ICP Test Report Certification Packet

Company Name: Littelfuse, Inc.

Product Type: Metal Oxide Varistors

Product Series: BA&BB Series RoHS Compliant models

Issue Date: June 21, 2012

It is hereby certified by Littelfuse, Inc. that there is neither RoHS(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: David Huang

< DGLF Environmental, Health & Safety Engineer >

(1) Parts, sub-materials and unit parts

This document covers Metal Oxide Varistors BA&BB series RoHS-Compliant models manufactured by Littelfuse, Inc.

Please see Table 1 for raw materials used.

(2) The ICP data on all measurable substances

Please see appropriate pages as identified in Table 1

Remarks :

Pb(lead) contained in glass of electronic components and is categorized as exempt under section 7(c)-I of the RoHS Annex.

Pb(lead) as an alloying element in aluminum containing up to 0.4 % lead by weight and is categorized as exempt under section 6(b) of the RoHS Annex.

Table 1: List of Raw Materials covered by this report

NO.	P/N	Raw Material Description	Page
1	N/A	D-Varistor	3-8
2	N/A	Gray Paste, for silver electrodes	
3	N/A	White power, for glass insulation	
4	N/A	Solder paste	9-20
5	N/A	Terminals	21-24
6	N/A	Industrial Casting Resin	25-31
7	N/A	Base & Lid, separating Copper Screw or Aluminum Fastener	32-39
8	N/A	Aluminum Fastener	40-43
9	N/A	Copper Screw	44-47
10	N/A	Screw & Washier	48-51

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

SGS Job No. :	CP11-007662 - GZ
Client Ref. Info. :	Used for B72260D*
	1.Ceramics, 2.Ag paste, 3.Glass coating
Date of Sample Received :	11 Nov 2011
Testing Period :	11 Nov 2011 - 21 Nov 2011
Test Requested :	Selected test(s) as requested by client.
Test Method :	Please refer to next page(s).
Test Results :	Please refer to next page(s).

Signed for and on behalf of
SGS-CSTC Ltd.

Merry

Merry Lv
Approved Signatory

Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
1	CAN11-108169.015	Dk-grey part(semi-product)
2	CAN11-108169.016	Silver-grey material(semi-product)
3	CAN11-108169.017	White powder(semi-product)

Remarks :

(1) 1 mg/kg = 1 ppm = 0.0001%

(2) MDL = Method Detection Limit

(3) ND = Not Detected (< MDL)

(4) "-" = Not Regulated

Elementary Analysis & Flame Retardants

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)	Unit	MDL	*015*	*016*	*017*
Cadmium (Cd)	mg/kg	2	ND	ND	ND
Lead (Pb)	mg/kg	2	18	8	243153
Mercury (Hg)	mg/kg	2	ND	ND	ND
Hexavalent Chromium (CrVI)	mg/kg	2	2	ND	ND
Sum of PBBs	mg/kg	-	ND	ND	ND
Monobromobiphenyl	mg/kg	5	ND	ND	ND
Dibromobiphenyl	mg/kg	5	ND	ND	ND
Tribromobiphenyl	mg/kg	5	ND	ND	ND
Tetrabromobiphenyl	mg/kg	5	ND	ND	ND
Pentabromobiphenyl	mg/kg	5	ND	ND	ND
Hexabromobiphenyl	mg/kg	5	ND	ND	ND
Heptabromobiphenyl	mg/kg	5	ND	ND	ND
Octabromobiphenyl	mg/kg	5	ND	ND	ND
Nonabromobiphenyl	mg/kg	5	ND	ND	ND
Decabromobiphenyl	mg/kg	5	ND	ND	ND

Test Item(s)	Unit	MDL	*015*	*016*	*017*
Sum of PBDEs	mg/kg	-	ND	ND	ND
Monobromodiphenyl ether	mg/kg	5	ND	ND	ND
Dibromodiphenyl ether	mg/kg	5	ND	ND	ND
Tribromodiphenyl ether	mg/kg	5	ND	ND	ND
Tetrabromodiphenyl ether	mg/kg	5	ND	ND	ND
Pentabromodiphenyl ether	mg/kg	5	ND	ND	ND
Hexabromodiphenyl ether	mg/kg	5	ND	ND	ND
Heptabromodiphenyl ether	mg/kg	5	ND	ND	ND
Octabromodiphenyl ether	mg/kg	5	ND	ND	ND
Nonabromodiphenyl ether	mg/kg	5	ND	ND	ND
Decabromodiphenyl ether	mg/kg	5	ND	ND	ND

Result Pb of specimen 3 is only for reference

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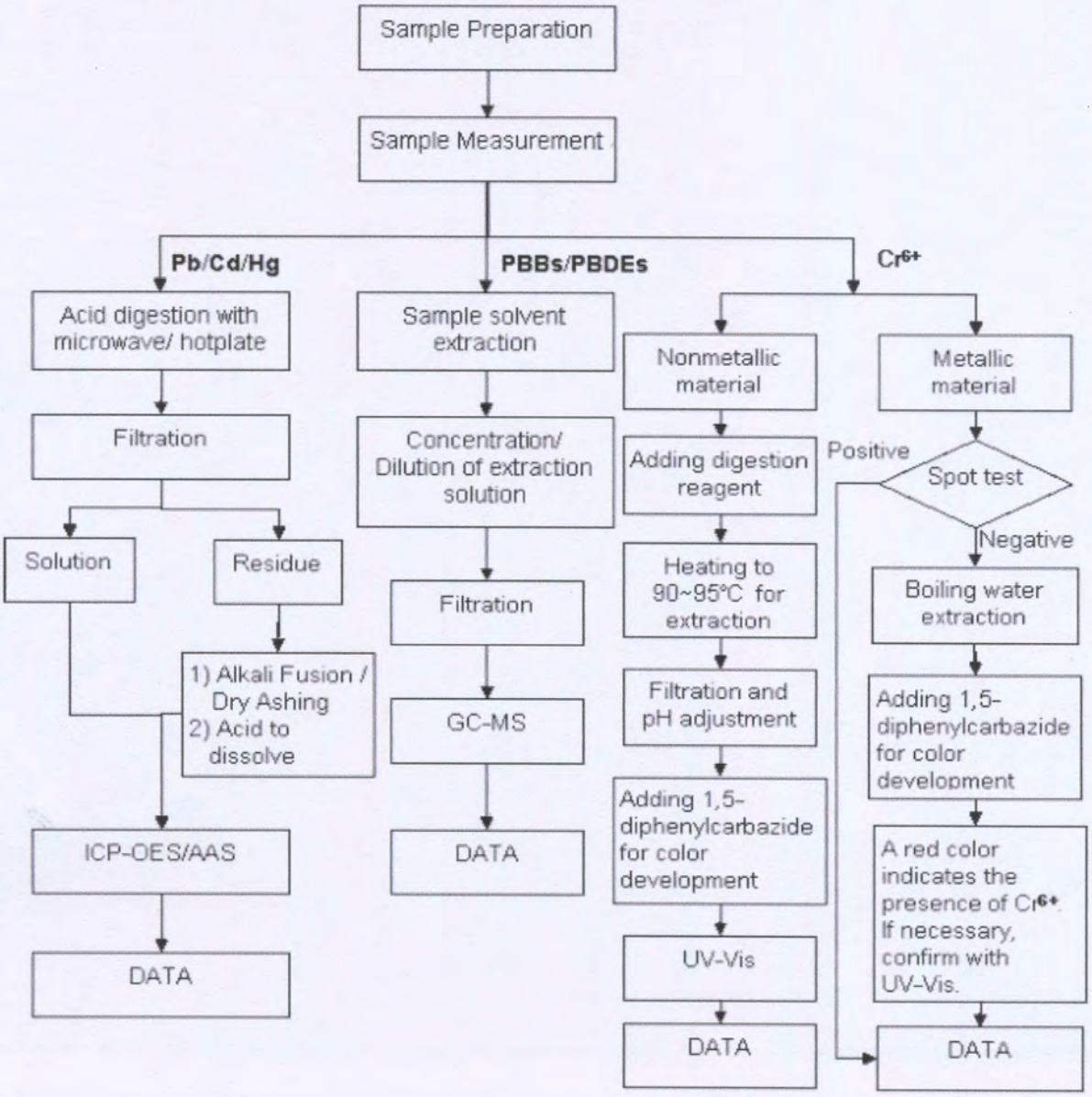
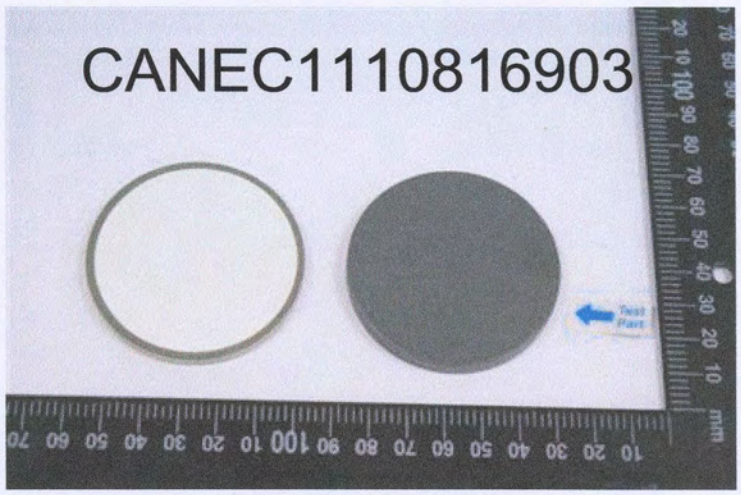
ATTACHMENTS

RoHS Testing Flow Chart

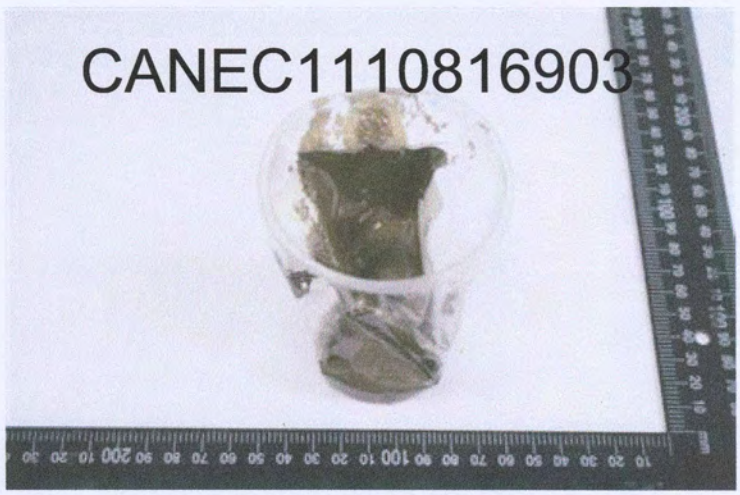
1) Name of the person who made testing: Bella Wang / Cutey Yu / Ross Zhan
2) Name of the person in charge of testing: Adams Yu / Ryan Yang
3) These samples were dissolved totally by pre-conditioning method according to below flow chart (Cr6+ and PBBs/PBDEs test method excluded).



Sample photo:



CAN11-108169.015



CAN11-108169.016

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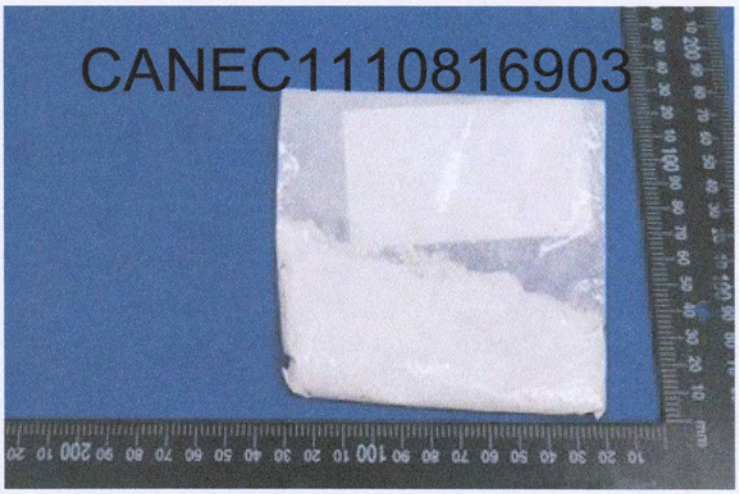

CAN11-108169.017

SGS authenticate the photo on original report only

*** End of Report ***

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CTI 华通检测

Test Report

Report No. RLSZE001191100004 Page 1 of 4

Applicant DONGGUAN QIHANG XIYE MANUFACTURING CO.,LTD
Address NO.1 INDUSTRIAL AREA XIAGANG ,CHANG'AN TOWN ,DONGGUAN CITY

Report on the submitted sample(s) said to be

Sample Name	LEAD-FREE SOLDER PASTE
Sample Description	Gray paste
Part No.	MIXTURE OF QH#LF96, QH#LF97, QH#LF98, QH#LF658, QH#LF601, QH#LT658, QH#LT601, QH#LT658C, QH#LF96H, QH#LF97H, QH#LF98H, QH#LF658H, QH#LF601H, QH#LT658H, QH#LT601H, QH#LT658CH
Color	Silver
Sample Received Date	Mar. 3, 2012
Testing Period	Mar. 3, 2012 to Mar. 8, 2012

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

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

Conclusion:

Tested Sample	According to directive	Result
Submitted Sample	2011/65/EU*	Pass

*=July 1, 2011, the EU Official Journal (OJ) released the directive 2011/65/EU which as a new version of RoHS Directive (2002/95/EC). The revised directive has entered into force on the twentieth day after its publication in the OJ.

Tested by Rick Inspected by Vargas

Approved by Technical Manager Date Mar. 8, 2012

CENTRE TESTING INTERNATIONAL CTI SZ03

No. 11363955

Test Report

Report No. RLSZE001191100004

Test Result(s)

Tested Item(s)	Content
Lead(Pb)	55 mg/kg
Cadmium (Cd)	N.D.
Mercury(Hg)	N.D.
Hexavalent Chromium(Cr(VI))	N.D.

Tested Item(s)	Content
Polybrominated Biphenyls (PBBs)	
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)	Content
Polybrominated Diphenyl Ethers (PBDEs)	
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.

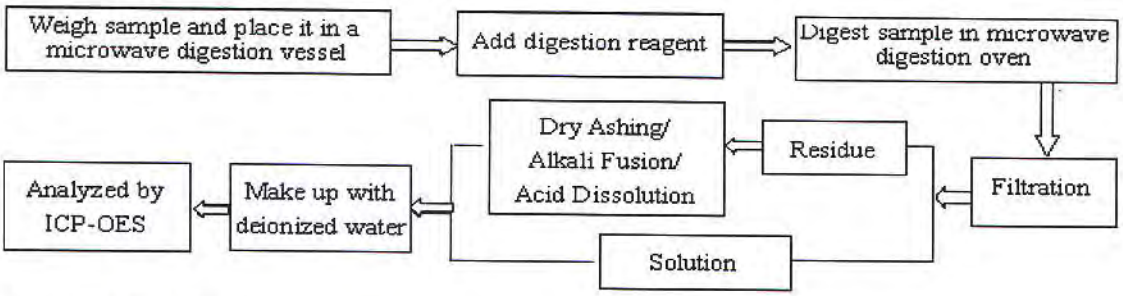
Note: **The sample had been dissolved totally tested for Lead, Cadmium, Mercury.**
-MDL = Method Detection Limit
-N.D. = Not Detected (<MDL)
-mg/kg = ppm = parts per million

Test Report

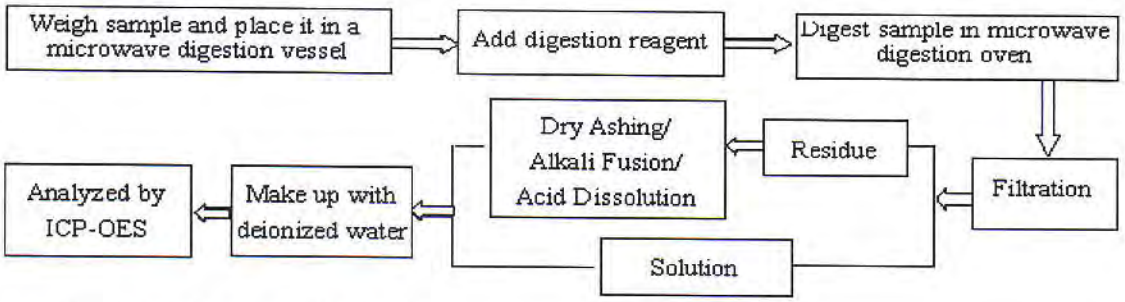
Report No. RLSZE001191100004

Test Process

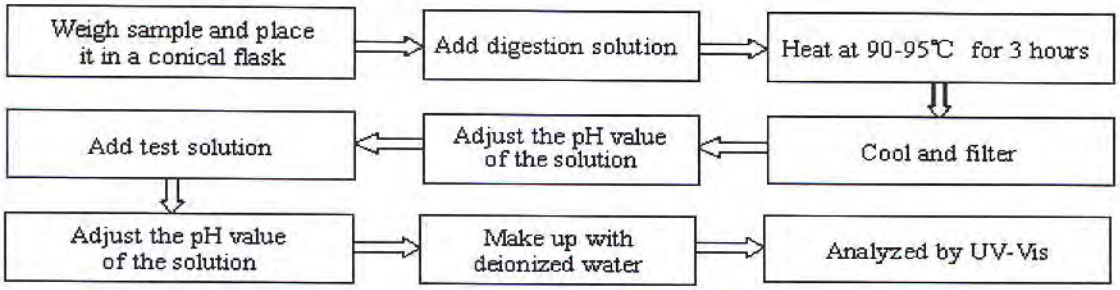
1. Lead(Pb), Cadmium(Cd)



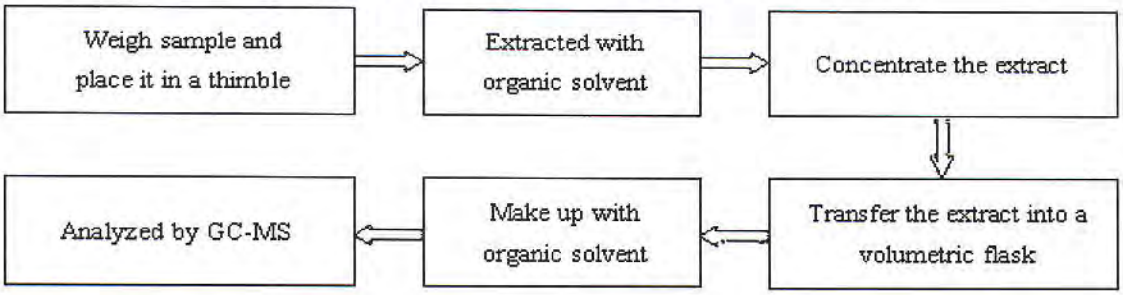
2. Mercury(Hg)



3. Hexavalent Chromium(Cr(VI))



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



Test Report

Report No. RLSZE001191100004

Photo(s) of the sample(s)

*** End of report ***

CTI 华测检测

Test Report

Report No. RLSZE001296390001 Page 1 of 3

Applicant DONGGUAN QIHANG XIYE MANUFACTURING CO.,LTD
Address NO.1 INDUSTRIAL AREA XIAGANG ,CHANG'AN TOWN ,DONGGUAN CITY

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

Sample Name	LEAD-FREE SOLDER PASTE
COLOR	silver
Material	TIN
Sample Received Date	May. 25, 2012
Testing Period	May. 25, 2012 to May. 29, 2012

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)	MDL
Fluorine(F)	Refer to BS EN 14582:2007	IC	10 mg/kg
Chlorine(Cl)	Refer to BS EN 14582:2007	IC	10 mg/kg
Bromine(Br)	Refer to BS EN 14582:2007	IC	10 mg/kg
Iodine(I)	Refer to BS EN 14582:2007	IC	10 mg/kg

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

Tested by Rick Li Reviewed by Vargas He

Approved by Danny Liu Date May. 29, 2012

Technical Manager

No. 38791053

Test Report

Report No. RLSZE001296390001

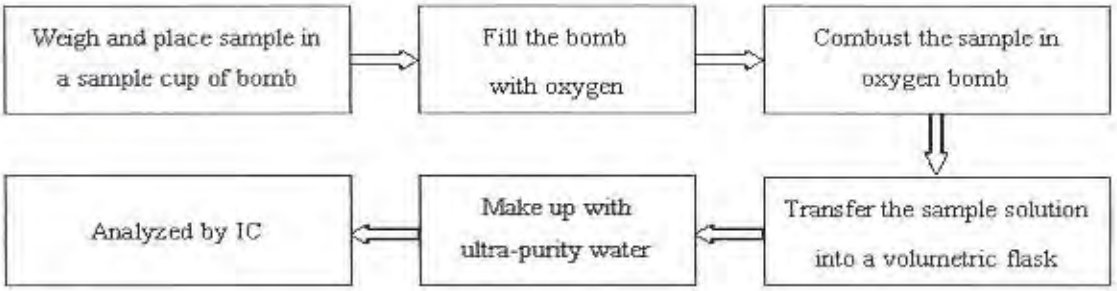
Test Result(s)

Tested Item(s)	Content
Halogen(s)	
Fluorine (F)	N.D.
Chlorine (Cl)	N.D.
Bromine (Br)	N.D.
Iodine (I)	N.D.

Tested Sample/Part Description Gray paste

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

Test Process



Test Report

Report No. RLSZE001296390001

Photo(s) of the sample(s)

*** End of report ***

Test Report

No. CANEC1204755001 Date: 27 Apr 2012

DONGGUAN QI HANG XI YE MANUFACTURING CO.,LTD

NO.1 INDUSTRUAL PARK,XIAGANG,CHANGAN TOWN,DONGGUAN CITY
CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as : Lead Free Solder Paste

SGS Job No. :	CP12-017386 - GZ
Date of Sample Received :	23 Apr 2012
Testing Period :	23 Apr 2012 - 27 Apr 2012
Test Requested :	Selected test(s) as requested by client.
Test Method :	Please refer to next page(s).
Test Results :	Please refer to next page(s).

Signed for and on behalf of
SGS-CSTC Ltd.

Silva Zhou
Approved Signatory

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Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
1	CAN12-047550.001	Grey paste

Remarks :

(1) 1 mg/kg = 1 ppm = 0.0001%

(2) MDL = Method Detection Limit

(3) ND = Not Detected (< MDL)

(4) "-" = Not Regulated

Hexabromocyclododecane (HBCDD)

Test Method : Determination of HBCDD by GC-MS based on IEC 62321:2008.

Test Item(s)	Unit	MDL	*001*
Hexabromocyclododecane (HBCDD)	mg/kg	10	ND

Notes :

(1) Reference Information: Directive 2011/65/EU recasting RoHS directive 2002/95/EC: Hexabromocyclododecane (HBCDD) is considered as a priority for risk evaluation and substance restriction.

Phthalates

Test Method : Determination of phthalates by GC-MS based on EN 14372:2004.

Test Item(s)	Unit	MDL	*001*
Dibutyl Phthalate (DBP)	% (w/w)	0.003	ND
Benzylbutyl Phthalate (BBP)	% (w/w)	0.003	ND
Bis-(2-ethylhexyl) Phthalate (DEHP)	% (w/w)	0.003	ND

Notes :

(1) Reference Information: Directive 2011/65/EU recasting RoHS directive 2002/95/EC: Bis (2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP) and Dibutyl phthalate (DBP) are considered as a priority for risk evaluation and substance restriction.

Remark : The result(s) shown is/are of the total weight of wet sample.

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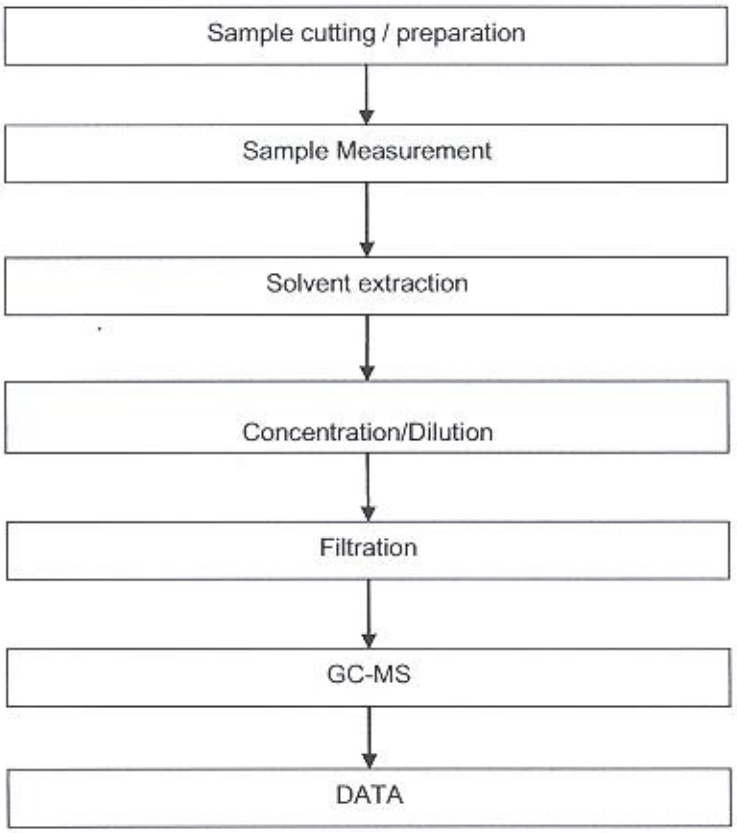
ATTACHMENTS

HBCDD Testing Flow Chart

1) Name of the person who made testing: Cutey Yu
2) Name of the person in charge of testing: Ryan Yang



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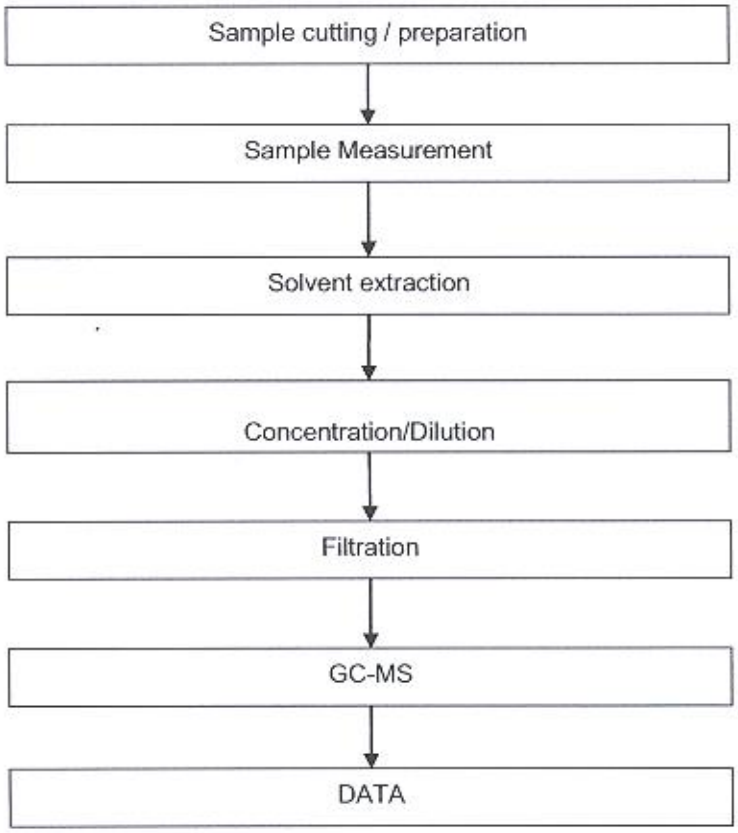
ATTACHMENTS

Phthalates Testing Flow Chart

1) Name of the person who made testing: Tina Zhao
2) Name of the person in charge of testing: Ryan Yang



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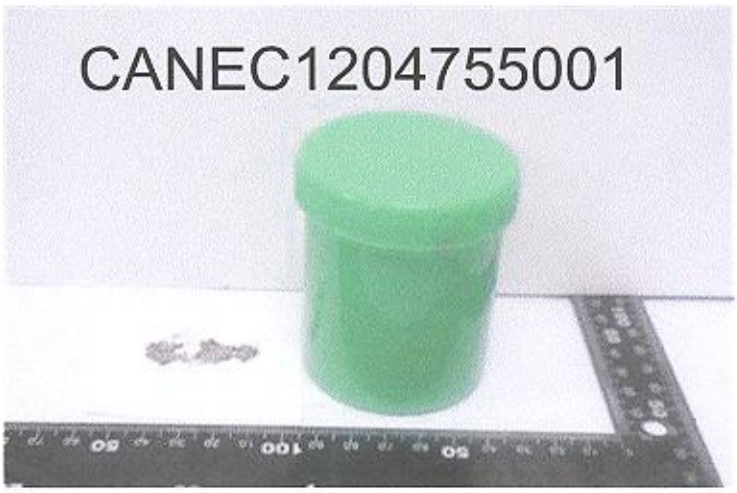
Sample photo:



CAN12-047550.001

SGS authenticate the photo on original report only

*** End of Report ***

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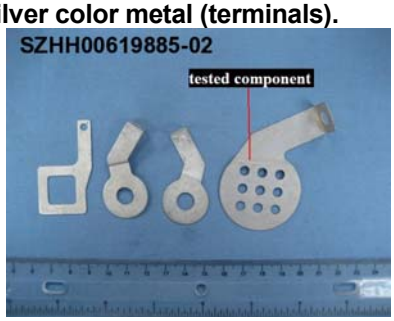
Test Report Number: SZHH0061988502

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

Attn: KRISTEEN BACILA/ARSENIO CESISTA JR.

Date: Aug 17, 2011

Sample Description:
One (1) submitted sample said to be **silver color metal (terminals).**



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

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Authorized by:
For Intertek Testing Services
Shenzhen Ltd.

Ben N.L. Lin
General Manager

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

Test Report Number: SZHH0061988502

Tests Conducted

RoHS Chemical Test

(A) Test Result Summary:

Testing Item	Result
Cadmium (Cd) Content (mg/kg)	ND(<2)
Lead (Pb) Content (mg/kg)	ND(<2)
Mercury (Hg) Content (mg/kg)	ND(<2)
Chromium (VI)(Cr^{6+}) Result (By Boiling Water Extraction on Metal)(mg/kg with $50cm^2$)	Negative(<0.02)

Chemist: Wang Haijun

mg/kg = milligram per kilogram = ppm
mg/kg with $50cm^2$ = milligram per kilogram with 50 square centimetre
< = Less than
ND = Not detected

Positive = A positive test result indicated the presence of Cr(VI) at the time of testing, equal to or greater than threshold of 1 mg/kg for spot test procedure or 0.02 mg/kg for boiling-water-extraction procedures with a sample surface area of $50cm^2$ used. However, it shall not be interpreted as the Cr(VI) concentration in the coating layer of the sample and should not be used as a method detection limit for this qualitative test.

Negative = A negative test result indicated above positive observation was not found at the time of testing. When the spot-test showed a negative result, the boiling-water-extraction procedure shall be used to verify the result.

(B) RoHS Requirement:

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

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

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

Test Report Number: SZHH0061988502

Tests Conducted

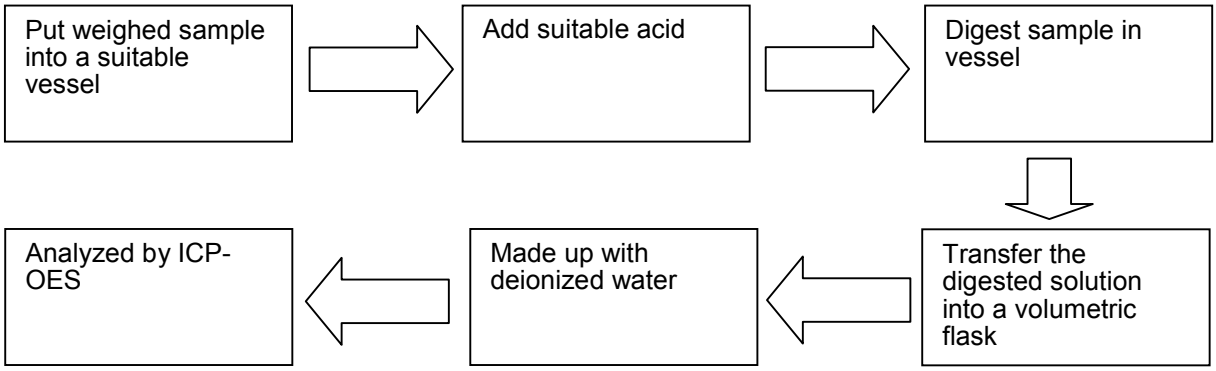
(C) Test Method:

Testing Item	Testing Method	Reporting Limit
Cadmium (Cd) Content	With reference to IEC 62321 Edition 1.0:2008, by acid digestion and determined by ICP - OES	2 mg/kg
Lead (Pb) Content	With reference to IEC 62321 Edition 1.0:2008, by acid digestion and determined by ICP - OES	2 mg/kg
Mercury (Hg) Content	With reference to IEC 62321 Edition 1.0:2008, by acid digestion and determined by ICP - OES	2 mg/kg
Chromium (VI) (Cr^{6+}) Content	With reference to IEC 62321 Edition 1.0:2008, by boiling water extraction and determined by UV-VIS Spectrophotometer	Positive/ Negative (Threshold of 0.02mg/kg with 50cm^2)

Date sample received : Aug 12, 2011
Testing period: Aug 12, 2011 to Aug 15, 2011

(D) Measurement Flowchart:

1. Test for Cd/Pb Contents



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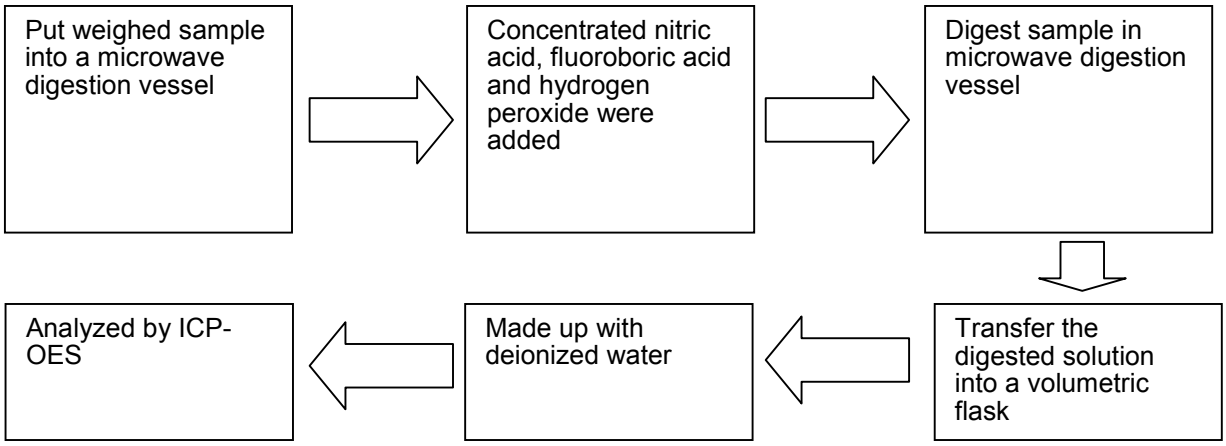
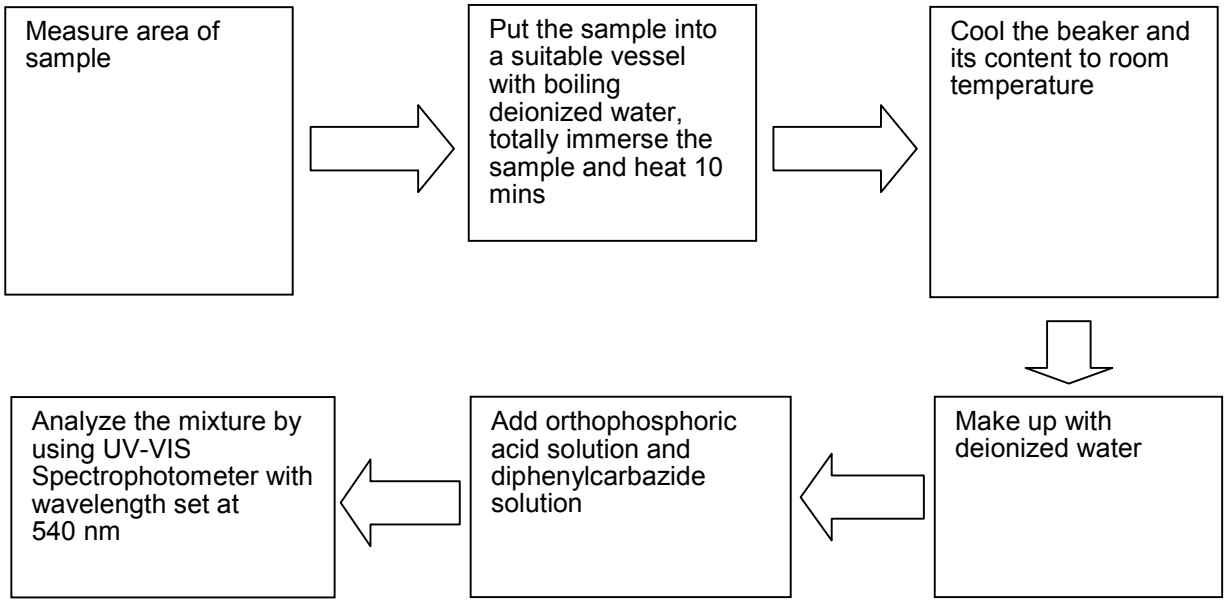
Intertek Testing Services Shenzhen Ltd.-TFH Division
7/F., ShekouTechnology Main Building, Industrial 7th Road,Shekou,Shenzhen, China
Tel: (86-755) 2602 0111 Fax: (86-755) 2683 7118/9 Postcode: 518067

Tests Conducted

2. Test for Hg Content



3. Test for Chromium (VI) (Cr^{6+}) Content (Boiling Water Extraction)



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End of report

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

Test Report Number: SZHH0061988301

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

Date: Aug 19, 2011

Attn: KRISTEEN BACILA/ARSENIO CESISTA JR.

Sample Description:
One (1) submitted sample said to be **black material (industrial coating resin).**

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

****

Authorized by:
For Intertek Testing Services
Shenzhen Ltd.

Ben N.L. Lin
General Manager

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

Test Report Number: SZHH0061988301

Tests Conducted

1 RoHS Chemical Test

(A) Test Result Summary:

Testing Item	Result
Cadmium (Cd) Content (mg/kg)	ND(<2)
Lead (Pb) Content (mg/kg)	ND(<2)
Mercury (Hg) Content (mg/kg)	ND(<2)
Chromium (VI)(Cr^{6+}) Content (mg/kg)	ND(<1)
Polybrominated Biphenyls (PBBs)(mg/kg)	
Monobromobiphenyl (MonoBB)	ND(<5)
Dibromobiphenyl (DiBB)	ND(<5)
Tribromobiphenyl (TriBB)	ND(<5)
Tetrabromobiphenyl (TetraBB)	ND(<5)
Pentabromobiphenyl (PentaBB)	ND(<5)
Hexabromobiphenyl (HexaBB)	ND(<5)
Heptabromobiphenyl (HeptaBB)	ND(<5)
Octabromobiphenyl (OctaBB)	ND(<5)
Nonabromobiphenyl (NonaBB)	ND(<5)
Decabromobiphenyl (DecaBB)	ND(<5)
Polybrominated Diphenyl Ethers (PBDEs)(mg/kg)	
Monobromodiphenyl Ether (MonoBDE)	ND(<5)
Dibromodiphenyl Ether (DiBDE)	ND(<5)
Tribromodiphenyl Ether (TriBDE)	ND(<5)
Tetrabromodiphenyl Ether (TetraBDE)	ND(<5)
Pentabromodiphenyl Ether (PentaBDE)	ND(<5)
Hexabromodiphenyl Ether (HexaBDE)	ND(<5)
Heptabromodiphenyl Ether (HeptaBDE)	ND(<5)
Octabromodiphenyl Ether (OctaBDE)	ND(<5)
Nonabromodiphenyl Ether (NonaBDE)	ND(<5)
Decabromodiphenyl Ether (DecaBDE)	ND(<5)

Chemist: Wang Haijun/Tang Wenming

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

****

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

Test Report Number: SZHH0061988301

Tests Conducted

(B) RoHS Requirement:

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

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

(C) Test Method:

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

Date sample received: Aug 12, 2011
Testing period: Aug 12, 2011 to Aug 15, 2011

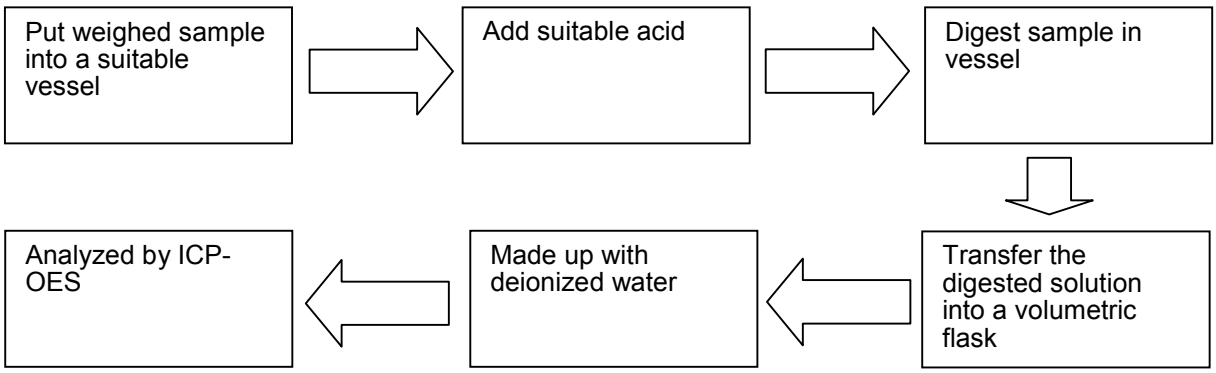
****

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

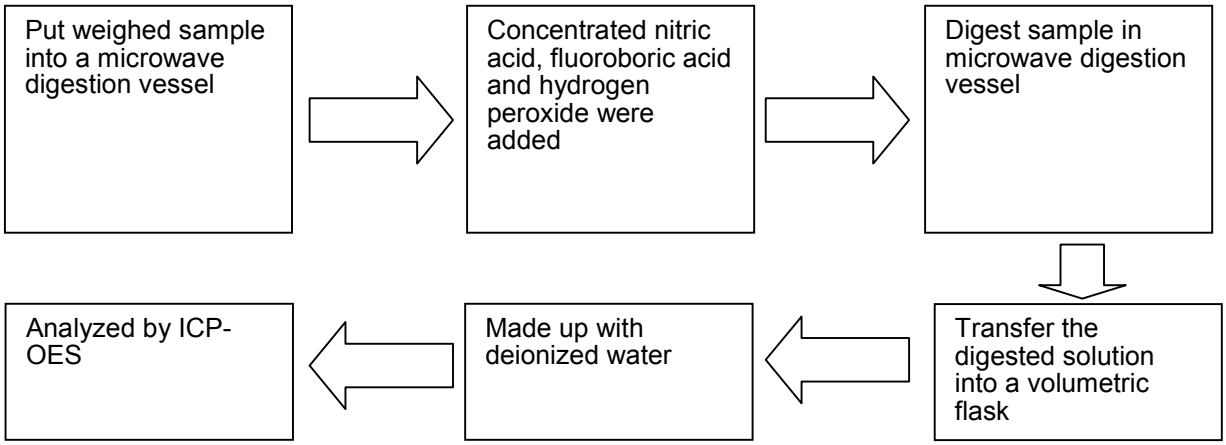
Tests Conducted

(D) Measurement Flowchart:

1. Test for Cd/Pb Contents



2. Test for Hg Content



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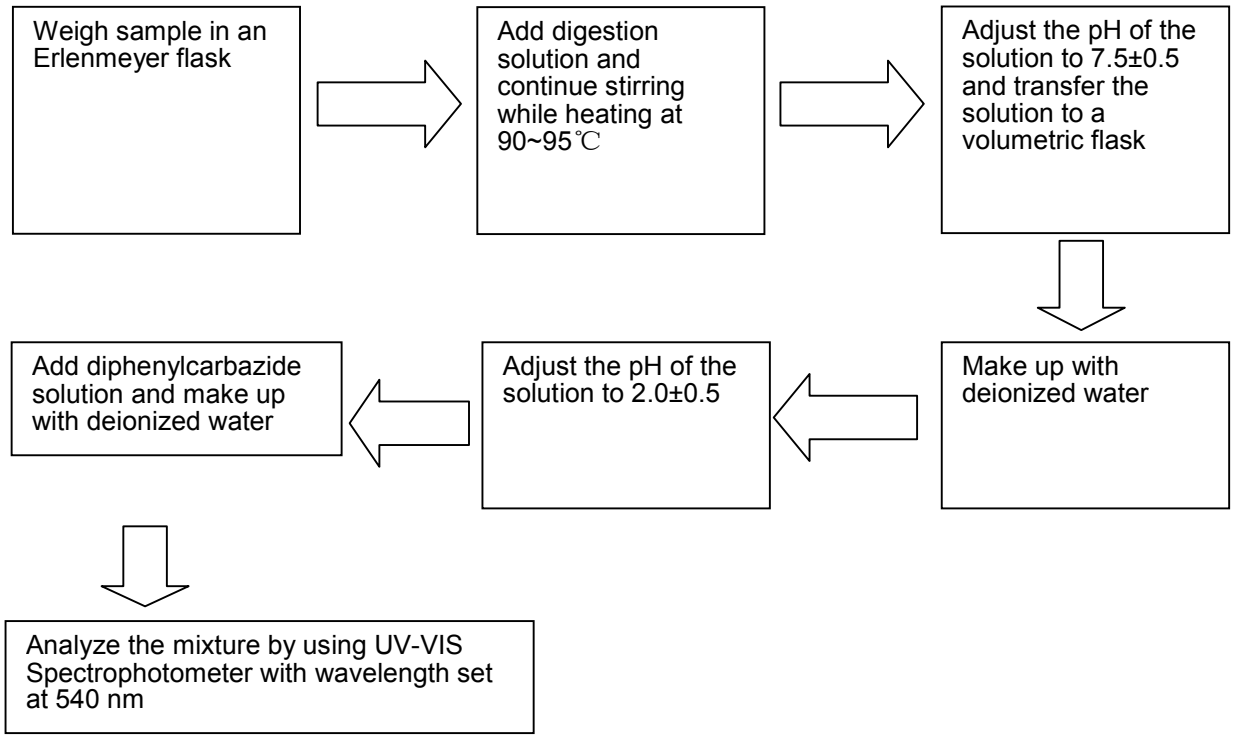
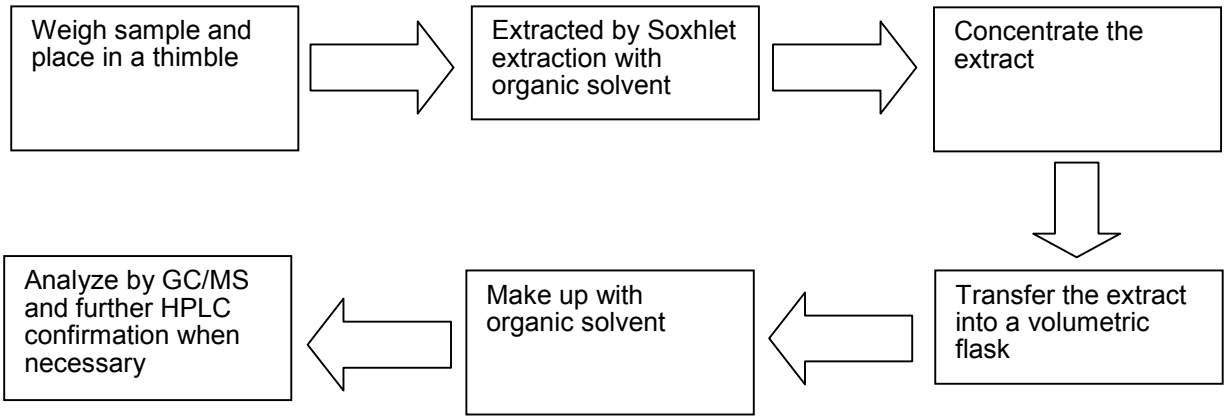
Tel: (86-755) 2602 0111 Fax: (86-755) 2683 7118/9 Postcode: 518067

Tests Conducted

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



4. Test for PBBs/PBDEs Contents



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Test Report Number: SZHH0061988301

Tests Conducted

2 Halogen Content

(Ⅰ) Test Result Summary:

Testing Item	Result (mg/kg)
Fluorine (F) Content	ND
Chlorine (Cl) Content	155
Bromine (Br) Content	ND
Iodine (I) Content	ND

mg/kg= milligram per kilogram = ppm
ND= Not detected

(Ⅱ) Test Method:

Testing Item	Testing Method	Reporting Limit
Halogen (F, Cl, Br, I) Content	With reference to BS EN 14582:2007, by calorimetric bomb and determined by Ion Chromatography	50 mg/kg

Reporting limit = Quantitation limit of analyte in sample

Date sample received : Aug 12, 2011
Testing period : Aug 12, 2011 to Aug 17, 2011

****

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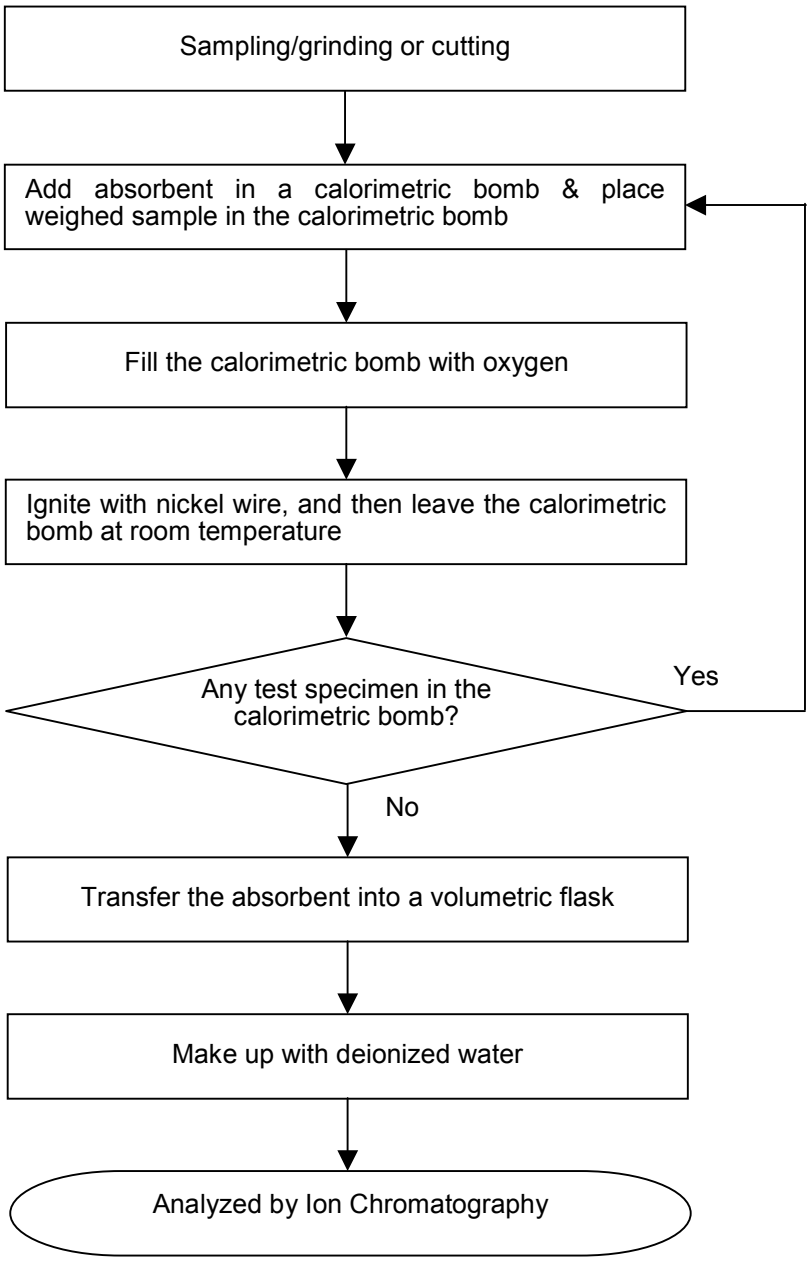
Tests Conducted

(III) Measurement Flowchart:

Test for Halogen Content (Reference Method: BS EN 14582:2007)



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End of report

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

Test Report Number: SZHH00651966

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

Date: Dec 15, 2011

Attn: KRISTEEN BACILA/ARSENIO CESISTA JR.

Sample Description:
One (1) submitted sample said to be **base & lid.**
Tested components:
(1) red plastic. (base)
(2) red plastic. (lid)

****

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

****

To be continued

Authorized by:
For Intertek Testing Services
Shenzhen Ltd.

Ben N.L. Lin
General Manager

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

Test Report Number: SZHH00651966

Conclusion:

Tested Sample	Standard	Result
Submitted sample	Phthalates content requirement in Annex XVII Items 51 & 52 of the REACH Regulation (EC) No. 1907/2006 & Amendment No. 552/2009 (formerly known as Directive 2005/84/EC) (DEHP, DBP & BBP)	Pass
	Test Item	
	Hexabromocyclododecane Content	See Test Conducted
	Halogen Content	See Test Conducted
	Restriction of the use of certain hazardous substance in electrical electronic and equipment (RoHS Direction 2002/95/EC and amendment 2005/618/EC)	See Test Conducted

****

Remark As requested by the applicant, tested components (1) and (2) were tested together.

****

Authorized by:
For Intertek Testing Services
Shenzhen Ltd.

Ben N.L. Lin
General Manager

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

Test Report Number: SZHH00651966

Tests Conducted

1 RoHS Chemical Test

(A) Test Result Summary:

Testing Item	Result
	(1/2)
Cadmium (Cd) Content (mg/kg)	ND(<2)
Lead (Pb) Content (mg/kg)	47
Mercury (Hg) Content (mg/kg)	ND(<2)
Chromium (VI)(Cr^{6+}) Content (mg/kg)	ND(<1)
Polybrominated Biphenyls (PBBs)(mg/kg)	
Monobromobiphenyl (MonoBB)	ND(<5)
Dibromobiphenyl (DiBB)	ND(<5)
Tribromobiphenyl (TriBB)	ND(<5)
Tetrabromobiphenyl (TetraBB)	ND(<5)
Pentabromobiphenyl (PentaBB)	ND(<5)
Hexabromobiphenyl (HexaBB)	ND(<5)
Heptabromobiphenyl (HeptaBB)	ND(<5)
Octabromobiphenyl (OctaBB)	ND(<5)
Nonabromobiphenyl (NonaBB)	ND(<5)
Decabromobiphenyl (DecaBB)	ND(<5)
Polybrominated Diphenyl Ethers (PBDEs)(mg/kg)	
Monobromodiphenyl Ether (MonoBDE)	ND(<5)
Dibromodiphenyl Ether (DiBDE)	ND(<5)
Tribromodiphenyl Ether (TriBDE)	ND(<5)
Tetrabromodiphenyl Ether (TetraBDE)	ND(<5)
Pentabromodiphenyl Ether (PentaBDE)	ND(<5)
Hexabromodiphenyl Ether (HexaBDE)	ND(<5)
Heptabromodiphenyl Ether (HeptaBDE)	ND(<5)
Octabromodiphenyl Ether (OctaBDE)	ND(<5)
Nonabromodiphenyl Ether (NonaBDE)	ND(<5)
Decabromodiphenyl Ether (DecaBDE)	ND(<5)

Chemist: Wang Haijun/Zeng Guoliang

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

Tested components:

(1) Red plastic (based of mark as #1).
(2) Red plastic (lid of mark as #1).

****

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

Test Report Number: SZHH00651966

Tests Conducted

(B) RoHS Requirement:

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

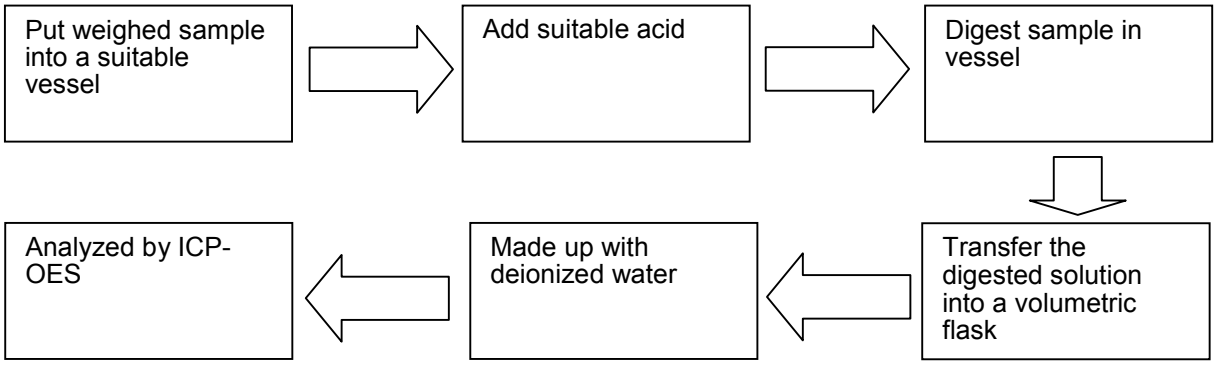
The above limits were quoted from 2002/95/EC and amendment 2005/618/EC for homogeneous material.

(C)Test Method:

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

Date sample received: Dec 08, 2011
Testing period: Dec 08, 2011 to Dec 13, 2011

(D) Measurement Flowchart:
1. Test for Cd/Pb Contents



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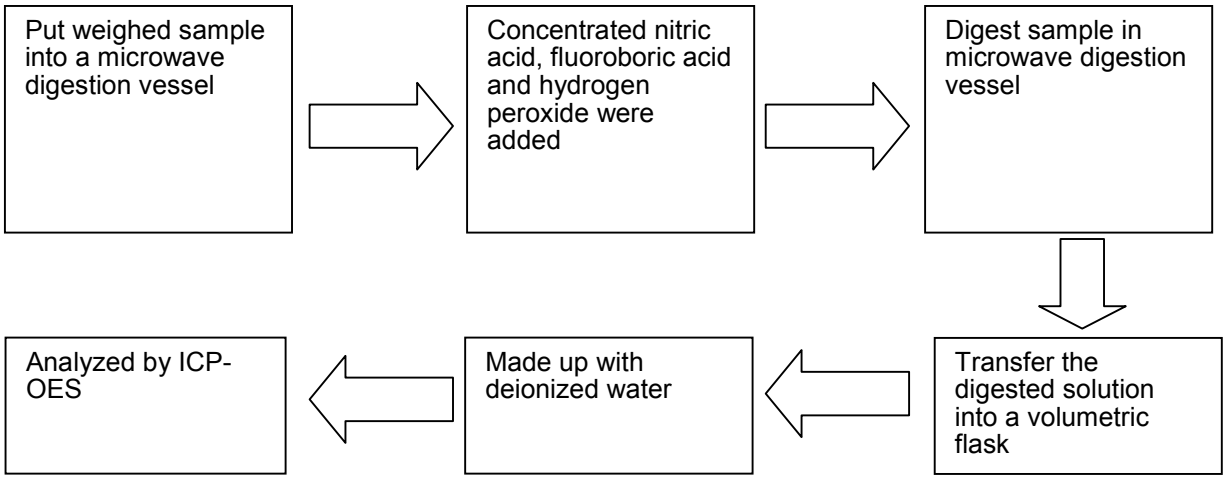
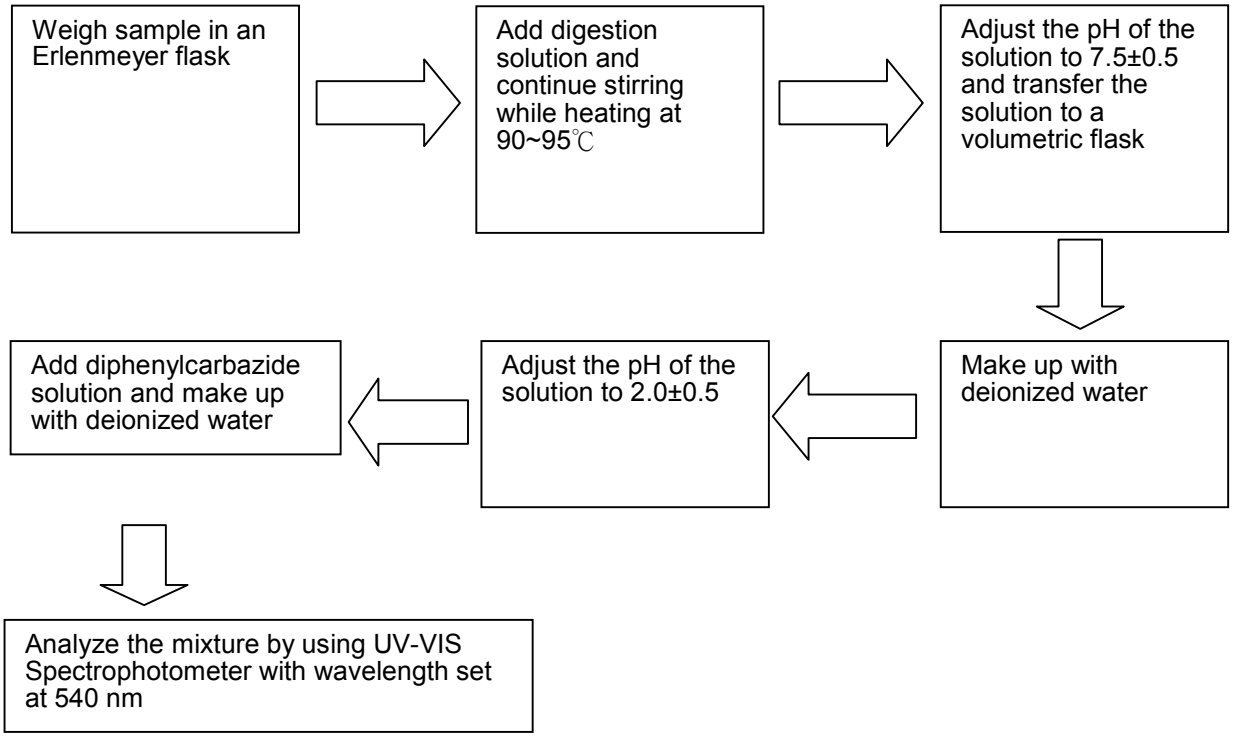
Tel: (86-755) 2602 0111 Fax: (86-755) 2683 7118/9 Postcode: 518067

Tests Conducted

2. Test for Hg Content



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



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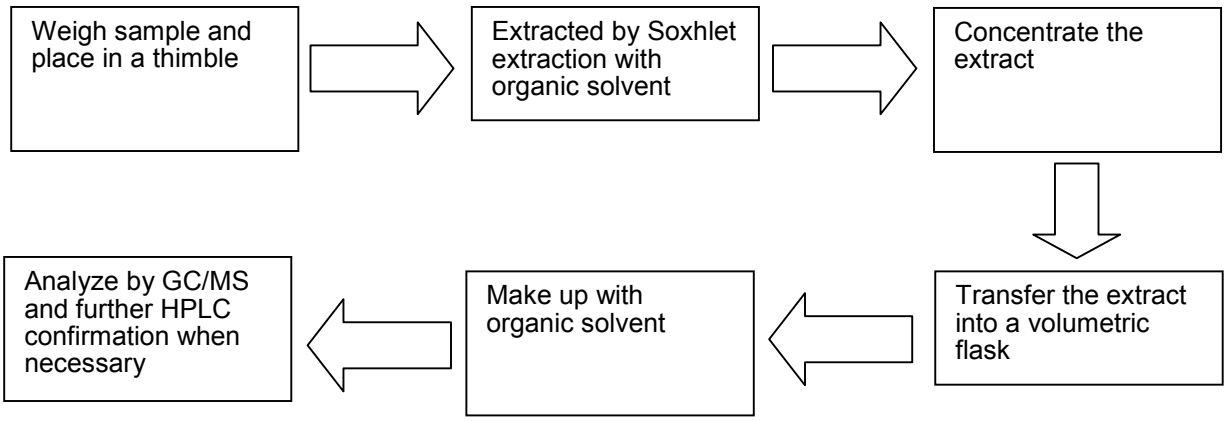
Tests Conducted

4. Test for PBBs/PBDEs Contents



2 Halogen Content

(Ⅰ) Test Result Summary:

Testing Item	Result (mg/kg)
	(1/2)
Fluorine (F) Content	597
Chlorine (Cl) Content	ND
Bromine (Br) Content	41600
Iodine (I) Content	ND

mg/kg= milligram per kilogram = ppm
ND= Not detected

Remark: As requested by the applicant, tested components (1) and (2) were tested together.

(Ⅱ) Test Method:

Testing Item	Testing Method	Reporting Limit
Halogen (F, Cl, Br, I) Content	With reference to BS EN 14582:2007, by calorimetric bomb and determined by Ion Chromatography	50 mg/kg

Reporting limit = Quantitation limit of analyte in sample

Date sample received: Dec 08, 2011
Testing period: Dec 08, 2011 to Dec 14, 2011

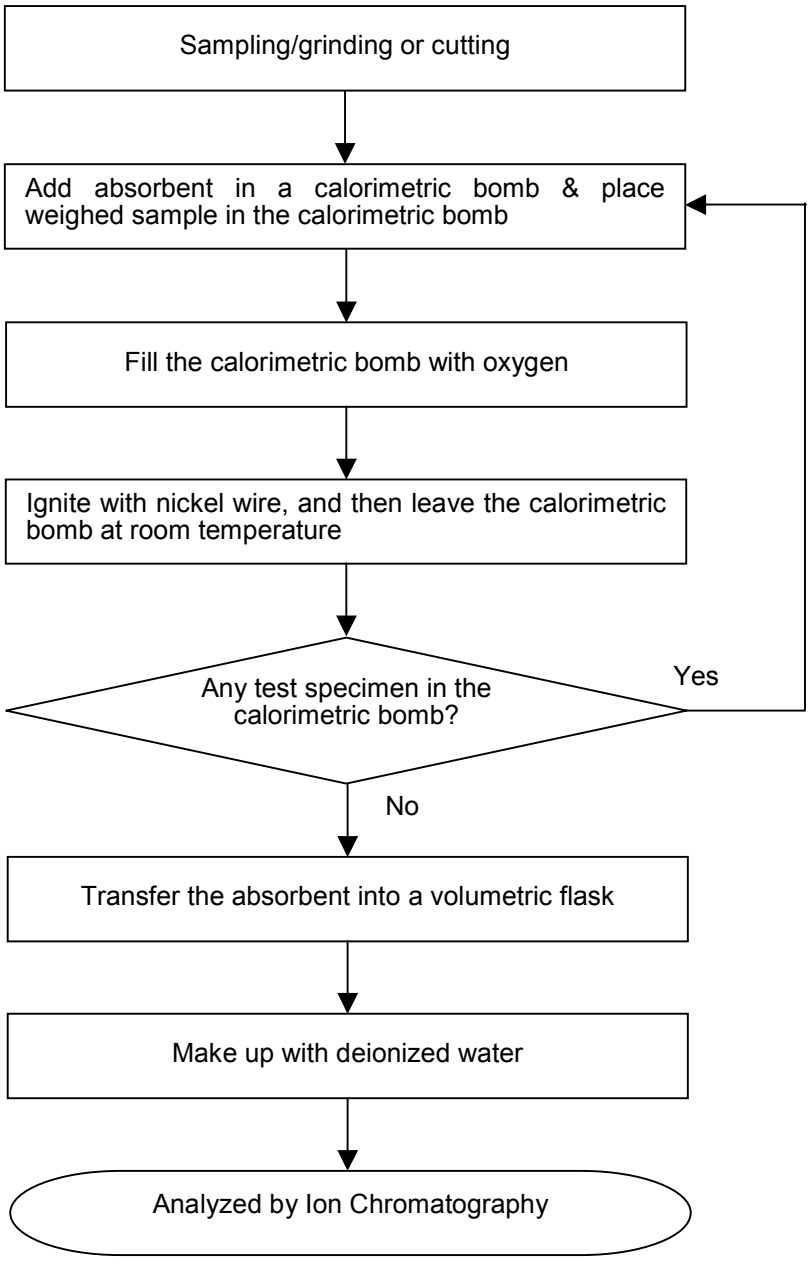
****

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

Tests Conducted

(Ⅲ) Measurement Flowchart:

Test for Halogen Content (Reference Method: BS EN 14582:2007)



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

Tests Conducted

3 Phthalate Content

With reference to EN14372, by Gas chromatographic-Mass Spectrometric (GC-MS) analysis.

	Result (%) (1/2)
Dibutyl phthalate (DBP)	<0.01
Di-(2-ethyl hexyl) phthalate (DEHP)	<0.01
Benzyl butyl phthalate (BBP)	<0.01
Sum of three phthalates	<0.01
Limit	0.1 %

The above limit was quoted according to Annex XVII Items 51 & 52 of the REACH Regulation (EC) No. 1907/2006 & Amendment No. 552/2009(formerly known as Directive 2005/84/EC) for phthalate content in toys and children articles.

< = Less than

As per client's request, only DBP, DEHP and BBP were tested for the components (1) to (2) of the submitted sample.

Tested components:

(1) Red plastic (based of mark as #1).
(2) Red plastic (lid of mark as #1).

Date sample received : Dec 08, 2011
Testing period : Dec 08, 2011 to Dec 12, 2011

4 Hexabromocyclododecane (HBCDD) Content:

By solvent extraction followed by Gas Chromatographic - Mass Spectrometric (GC-MS) analysis.

Tested Sample (1/2)	Result (mg/kg)
	<10

< = Less than
mg/kg =milligram per kilogram

Tested components:

(1) Red plastic (based of mark as #1).
(2) Red plastic (lid of mark as #1).

Date sample received: Dec 08, 2011
Testing period: Dec 08, 2011 to Dec 10, 2011

****

End of report

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

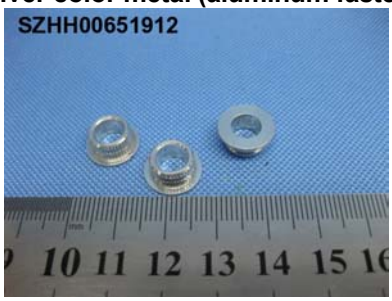
Test Report Number: SZHH00651912

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

Date: Dec 13, 2011

Attn: KRISTEEN BACILA/ARSENIO CESISTA JR.

Sample Description:
One (1) submitted sample said to be **silver color metal (aluminum fastener).**



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

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Authorized by:
For Intertek Testing Services
Shenzhen Ltd.

Ben N.L. Lin
General Manager

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

Test Report Number: SZHH00651912

Tests Conducted

RoHS Chemical Test

(A) Test Result Summary:

Testing Item	Result
Cadmium (Cd) Content (mg/kg)	ND(<2)
Lead (Pb) Content (mg/kg)	3370
Mercury (Hg) Content (mg/kg)	ND(<2)
Chromium (VI)(Cr^{6+}) Result (By Boiling Water Extraction on Metal)(mg/kg with $50cm^2$)	Negative(<0.02)

Chemist: Wang Haijun

mg/kg = milligram per kilogram = ppm
mg/kg with $50cm^2$ = milligram per kilogram with 50 square centimetre
< = Less than
ND = Not detected

Positive = A positive test result indicated the presence of Cr(VI) at the time of testing, equal to or greater than threshold of 1 mg/kg for spot test procedure or 0.02 mg/kg for boiling-water-extraction procedures with a sample surface area of $50cm^2$ used. However, it shall not be interpreted as the Cr(VI) concentration in the coating layer of the sample and should not be used as a method detection limit for this qualitative test.

Negative = A negative test result indicated above positive observation was not found at the time of testing. When the spot-test showed a negative result, the boiling-water-extraction procedure shall be used to verify the result.

(B) RoHS Requirement:

Restricted Substances	Limits
Cadmium (Cd)	0.01% (100 mg/kg)
Lead (Pb)	0.1% (1000 mg/kg)
Mercury (Hg)	0.1% (1000 mg/kg)
Chromium (VI) (Cr^{6+})	0.1% (1000 mg/kg)

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

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Intertek Testing Services Shenzhen Ltd.-TFH Division
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Tel: (86-755) 2602 0111 Fax: (86-755) 2683 7118/9 Postcode: 518067

Test Report Number: SZHH00651912

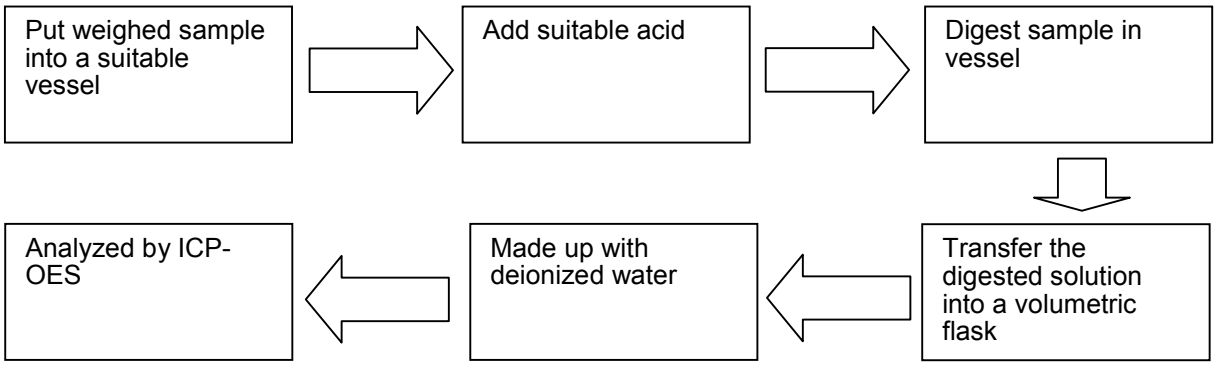
Tests Conducted

(C) Test Method:

Testing Item	Testing Method	Reporting Limit
Cadmium (Cd) Content	With reference to IEC 62321 Edition 1.0:2008, by acid digestion and determined by ICP - OES	2 mg/kg
Lead (Pb) Content	With reference to IEC 62321 Edition 1.0:2008, by acid digestion and determined by ICP - OES	2 mg/kg
Mercury (Hg) Content	With reference to IEC 62321 Edition 1.0:2008, by acid digestion and determined by ICP - OES	2 mg/kg
Chromium (VI) (Cr^{6+}) Content	With reference to IEC 62321 Edition 1.0:2008, by boiling water extraction and determined by UV-VIS Spectrophotometer	Positive/Negative (Threshold of 0.02mg/kg with 50cm^2)

Date sample received: Dec 08, 2011
Testing period: Dec 08, 2011 to Dec 10, 2011

(D) Measurement Flowchart:
1. Test for Cd/Pb Contents



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Intertek Testing Services Shenzhen Ltd.-TFH Division
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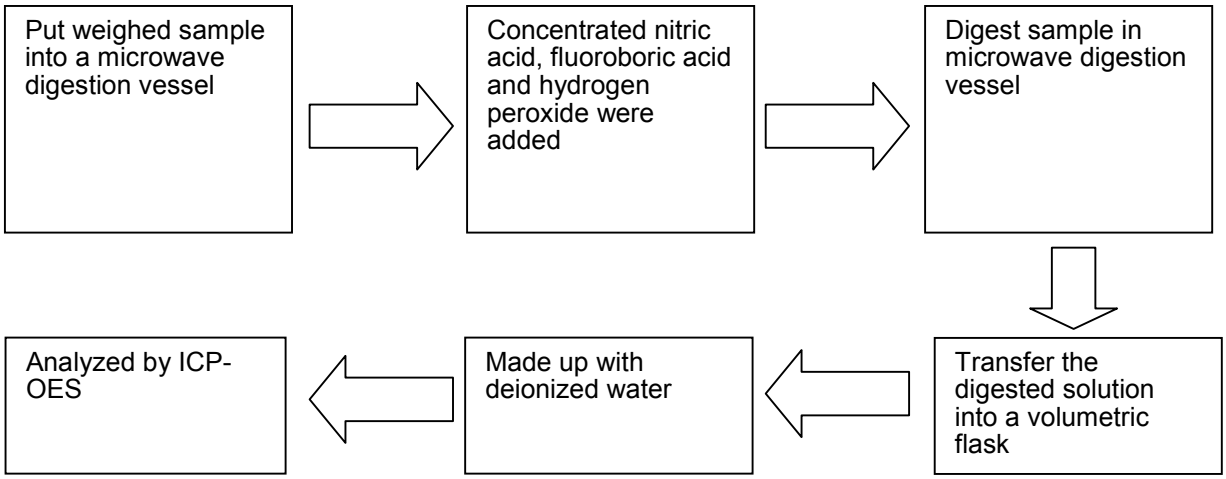
Tel: (86-755) 2602 0111 Fax: (86-755) 2683 7118/9 Postcode: 518067

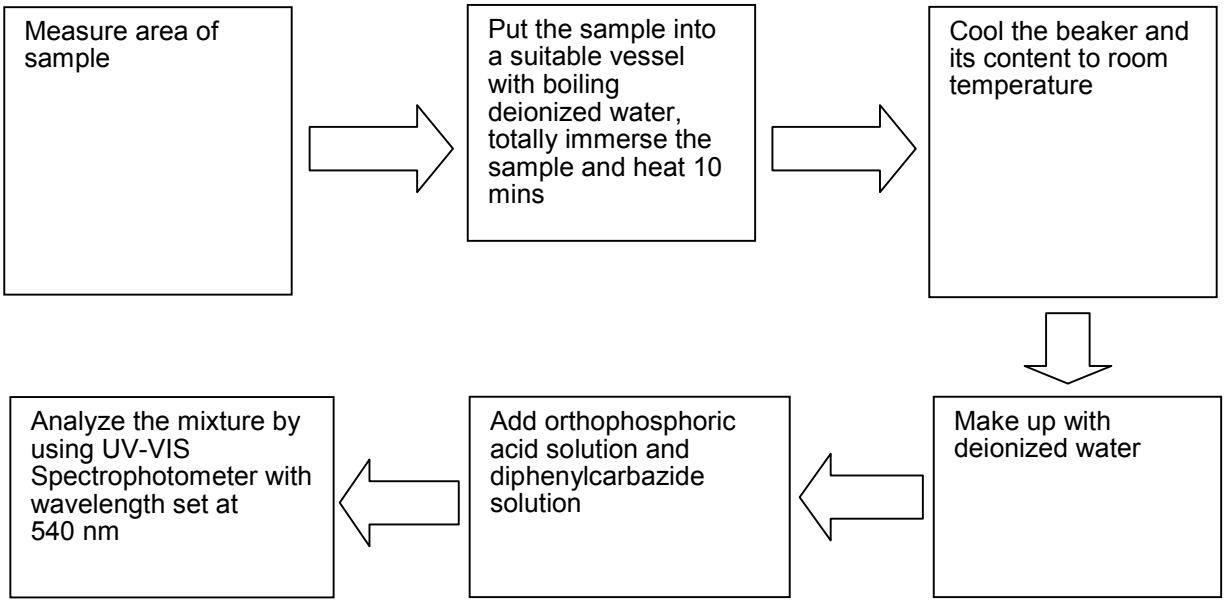
Test Report Number: SZHH00651912

Tests Conducted

2. Test for Hg Content



3. Test for Chromium (VI) (Cr^{6+}) Content (Boiling Water Extraction)



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End of report

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

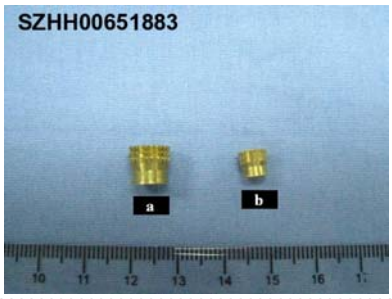
Test Report Number: SZHH00651883

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

Date: Dec 13, 2011

Attn: KRISTEEN BACILA/ARSENIO CESISTA JR.

Sample Description:
One (1) submitted sample said to be **copper screw.**
Tested components:
(a) copper color metal. (big)
(b) copper color metal. (small)



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Tests conducted:
As requested by the applicant, refer to attached page(s) for details.
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Remark : As requested by the applicant, tested components (a) and (b) were tested together.
****

Authorized by:
For Intertek Testing Services
Shenzhen Ltd.

Ben N.L. Lin
General Manager

Intertek Testing Services Shenzhen Ltd.-TFH Division
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Tel: (86-755) 2602 0111 Fax: (86-755) 2683 7118/9 Postcode: 518067

Test Report Number: SZHH00651883

Tests Conducted

RoHS Chemical Test

(A) Test Result Summary:

Testing Item	Result
	(a/b)
Cadmium (Cd) Content (mg/kg)	35
Lead (Pb) Content (mg/kg)	27600
Mercury (Hg) Content (mg/kg)	ND(<2)
Chromium (VI)(Cr^{6+}) Result (By Boiling Water Extraction on Metal)(mg/kg with $50cm^2$)	Negative (<0.02)

Chemist: Wang Haijun

mg/kg = milligram per kilogram = ppm
mg/kg with $50cm^2$ = milligram per kilogram with 50 square centimetre
< = Less than
ND = Not detected

Positive = A positive test result indicated the presence of Cr(VI) at the time of testing, equal to or greater than threshold of 1 mg/kg for spot test procedure or 0.02 mg/kg for boiling-water-extraction procedures with a sample surface area of $50cm^2$ used. However, it shall not be interpreted as the Cr(VI) concentration in the coating layer of the sample and should not be used as a method detection limit for this qualitative test.

Negative = A negative test result indicated above positive observation was not found at the time of testing. When the spot-test showed a negative result, the boiling-water-extraction procedure shall be used to verify the result.

(B) RoHS Requirement:

Restricted Substances	Limits
Cadmium (Cd)	0.01% (100 mg/kg)
Lead (Pb)	0.1% (1000 mg/kg)
Mercury (Hg)	0.1% (1000 mg/kg)
Chromium (VI) (Cr^{6+})	0.1% (1000 mg/kg)

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

****

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Test Report Number: SZHH00651883

Tests Conducted

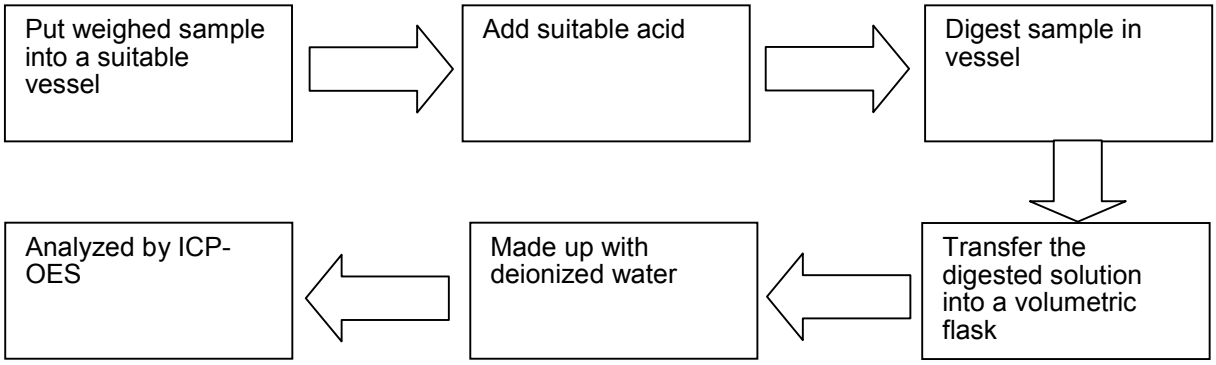
(C) Test Method:

Testing Item	Testing Method	Reporting Limit
Cadmium (Cd) Content	With reference to IEC 62321 Edition 1.0:2008, by acid digestion and determined by ICP - OES	2 mg/kg
Lead (Pb) Content	With reference to IEC 62321 Edition 1.0:2008, by acid digestion and determined by ICP - OES	2 mg/kg
Mercury (Hg) Content	With reference to IEC 62321 Edition 1.0:2008, by acid digestion and determined by ICP - OES	2 mg/kg
Chromium (VI) (Cr^{6+}) Content	With reference to IEC 62321 Edition 1.0:2008, by boiling water extraction and determined by UV-VIS Spectrophotometer	Positive/Negative (Threshold of 0.02mg/kg with 50cm^2)

Date sample received : Dec 08, 2011
Testing period : Dec 08, 2011 to Dec 10, 2011

(D) Measurement Flowchart:

1. Test for Cd/Pb Contents



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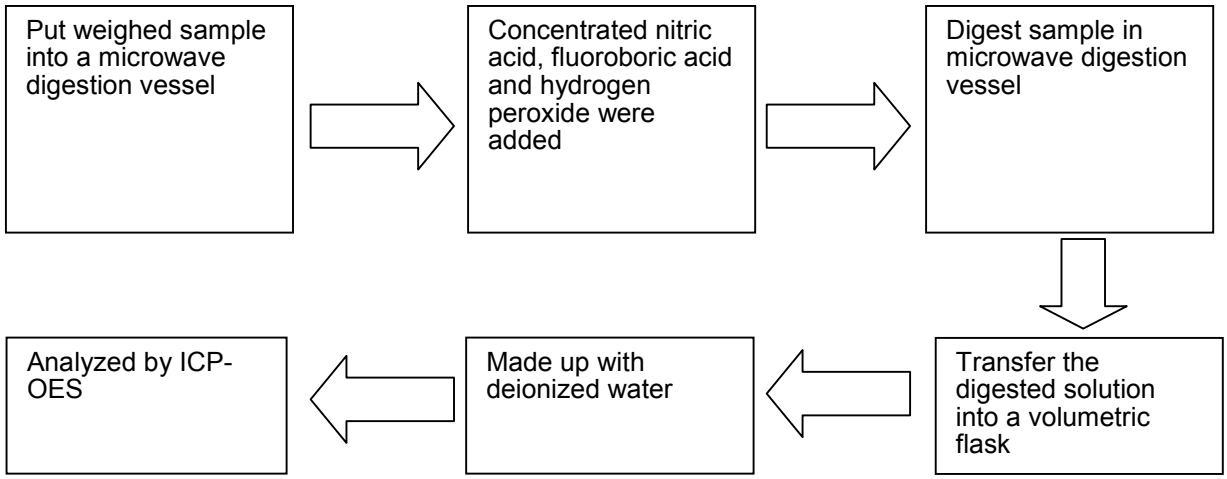
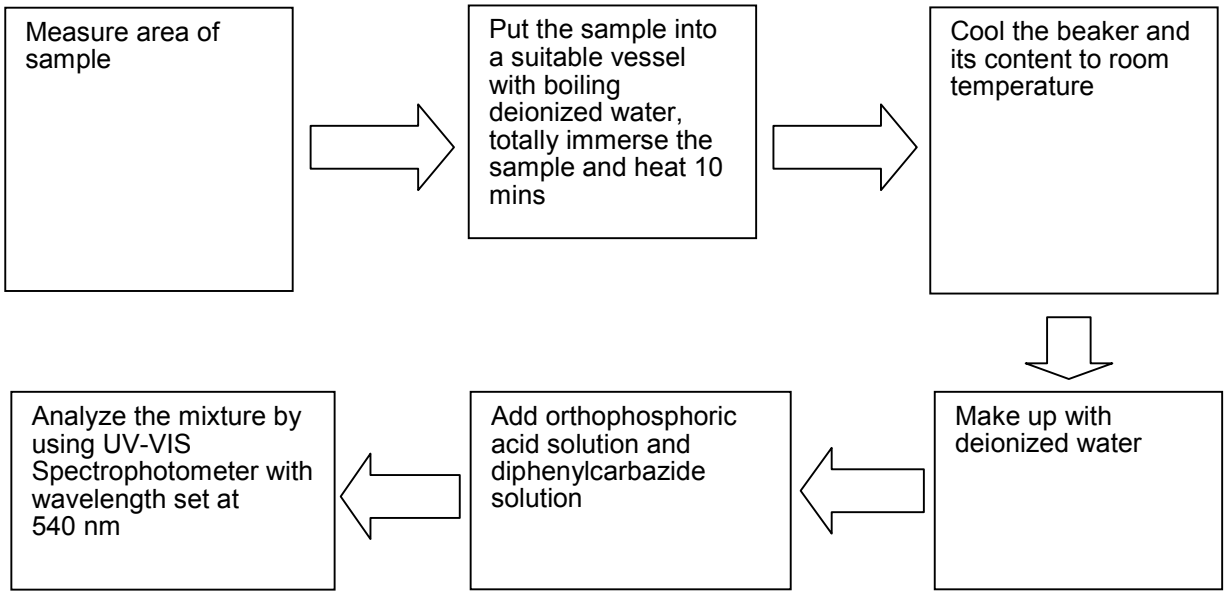
Test Report Number: SZHH00651883

Tests Conducted

2. Test for Hg Content



3. Test for Chromium (VI) (Cr^{6+}) Content (Boiling Water Extraction)



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End of report

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

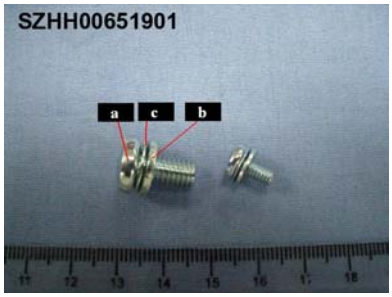
Test Report Number: SZHH00651901

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

Date: Dec 13, 2011

Attn: KRISTEEN BACILA/ARSENIO CESISTA JR.

Sample Description:
One (1) submitted sample said to be **screw & washer.**
Tested components:
(a) silver color metal. (screw)
(b) silver color metal. (big washer)
(c) silver color metal. (small washer)



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

Remark: As requested by the applicant, tested components (a), (b) and (c)were tested together.
****

Authorized by:
For Intertek Testing Services
Shenzhen Ltd.

Ben N.L. Lin
General Manager

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Test Report Number: SZHH00651901

Tests Conducted

RoHS Chemical Test

(A) Test Result Summary:

Testing Item	Result
	(a/b/c)
Cadmium (Cd) Content (mg/kg)	ND(<2)
Lead (Pb) Content (mg/kg)	ND(<2)
Mercury (Hg) Content (mg/kg)	ND(<2)
Chromium (VI)(Cr^{6+}) Result (By Boiling Water Extraction on Metal)(mg/kg with $50cm^2$)	Negative(<0.02)

Chemist: Wang Haijun

mg/kg = milligram per kilogram = ppm
mg/kg with $50cm^2$ = milligram per kilogram with 50 square centimetre
< = Less than
ND = Not detected

Positive = A positive test result indicated the presence of Cr(VI) at the time of testing, equal to or greater than threshold of 1 mg/kg for spot test procedure or 0.02 mg/kg for boiling-water-extraction procedures with a sample surface area of $50cm^2$ used. However, it shall not be interpreted as the Cr(VI) concentration in the coating layer of the sample and should not be used as a method detection limit for this qualitative test.

Negative = A negative test result indicated above positive observation was not found at the time of testing. When the spot-test showed a negative result, the boiling-water-extraction procedure shall be used to verify the result.

(B) RoHS Requirement:

Restricted Substances	Limits
Cadmium (Cd)	0.01% (100 mg/kg)
Lead (Pb)	0.1% (1000 mg/kg)
Mercury (Hg)	0.1% (1000 mg/kg)
Chromium (VI) (Cr^{6+})	0.1% (1000 mg/kg)

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

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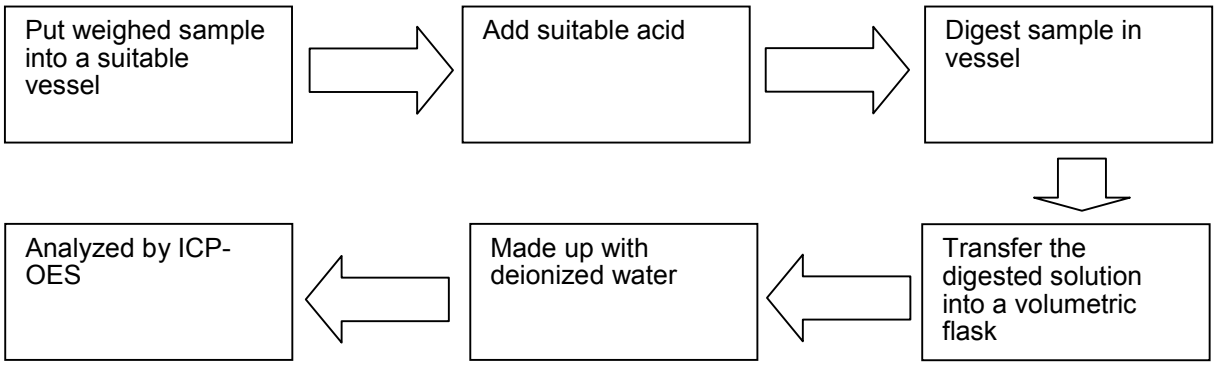
Tests Conducted

(C) Test Method:

Testing Item	Testing Method	Reporting Limit
Cadmium (Cd) Content	With reference to IEC 62321 Edition 1.0:2008, by acid digestion and determined by ICP - OES	2 mg/kg
Lead (Pb) Content	With reference to IEC 62321 Edition 1.0:2008, by acid digestion and determined by ICP - OES	2 mg/kg
Mercury (Hg) Content	With reference to IEC 62321 Edition 1.0:2008, by acid digestion and determined by ICP - OES	2 mg/kg
Chromium (VI) (Cr^{6+}) Content	With reference to IEC 62321 Edition 1.0:2008, by boiling water extraction and determined by UV-VIS Spectrophotometer	Positive/Negative (Threshold of 0.02mg/kg with 50cm^2)

Date sample received: Dec 08, 2011
Testing period: Dec 08, 2011 to Dec 10, 2011

(D) Measurement Flowchart:
1. Test for Cd/Pb Contents



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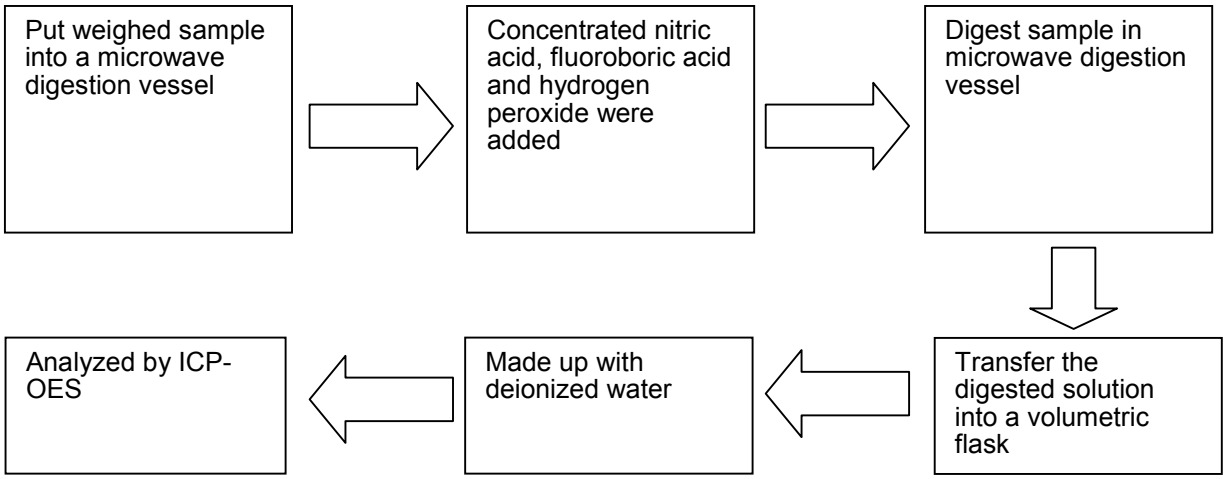
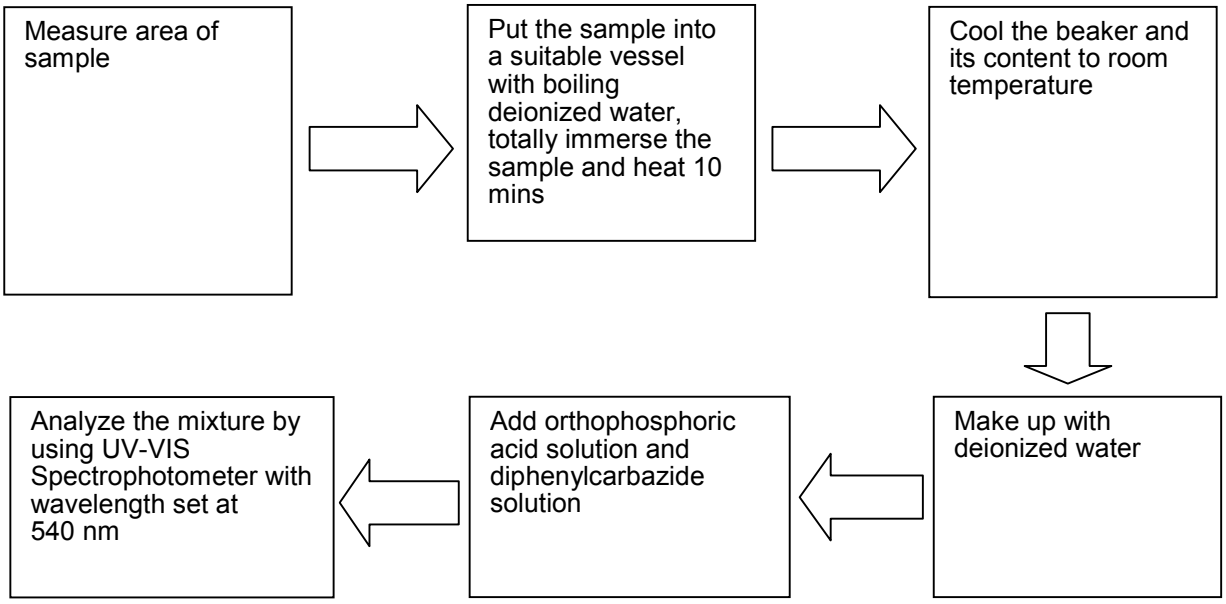
Tests Conducted

2. Test for Hg Content



3. Test for Chromium (VI) (Cr^{6+}) Content (Boiling Water Extraction)



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End of report

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