.1                                |

Remark : Detection Limit = 0.01%(w/w)

ND = Not Detected

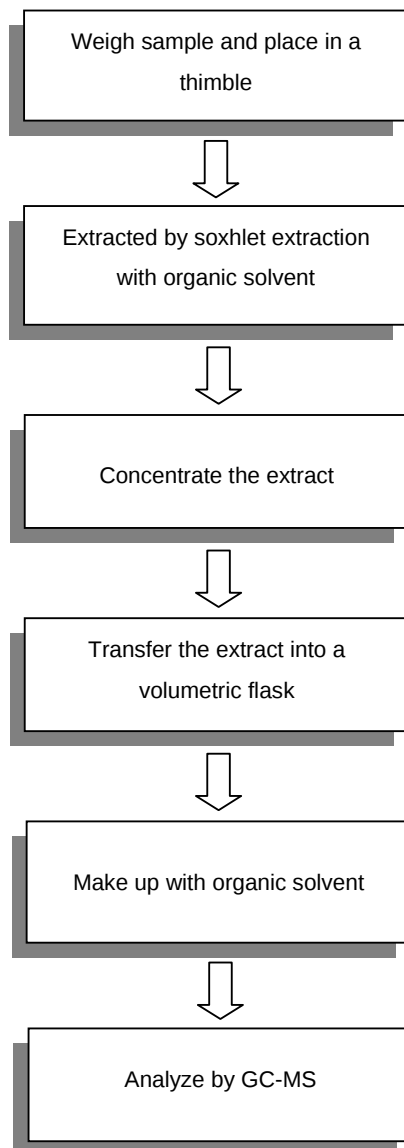
\*\*\*\*\*

To be continued

Tests Conducted

Measurement flowchart:

Test for **phthalate** content



\*\*\*\*\*

To be continued



**Test Report**

**Number: 131000457SHA-004**

Tests Conducted

3. HBCDD content

( I )Test result summary:

| <u>Testing item</u>            | <u>Result (ppm)</u> |
|--------------------------------|---------------------|
| HBCDD (hexabromocyclododecane) | ND                  |

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

( II ) Test method:

| <u>Testing item</u>            | <u>Testing method</u>                                                         | <u>Reporting limit</u> |
|--------------------------------|-------------------------------------------------------------------------------|------------------------|
| HBCDD (hexabromocyclododecane) | With reference to US EPA 3540C, by solvent extraction and determined by GC-MS | 10 ppm                 |

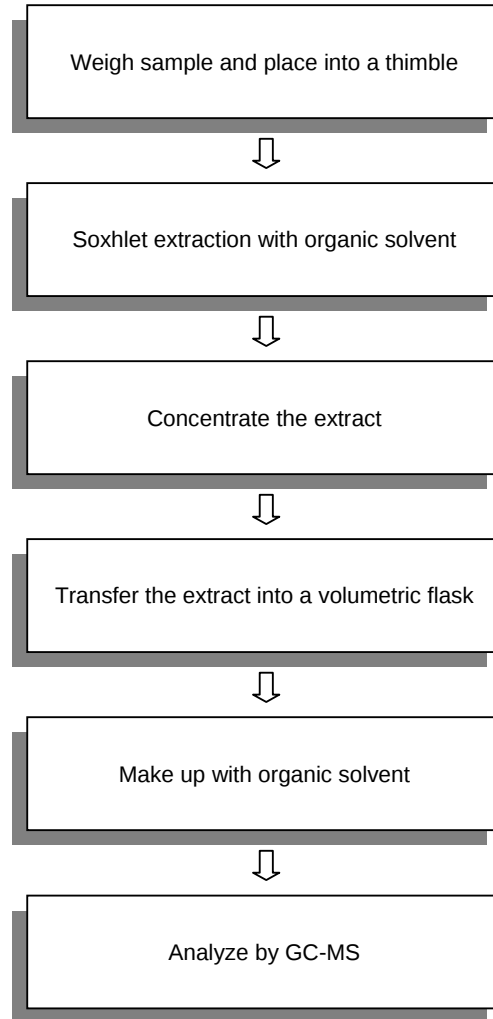
\*\*\*\*\*

To be continued

Tests Conducted

Measurement flowchart:

Test for HBCDD (hexabromocyclododecane) content



\*\*\*\*\*

To be continued



**Test Report**

**Number: 131000457SHA-004**

Tests Conducted

4. Total Antimony (Sb) Content

As per client's request, acid digestion method was used and total Antimony content was determined by Inductively Coupled Argon Plasma Spectrometry.

Result: <10ppm

Remark: ppm = parts per million = mg/kg

Date sample received: Oct. 16, 2013

Testing period: Oct. 16, 2013 To Oct. 29, 2013

\*\*\*\*\*

To be continued

## Test Report

**Number: 131000457SHA-004**

## Tests Conducted



Picture was provided by applicant

\*\*\*\*\*

## End of report

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**Test Report**

**Number: 131000457SHA-005**

Applicant: LITTELFUSE, INC.  
800 E. NORTHWEST HWY  
DES PLAINES, IL 60016  
ATTN: J. CABILAN / A. CESISTA JR

Date: Oct. 29, 2013

**Sample Description:**

One (1) submitted sample said to be: **Grey ink**  
Part Description : INK - GREY  
Part Number : 425909

\*\*\*\*\*

**Tests conducted:**

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

\*\*\*\*\*

**Conclusion:**

| <u>Tested sample</u> | <u>Standard</u>                                                                                                                           | <u>Result</u> |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Submitted sample     | With reference to test method of IEC 62321 Edition 1.0: 2008<br>and maximum concentration limits quoted from RoHS Directive<br>2011/65/EU | Pass          |

\*\*\*\*\*

To be continued

Prepared and check by:  
For Intertek Testing Services Ltd., Shanghai

Authorized by:  
For Intertek testing services Ltd., Shanghai

\_\_\_\_\_  
Joy Zhou

\_\_\_\_\_  
Jonny Jing  
Manager

**Tests Conducted**
**1. RoHS testing and Halogen content**
**(I) Test Result Summary:**

| Testing Item                                  | Result (ppm) |
|-----------------------------------------------|--------------|
| <b>Heavy Metal</b>                            |              |
| Cadmium (Cd) content                          | ND           |
| Lead (Pb) content                             | ND           |
| Mercury (Hg) content                          | ND           |
| Chromium VI (Cr <sup>6+</sup> ) content       | ND           |
| <b>Polybrominated Biphenyls (PBBs)</b>        |              |
| 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           |
| <b>Polybrominated Diphenyl Ethers (PBDEs)</b> |              |
| 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           |
| <b>Halogen Content</b>                        |              |
| 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 / Leaf Liu

\*\*\*\*\*

To be continued

**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 <sup>6+</sup> ) 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 2011/65/EU 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 <sup>6+</sup> ) 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 combustion flask with oxygen and determined by Ion Chromatography                                                            | 50 ppm                 |

Remark: Reporting limit = Quantitation Limit of Analyze in Sample

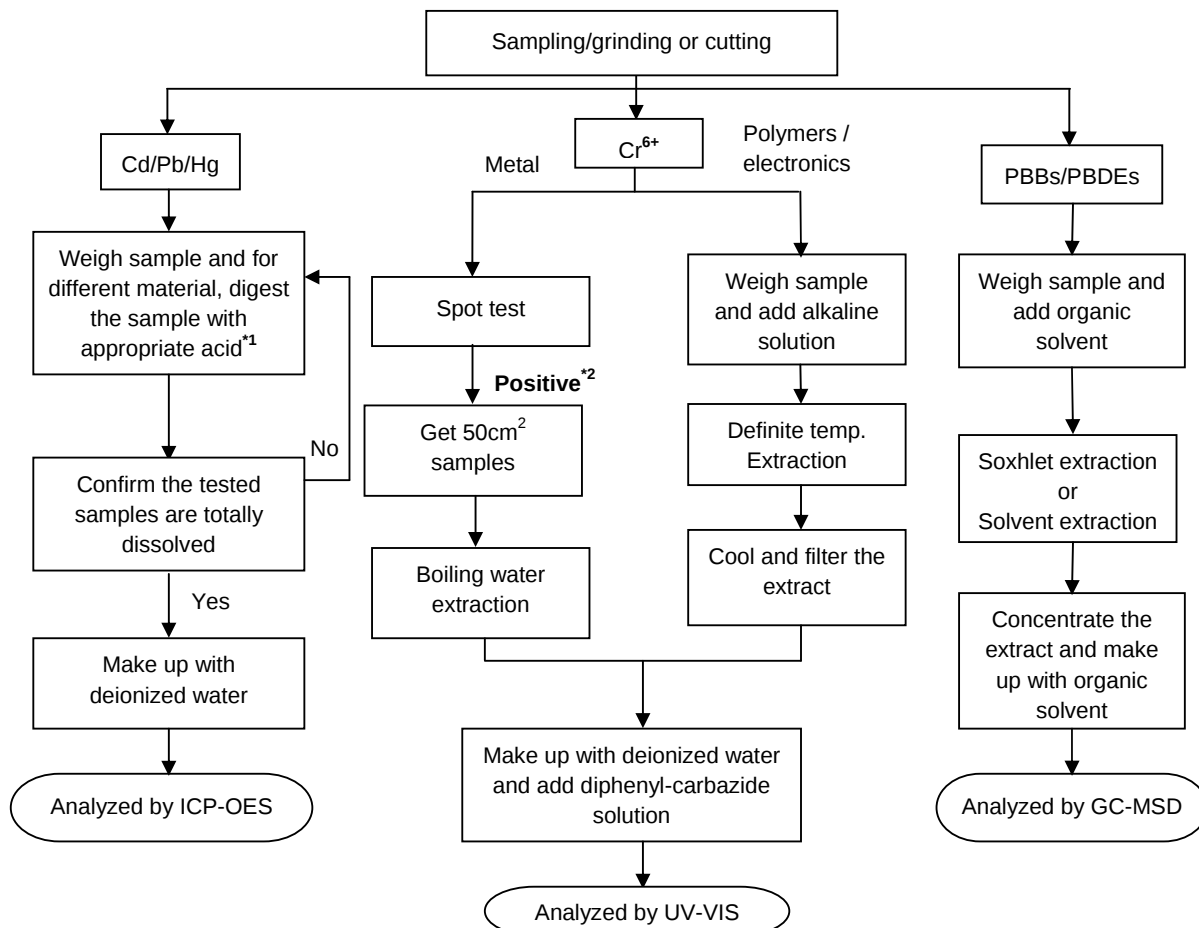
\*\*\*\*\*  
To be continued

Tests Conducted

(IV) Measurement Flowchart:

Test for Cd/ Pb/ Hg/Cr (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 <sub>3</sub> ,HCl,HF,H <sub>2</sub> O <sub>2</sub> ,H <sub>3</sub> BO <sub>3</sub> |
| Metals      | HNO <sub>3</sub> ,HCL,HF                                                               |
| Electronics | HNO <sub>3</sub> ,HCL,H <sub>2</sub> O <sub>2</sub> ,HBF <sub>4</sub>                  |

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

\*\*\*\*\*

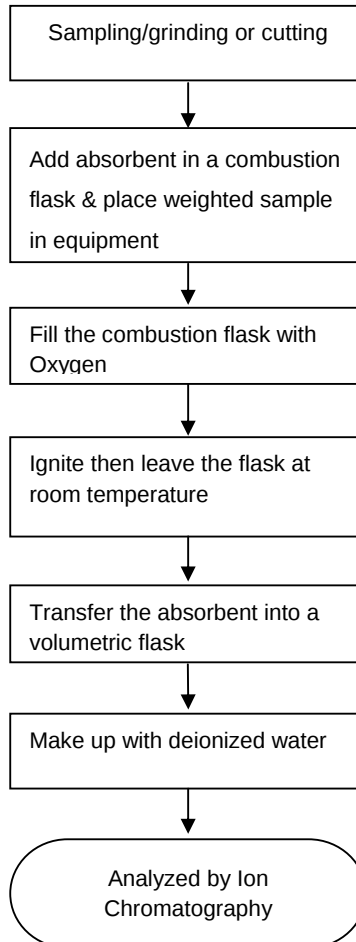
To be continued

Tests Conducted

(V) Measurement flowchart:

Test or Halogen content

Reference standard: EN 14582



\*\*\*\*\*

To be continued



**Test Report**

**Number: 131000457SHA-005**

Tests Conducted

2. Phthalate content test

With reference to EN 14372 by Gas Chromatography-Mass Spectrometry (GC-MS) analysis.

| <u>Tested Compound</u>            | <u>Result (%w/w)</u> | <u>Client' requirement (% w/w)</u> |
|-----------------------------------|----------------------|------------------------------------|
| Di-butyl phthalate (DBP)          | ND                   | -                                  |
| Di(2-ethyl hexyl) phthalate(DEHP) | ND                   | -                                  |
| Benzyl butyl phthalate (BBP)      | ND                   | -                                  |
| Sum of three phthalates           | ND                   | 0.1                                |
| Di-iso-butyl phthalate (DIBP)     | ND                   | 0.1                                |

Remark : Detection Limit = 0.01%(w/w)

ND = Not Detected

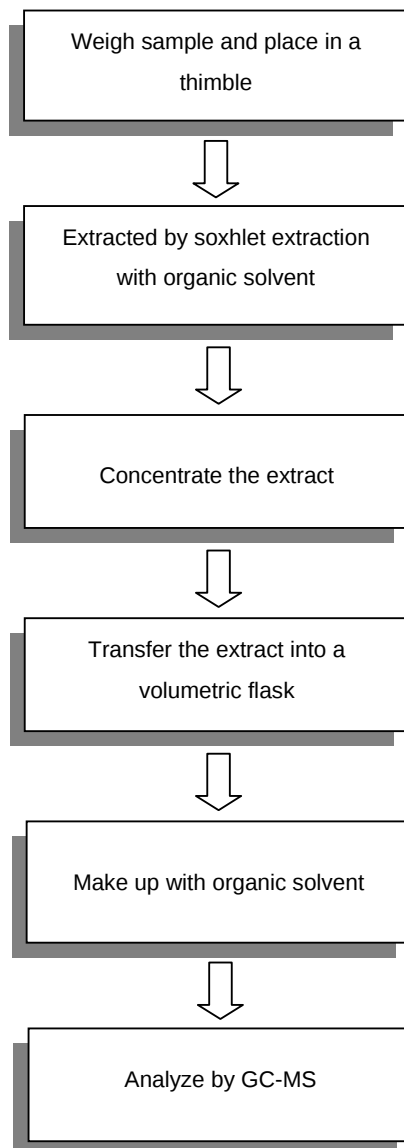
\*\*\*\*\*

To be continued

Tests Conducted

Measurement flowchart:

Test for **phthalate** content



\*\*\*\*\*

To be continued



**Test Report**

**Number: 131000457SHA-005**

Tests Conducted

3. HBCDD content

( I )Test result summary:

| <u>Testing item</u>            | <u>Result (ppm)</u> |
|--------------------------------|---------------------|
| HBCDD (hexabromocyclododecane) | ND                  |

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

( II ) Test method:

| <u>Testing item</u>            | <u>Testing method</u>                                                         | <u>Reporting limit</u> |
|--------------------------------|-------------------------------------------------------------------------------|------------------------|
| HBCDD (hexabromocyclododecane) | With reference to US EPA 3540C, by solvent extraction and determined by GC-MS | 10 ppm                 |

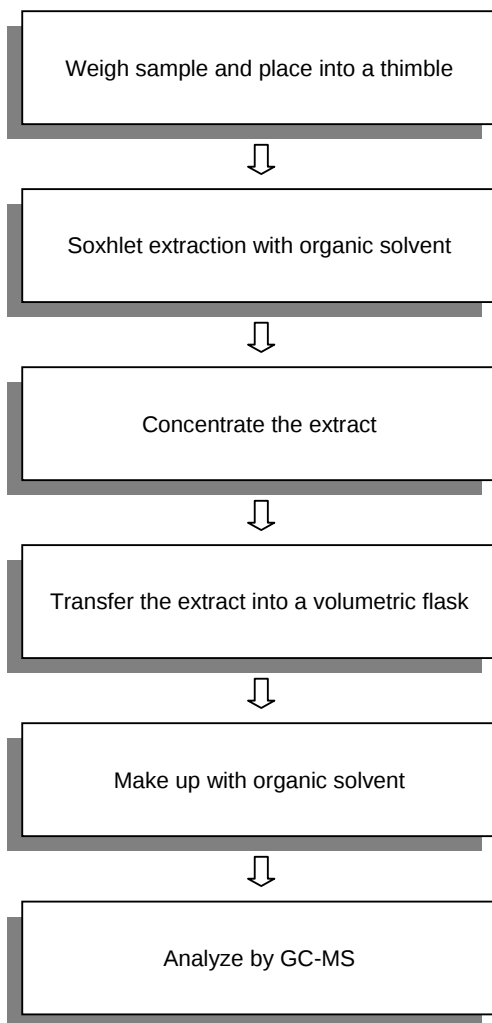
\*\*\*\*\*

To be continued

Tests Conducted

Measurement flowchart:

Test for HBCDD (hexabromocyclododecane) content



\*\*\*\*\*

To be continued



**Test Report**

**Number: 131000457SHA-005**

Tests Conducted

4. Total Antimony (Sb) Content

As per client's request, acid digestion method was used and total Antimony content was determined by Inductively Coupled Argon Plasma Spectrometry.

Result: <10ppm

Remark: ppm = parts per million = mg/kg

Date sample received: Oct. 16, 2013

Testing period: Oct. 16, 2013 To Oct. 29, 2013

\*\*\*\*\*

To be continued

Tests Conducted



Picture was provided by applicant

\*\*\*\*\*

**End of report**

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**Test Report**

**Number: 131000457SHA-011**

Applicant: LITTELFUSE, INC.  
800 E. NORTHWEST HWY  
DES PLAINES, IL 60016  
ATTN: J. CABILAN / A. CESISTA JR

Date: Oct. 29, 2013

**Sample Description:**

One (1) submitted sample said to be: **White ink**  
Part Description : INK- WHITE  
Part Number : 425912

\*\*\*\*\*

**Tests conducted:**

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

\*\*\*\*\*

**Conclusion:**

| <u>Tested sample</u> | <u>Standard</u>                                                                                                                           | <u>Result</u> |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Submitted sample     | With reference to test method of IEC 62321 Edition 1.0: 2008<br>and maximum concentration limits quoted from RoHS Directive<br>2011/65/EU | Pass          |

\*\*\*\*\*

To be continued

Prepared and check by:  
For Intertek Testing Services Ltd., Shanghai

Authorized by:  
For Intertek testing services Ltd., Shanghai

\_\_\_\_\_  
Joy Zhou

\_\_\_\_\_  
Jonny Jing  
Manager

**Tests Conducted**
**1. RoHS testing and Halogen content**
**(I) Test Result Summary:**

| Testing Item                                  | Result (ppm) |
|-----------------------------------------------|--------------|
| <b>Heavy Metal</b>                            |              |
| Cadmium (Cd) content                          | ND           |
| Lead (Pb) content                             | ND           |
| Mercury (Hg) content                          | ND           |
| Chromium VI (Cr <sup>6+</sup> ) content       | ND           |
| <b>Polybrominated Biphenyls (PBBs)</b>        |              |
| 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           |
| <b>Polybrominated Diphenyl Ethers (PBDEs)</b> |              |
| 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           |
| <b>Halogen Content</b>                        |              |
| Fluorine (F)                                  | ND           |
| Chlorine (Cl)                                 | 100          |
| Bromine (Br)                                  | ND           |
| Iodine (I)                                    | ND           |

Remarks: ppm = parts per million = mg/kg  
ND = not detected

Responsibility of Chemist: Dent Fang / Leaf Liu

\*\*\*\*\*

To be continued

**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 <sup>6+</sup> ) 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 2011/65/EU 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 <sup>6+</sup> ) 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 combustion flask with oxygen and determined by Ion Chromatography                                                            | 50 ppm                 |

Remark: Reporting limit = Quantitation Limit of Analyze in Sample

\*\*\*\*\*

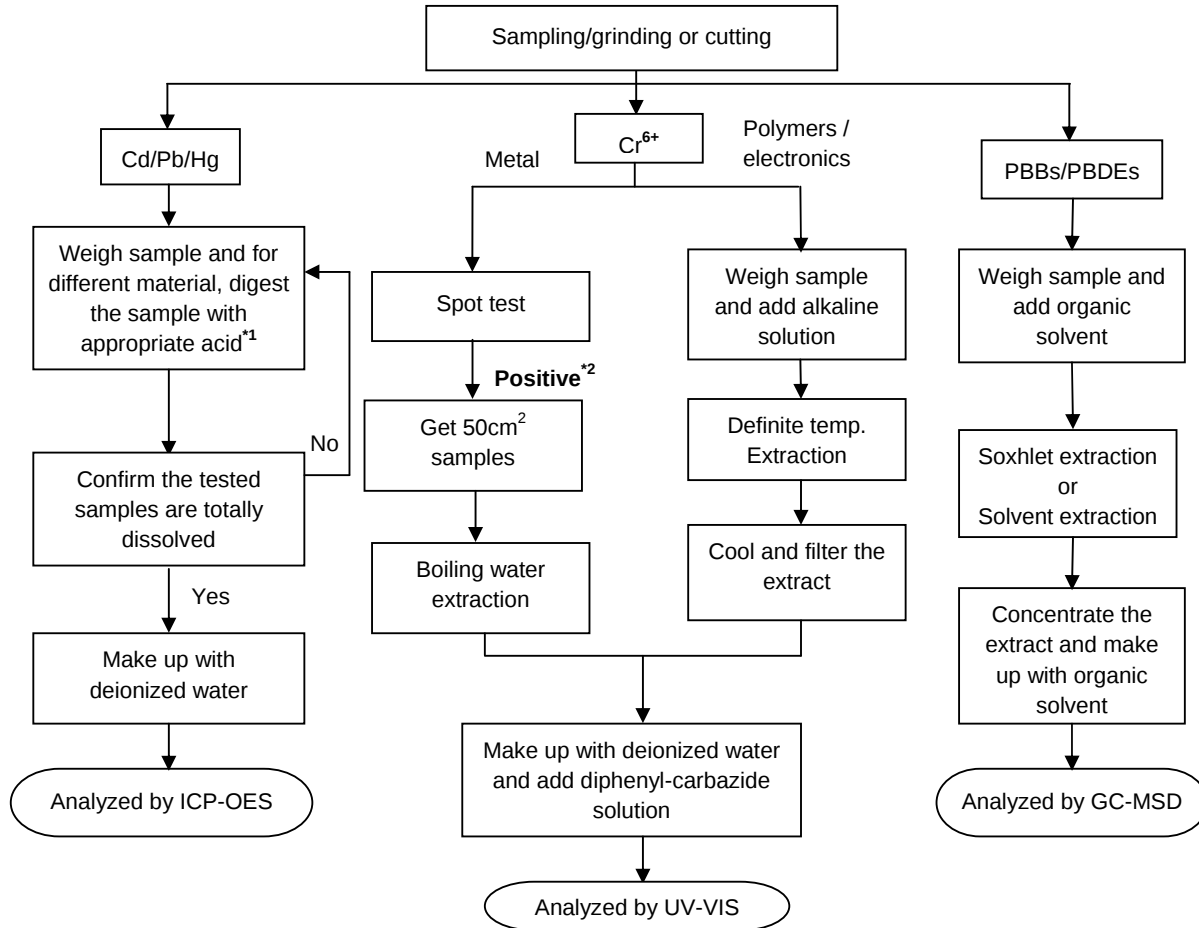
To be continued

Tests Conducted

(IV) Measurement Flowchart:

Test for Cd/ Pb/ Hg/Cr (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 <sub>3</sub> ,HCl,HF,H <sub>2</sub> O <sub>2</sub> ,H <sub>3</sub> BO <sub>3</sub> |
| Metals      | HNO <sub>3</sub> ,HCL,HF                                                               |
| Electronics | HNO <sub>3</sub> ,HCL,H <sub>2</sub> O <sub>2</sub> ,HBF <sub>4</sub>                  |

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

\*\*\*\*\*

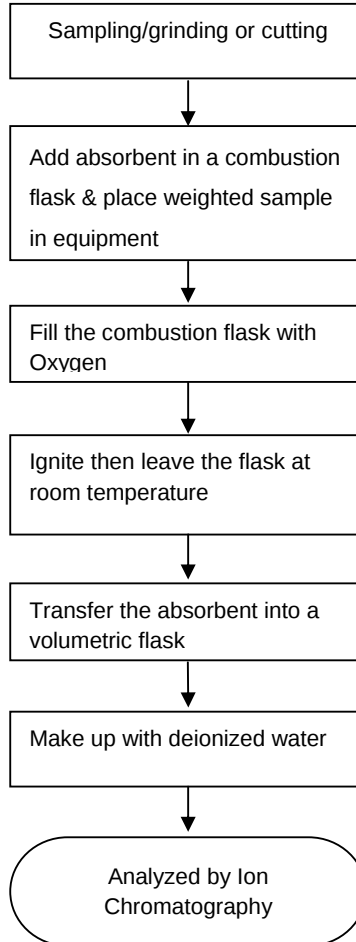
To be continued

Tests Conducted

(V) Measurement flowchart:

Test or Halogen content

Reference standard: EN 14582



\*\*\*\*\*

To be continued



**Test Report**

**Number: 131000457SHA-011**

Tests Conducted

2. Phthalate content test

With reference to EN 14372 by Gas Chromatography-Mass Spectrometry (GC-MS) analysis.

| <u>Tested Compound</u>            | <u>Result (% w/w)</u> | <u>Client' requirement (% w/w)</u> |
|-----------------------------------|-----------------------|------------------------------------|
| Di-butyl phthalate (DBP)          | ND                    | -                                  |
| Di(2-ethyl hexyl) phthalate(DEHP) | ND                    | -                                  |
| Benzyl butyl phthalate (BBP)      | ND                    | -                                  |
| Sum of three phthalates           | ND                    | 0.1                                |
| Di-iso-butyl phthalate (DIBP)     | ND                    | 0.1                                |

Remark : Detection Limit = 0.01%(w/w)

ND = Not Detected

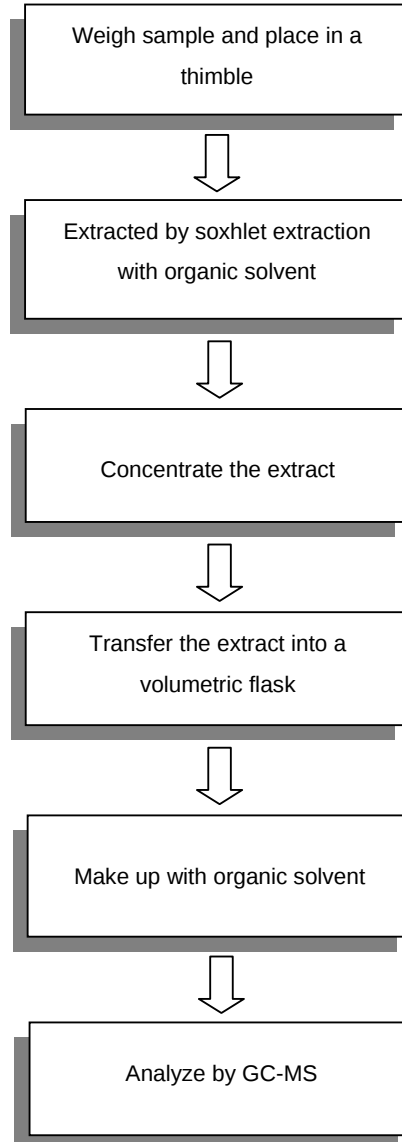
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To be continued

Tests Conducted

Measurement flowchart:

Test for **phthalate** content



\*\*\*\*\*  
To be continued



**Test Report**

**Number: 131000457SHA-011**

Tests Conducted

3. HBCDD content

( I )Test result summary:

| <u>Testing item</u>            | <u>Result (ppm)</u> |
|--------------------------------|---------------------|
| HBCDD (hexabromocyclododecane) | ND                  |

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

( II ) Test method:

| <u>Testing item</u>            | <u>Testing method</u>                                                         | <u>Reporting limit</u> |
|--------------------------------|-------------------------------------------------------------------------------|------------------------|
| HBCDD (hexabromocyclododecane) | With reference to US EPA 3540C, by solvent extraction and determined by GC-MS | 10 ppm                 |

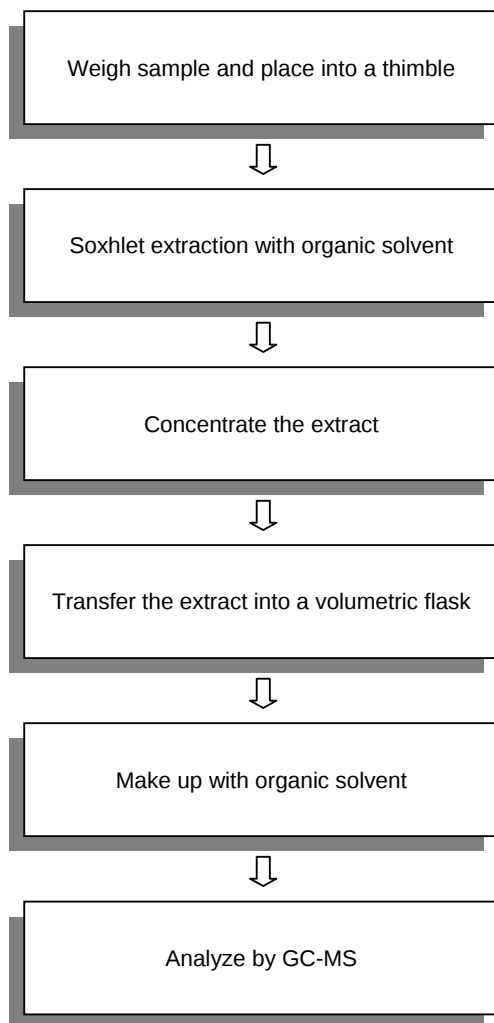
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To be continued

Tests Conducted

Measurement flowchart:

Test for HBCDD (hexabromocyclododecane) content



\*\*\*\*\*

To be continued



**Test Report**

**Number: 131000457SHA-011**

Tests Conducted

**4. Total Antimony (Sb) Content**

As per client's request, acid digestion method was used and total Antimony content was determined by Inductively Coupled Argon Plasma Spectrometry.

Result: <10ppm

Remark: ppm = parts per million = mg/kg

Date sample received: Oct. 16, 2013

Testing period: Oct. 16, 2013 To Oct. 29, 2013

\*\*\*\*\*

To be continued

Tests Conducted



Picture was provided by applicant

\*\*\*\*\*

**End of report**

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# Test Report

Report No. RLTJF000099660001

Page 1 of 4

Applicant BEIJING HYSTIC NEW MATERIALS CO., LTD

Address 7 ZH5 SHUANGYUAN ROAD, BADACHU HIGH-TECH ZONE, BEIJING. 100041, CHINA

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

Sample Name EPOXY ADHESIVE

Part No. 3162

Item/Lot No. EP625, EP652, EP425, EP162, EP162L, EP209, EP210, EP211, EP229, EP313, EP315, EP100-EP199, EP200-EP299, EP300-EP399, EP400-EP499, EP500-EP599, EP600-EP699

Sample Received Date Mar. 22, 2013

Testing Period Mar. 22, 2013 to Mar. 26, 2013

Test Requested As specified by client, to test Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)), Polybrominated Biphenyls(PBBs), Polybrominated Diphenyl Ethers(PBDEs) in the submitted sample(s).

## Test Method

| Test Item(s)                          | Test Method                 | Measured Equipment(s) | MDL    |
|---------------------------------------|-----------------------------|-----------------------|--------|
| Lead(Pb)                              | IEC 62321:2008 Ed.1 Sec.10  | ICP-OES               | 2mg/kg |
| Cadmium(Cd)                           | IEC 62321:2008 Ed.1 Sec.10  | ICP-OES               | 2mg/kg |
| Mercury(Hg)                           | IEC 62321:2008 Ed.1 Sec.7   | ICP-OES               | 2mg/kg |
| Hexavalent Chromium(Cr(VI))           | IEC 62321:2008 Ed.1 Annex C | UV-Vis                | 2mg/kg |
| Polybrominated Biphenyls(PBBs)        | IEC 62321:2008 Ed.1 Annex A | GC-MS                 | 5mg/kg |
| Polybrominated Diphenyl Ethers(PBDEs) | IEC 62321:2008 Ed.1 Annex A | GC-MS                 | 5mg/kg |

Test Result(s) Please refer to the following page(s).

Tested by

*Allen Wang*

Reviewed by

*Andy Chang*

Approved by

*Allen Wang*

Date

Mar. 26, 2013

Allen Wang  
Technical Manager

No. 1428642654

Centre Testing International (Tianjin) Co., Ltd.

No.99, Xianfeng East Road, Dongli District, Tianjin, China

# Test Report

Report No. RLTJF000099660001

Page 2 of 4

## Test Result(s)

| Tested Item(s)              | Result |
|-----------------------------|--------|
| Lead(Pb)                    | N.D.   |
| Cadmium(Cd)                 | N.D.   |
| Mercury(Hg)                 | N.D.   |
| Hexavalent Chromium(Cr(VI)) | N.D.   |

| Tested Item(s)                        | Result |
|---------------------------------------|--------|
| <b>Polybrominated Biphenyls(PBBs)</b> |        |
| Monobromobiphenyl                     | N.D.   |
| Dibromobiphenyl                       | N.D.   |
| Tribromobiphenyl                      | N.D.   |
| Tetrabromobiphenyl                    | N.D.   |
| Pentabromobiphenyl                    | N.D.   |
| Hexabromobiphenyl                     | N.D.   |
| Heptabromobiphenyl                    | N.D.   |
| Octabromobiphenyl                     | N.D.   |
| Nonabromobiphenyl                     | N.D.   |
| Decabromobiphenyl                     | N.D.   |

| Tested Item(s)                               | Result |
|----------------------------------------------|--------|
| <b>Polybrominated Diphenyl Ethers(PBDEs)</b> |        |
| Monobromodiphenyl ether                      | N.D.   |
| Dibromodiphenyl ether                        | N.D.   |
| Tribromodiphenyl ether                       | N.D.   |
| Tetrabromodiphenyl ether                     | N.D.   |
| Pentabromodiphenyl ether                     | N.D.   |
| Hexabromodiphenyl ether                      | N.D.   |
| Heptabromodiphenyl ether                     | N.D.   |
| Octabromodiphenyl ether                      | N.D.   |
| Nonabromodiphenyl ether                      | N.D.   |
| Decabromodiphenyl ether                      | N.D.   |

**Tested Sample/Part Description** Bluck glue

**Note:** The sample(s) had been dissolved totally tested for Lead, Cadmium, Mercury.  
 -MDL = Method Detection Limit  
 -N.D. = Not Detected (<MDL )  
 -mg/kg = ppm = parts per million

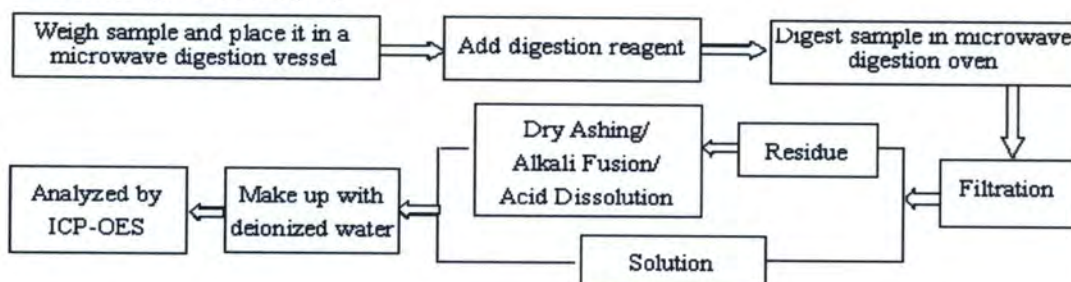
# Test Report

Report No. RLTJF000099660001

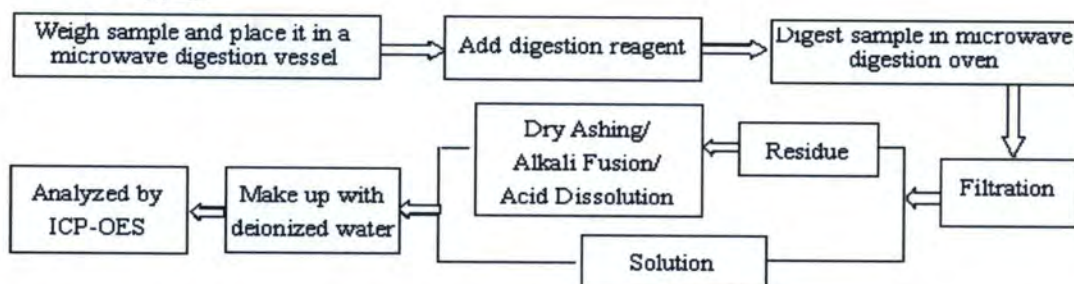
Page 3 of 4

## Test Process

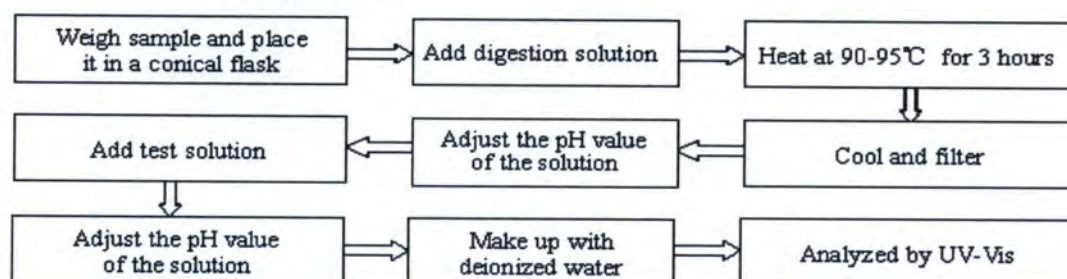
### 1. Lead(Pb), Cadmium(Cd)



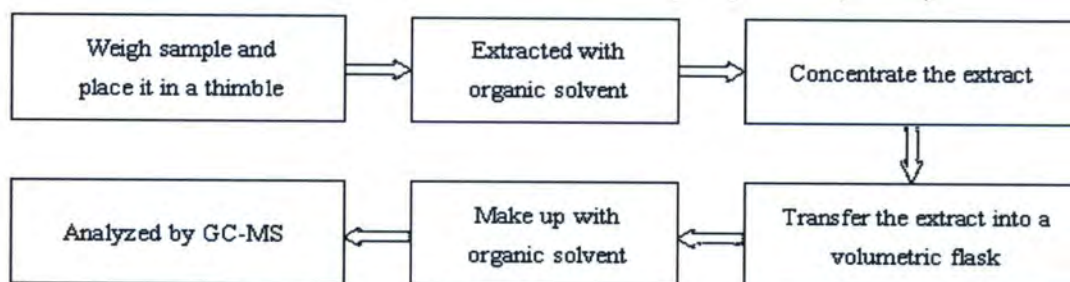
### 2. Mercury(Hg)



### 3. Hexavalent Chromium(Cr(VI))



### 4. Polybrominated Biphenyls(PBBs), Polybrominated Diphenyl Ethers(PBDEs)



## Test Report

Report No. RLTJF000099660001

Page 4 of 4

### Photo(s) of the sample(s)



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# Test Report

Report No. RL TJF000102620002

Page 1 of 3

Applicant BEIJING HYSTIC NEW MATERIALS CO., LTD.

Address 5 SHUANGYUAN ROAD, BADACHU HIGH-TECH ZONE, BEIJING. 100041, CHINA.

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

Sample Name EPOXY ADHESIVE  
Part No. EP608  
Customer Reference EP625, EP652, EP425, EP162, EP162L, EP209, EP210, EP211, EP229, EP313, EP315, EP100-EP199, EP200-EP299, EP300-EP399, EP400-EP499, EP500-EP599, EP600-EP699  
Information

Sample Received Date Apr. 19, 2013  
Testing Period Apr. 19, 2013 to Apr. 24, 2013

Test Requested As specified by client, to test Fluorine(F), Chlorine(Cl), Bromine(Br), Iodine(I) in the submitted sample(s).

## Test Method

| Test Item(s) | Test Method               | Measured Equipment(s) |
|--------------|---------------------------|-----------------------|
| Fluorine(F)  | Refer to BS EN 14582:2007 | IC                    |
| Chlorine(Cl) | Refer to BS EN 14582:2007 | IC                    |
| Bromine(Br)  | Refer to BS EN 14582:2007 | IC                    |
| Iodine(I)    | Refer to BS EN 14582:2007 | IC                    |

Test Result(s) Please refer to the following page(s).

Tested by

*Ris Liu*

Reviewed by

*Andy Chang*

Approved by

*Allen Wang*

Date

Apr. 24, 2013

Allen Wang

Technical Manager

No. 1428612964

Centre Testing International (Tianjin) Co., Ltd.

No.99, Xianfeng East Road, Dongli District, Tianjin, China

# Test Report

Report No. RL TJF000102620002

Page 2 of 3

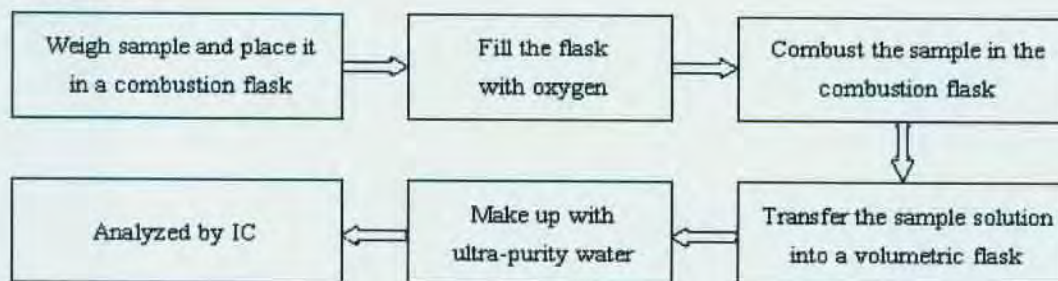
## Test Result(s)

| Tested Item(s)    | Result                      | MDL      |
|-------------------|-----------------------------|----------|
| <b>Halogen(s)</b> |                             |          |
| Fluorine(F)       | N.D.                        | 10 mg/kg |
| Chlorine(Cl)      | $5.62 \times 10^{-3}$ mg/kg | 10 mg/kg |
| Bromine(Br)       | N.D.                        | 10 mg/kg |
| Iodine(I)         | N.D.                        | 10 mg/kg |

**Tested Sample/Part Description** Light yellow liquid

**Note:**  
 -MDL = Method Detection Limit  
 -N.D. = Not Detected (<MDL )  
 -mg/kg = ppm = parts per million

## Test Process

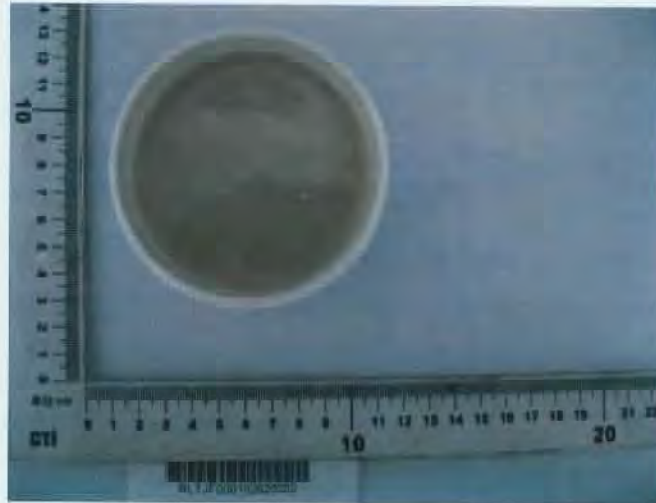


## Test Report

Report No. RLTJF000102620002

Page 3 of 3

Photo(s) of the sample(s)



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# Test Report

Report No. RL TJF000102620001

Page 1 of 3

Applicant BEIJING HYSTIC NEW MATERIALS CO., LTD.

Address 5 SHUANGYUAN ROAD, BADACHU HIGH-TECH ZONE, BEIJING, 100041, CHINA.

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

Sample Name EPOXY ADHESIVE  
Part No. EP608  
Customer Reference EP625, EP652, EP425, EP162, EP162L, EP209, EP210, EP211, EP229, EP313, EP315, EP100-EP199, EP200-EP299, EP300-EP399, EP400-EP499, EP500-EP599, EP600-EP699  
Information

Sample Received Date Apr. 19, 2013  
Testing Period Apr. 19, 2013 to Apr. 24, 2013

Test Requested As specified by client, to test Dibutyl phthalate (DBP), Benzyl butyl phthalate (BBP), Di-2-ethylhexyl phthalate (DEHP), Hexabromocyclododecane (HBCDD) in the submitted sample(s).

## Test Method

| Test Item(s)                     | Test Method                | Measured Equipment(s) |
|----------------------------------|----------------------------|-----------------------|
| Dibutyl phthalate (DBP)          | Refer to EN 14372 : 2004   | GC-MS                 |
| Benzyl butyl phthalate (BBP)     | Refer to EN 14372 : 2004   | GC-MS                 |
| Di-2-ethylhexyl phthalate (DEHP) | Refer to EN 14372 : 2004   | GC-MS                 |
| Hexabromocyclododecane (HBCDD)   | Refer to US EPA 3540C:1996 | GC-MS                 |

Test Result(s) Please refer to the following page(s).

Tested by Rui Li  
Approved by Allen Wang  
Allen Wang  
Technical Manager  
Centre Testing International (Tianjin) Co., Ltd.

Reviewed by Andy Chang  
Date Apr. 24, 2013  
No. 1428612964



# Test Report

Report No. RLTJF000102620001

Page 2 of 3

## Test Result(s)

| Tested Item(s)                 | Result | MDL     |
|--------------------------------|--------|---------|
| Hexabromocyclododecane (HBCDD) | N.D.   | 5 mg/kg |

| Tested Item(s)                                | Result | MDL      |
|-----------------------------------------------|--------|----------|
| <b>Phthalate</b>                              |        |          |
| Dibutyl phthalate(DBP) CAS#:84-74-2           | N.D.   | 50 mg/kg |
| Benzyl butyl phthalate(BBP) CAS#:85-68-7      | N.D.   | 50 mg/kg |
| Di-2-ethylhexyl phthalate(DEHP) CAS#:117-81-7 | N.D.   | 50 mg/kg |

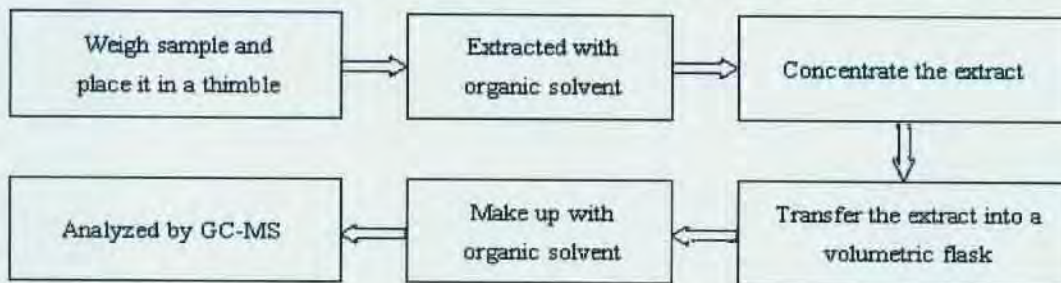
**Tested Sample/Part Description** Light yellow liquid

**Note:**

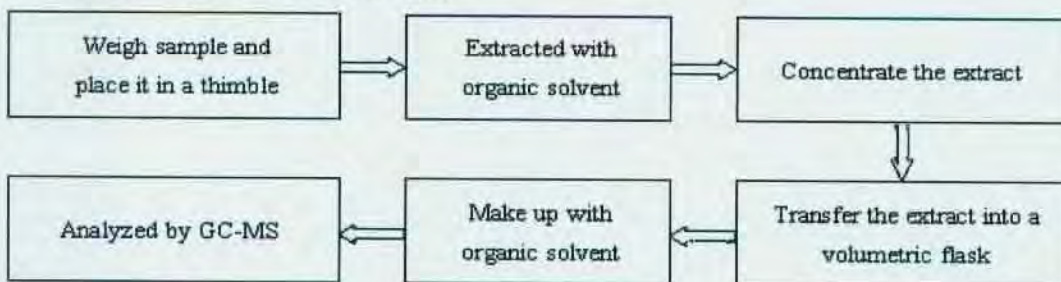
- MDL = Method Detection Limit
- N.D. = Not Detected (<MDL )
- mg/kg = ppm = parts per million

## Test Process

### 1. Dibutyl phthalate(DBP), Di-2-ethylhexyl phthalate(DEHP), Benzyl butyl phthalate(BBP)



### 2. Hexabromocyclododecane (HBCDD)

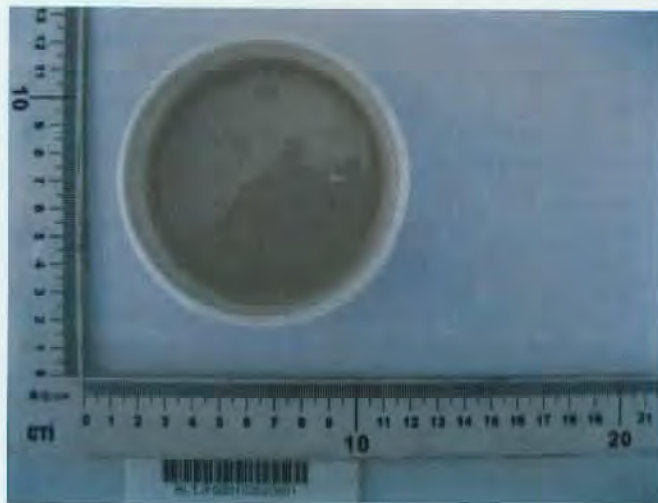


## Test Report

Report No. RL TJF000102620001

Page 3 of 3

### Photo(s) of the sample(s)



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