

ICP Test Report Certification Packet

Company name:	Littelfuse, Inc.		
Product Series:	Midget Fuse		
Product #:	FLM Series		
Issue Date:	August 09, 2013		
2011/65/EU)-restricted packing/packaging mate In addition, it is hereby	substance nor such userials, and for additives are ported to you that the g/packaging materials, a	se, for materials to be and the like in the manu parts and sub-materials and the additives and the	U Directive 2002/95/EC, used for unit parts, for facturing processes. the materials to be used like in the manufacturing
	Issued by:	JENNY DINGLASAN	
		<global ehs="" specialis<="" td=""><td>st></td></global>	st>
	s and unit parts overs the FLM Slo Blo ctured by Littelfuse, Inc.	Military Fuse	RoHS-Compliant series
< Raw Materials Please see Ta			
. ,	I measurable substance opropriate pages as ider		
Remarks :			



Table 1: List of Raw Materials covered by this report

Total Parts	Raw Material Part Number	Raw Material Description	Page(s)
1	082xxx	Wire-CuNi	3-7
2	082xxx	Wire-99% Copper	8-11
3	082xxx	Wire-5% by Weight Ag plated Cu	12-16
4	082xxx	Wire-2% by Weight Ag Clad Cu (082684)	16-19
5	923-001	Cap	20-25
6	079xxx	Cu 110 Strip w/ Center Sn Overlay	26-29
7	909-410	Midget Paper Body	30-36
8	927-027	Solder Pellet	37-42
9	692532	Solder	43-48
10	090183	Fuller Earth	49-56
11	648102	Yarn	57-62
13	955xxx	Zinc Strip Alloy	63-68



Number: SHAH0036227401

Date:

Applicant:

ELSCHUKOM ELEKTROSCHUTZKOMPONENTENBAU

U

JAN 18, 2013

GMBH

GEWERBESTRASSE 87,D-98669 VEILSDORF,

GERMANY

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

Germany

Tests Conducted:

Country Of Origin

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:

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

Number:

SHAH0036227401

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

Remark: mg/kg with 50cm² = milligram per kilogram with 50 square centimeter ND = not detected

(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 ⁸⁺)	0.1% (1000 mg/kg)

The above limits were quoted from RoHS Directive 2011/65/EU 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 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 ⁶⁺) 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 ² (in testing solution)

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

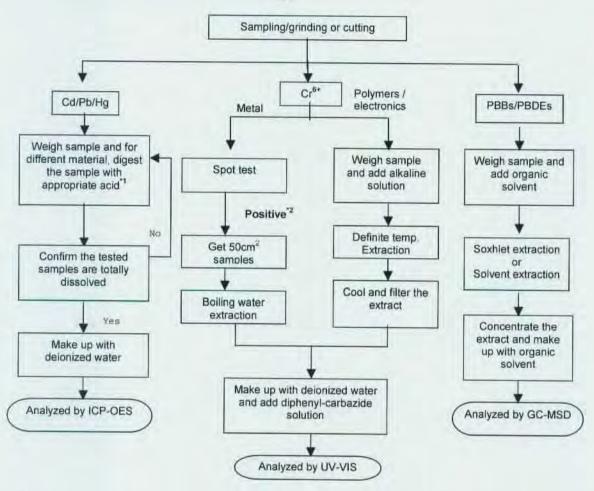
To Be Continued



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 ₃ ,HCL,HF,H ₂ O ₂ H ₃ BO ₃	
Metals	HNO3.HCL,HF	
Electronics	HNO ₃ ,HCL,H ₂ O ₂ HBF ₄	

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

To Be Continued

SHAH0036227401

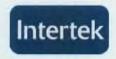
Number:



Test Report Number: SHAH0036227401

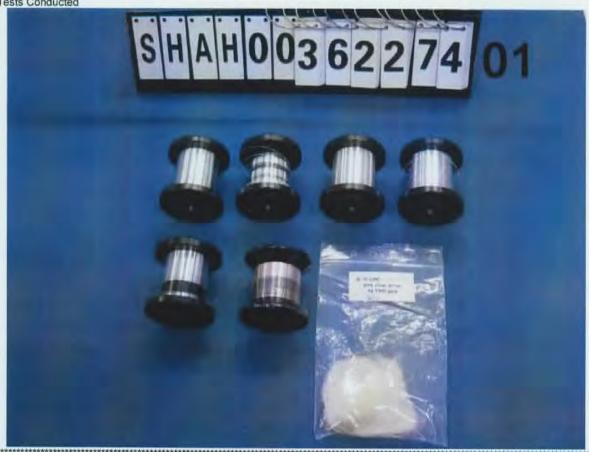
Tests Conducted

To Be Continued



Number: SHAH0036227401

Tests Conducted



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.



Test Report SHAH00361401 Number:

Date:

JAN 16, 2013

Applicant: LITTELFUSE,INC.

800 E. NORTHWEST HWY

A.DIVIETRO/D.UNTIEDT

Sample Description:

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

: Wire Tin Plated Cu. Item Name

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





Test Report SHAH00361401 Number:

Tests Conducted

(I) Test Result Summary:

<u>Testing Item</u>	Result (ppm)	
	(1)	
Heavy Metal		
Cadmium (Cd) content	ND	
Lead (Pb) content	ND	
Mercury (Hg) content	ND	
Chromium VI (Cr ⁸⁺) content (mg/kg With 50cm ²)	Negative (< 0.02)	

<u>Testing Item</u>	Result (ppm)
	(2)
Heavy Metal	
Cadmium (Cd) content / Plating	ND
Lead (Pb) content / Plating	60
Mercury (Hg) content / Plating	ND
Chromium VI (Cr ⁶⁺) content (mg/kg With 50cm ²) / 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 cm² was used and the dilution factor was adjusted accordingly.

mg/kg with 50cm² = 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	<u>Limits</u>
Cadmium (Cd) Content	0.01% (100ppm)
Lead (Pb) Content	0.1% (1000ppm)
Mercury (Hg) Content	0.1% (1000ppm)
Chromium VI (Cr ^{o+}) 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		Reporting limit
Cadmium (Cd) content	determined by ICP-OES.	2 ppm
Lead (Pb) content	determined by ICP-OES.	2 ppm
Mercury (Hg) content	With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Chromium VI (Cr ⁶⁺) content		0.02 mg/kg with 50cm ²

Remark: Reporting limit = Quantitation limit of analyze in sample

Date Sample Received: Jan.9, 2013
Testing Period: Jan.9, 2013 to Jan.14, 2013

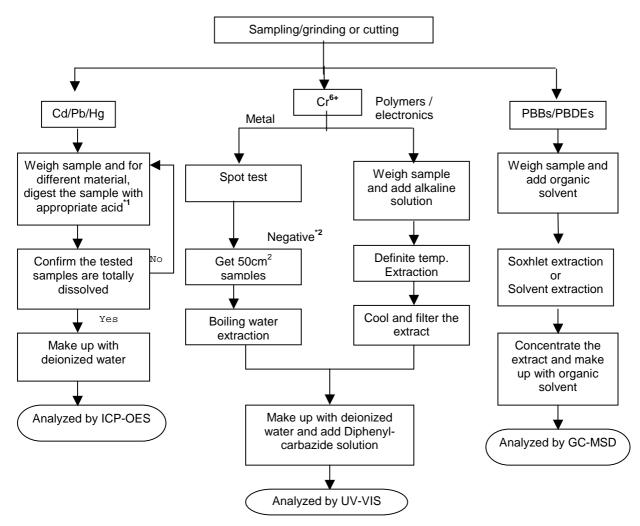
To be continued



Test Report Number: SHAH00361401

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:

7 ALLIKOT KIALL AGID.	
MATERIAL	ACID ADDED FOR DIGESTION
Polymers	HNO ₃ ,HCI,HF,H ₂ O ₂ ,H ₃ BO ₃
Metals	HNO _{3,} HCL,HF
Electronics	HNO ₃ ,HCL,H ₂ O ₂ ,HBF ₄

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

To be continued



Test Report SHAH00361401 Number:

Tests Conducted



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.



Test Report Number: TWNC00300508

Date : Mar 06, 2013 Applicant: Littelfuse Philippines Inc.

LIMA Technology Center, Lipa City,

Malvar, Batangas

Sample Description:

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

Part Description : Element - (Silver clad Cu wire with 5% Ag) 082686

: 082xxx Part Number

: Feb 26, 2013 Date Sample Received Date Test Started : Feb 26, 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





Test Conducted

(I) Test Result Summary:

(1) lest Result Summary.		1		
<u>Test Item</u>	<u>Unit</u>	Test Method	Result Silvery metal wire	RL
Heavy Metal			metal wire	
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 ⁶⁺) content	mg/kg with 50 cm ²	With reference to IEC 62321: 2008, by boiling water extraction and determined by UV-Vis Spectrophotometer.	Negative	0.02

ppm = parts per million based on weight of tested sample = mg/kg Remarks:

> = Not detected ND

RL = Reporting Limit, Quantitation limit of analyte in sample mg/kg with 50cm² = milligram per kilogram with 50 square centimeter

Negative = A negative test result indicated positive observation was not

found at the time of Test.

Responsibility of Chemist: Kevin Liu/ Irene Chiou

Date Sample Received : Feb 26, 2013

: Feb 26, 2013 To Mar 01, 2013 Test Period

(Ⅱ) Limit:

RoHS Limit

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

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





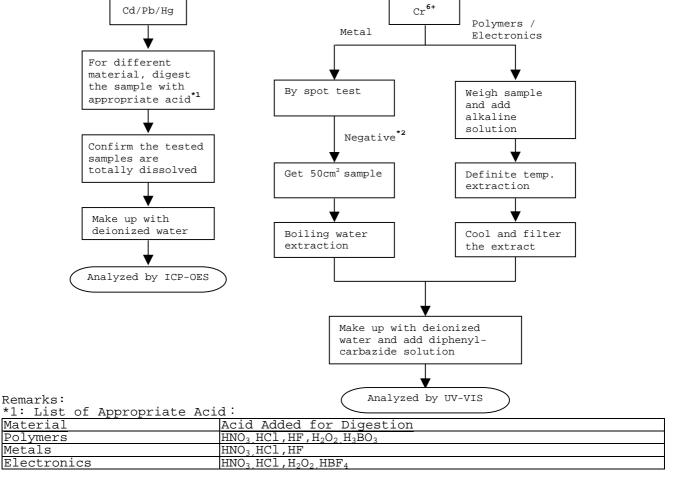
Test Conducted

(Ⅲ) Measurement Flowchart:

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

Reference Standard: IEC 62321 edition 1.0:2008

Sampling/grinding or cutting



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

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.



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



Test Conducted

<u>Photo</u>









Test Report Number : TWNC00300507

Date : Mar 06, 2013 Applicant: Littelfuse Philippines Inc.

LIMA Technology Center, Lipa City,

Malvar, Batangas

Sample Description:

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

Part Description : Element - (Silver Clad Cu Wire with 2% Ag) 082685

: 082xxx Part Number

: Feb 26, 2013 Date Sample Received Date Test Started : Feb 26, 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





Test Conducted

(I) Test Result Summary:

(1) Test Results Summerly			Result	
Test Item	<u>Unit</u>	Test Method	<u>Silvery</u> metal wire	<u>RL</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 ⁶⁺) content	mg/kg with 50 cm ²	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 $50cm^2$ = milligram per kilogram with 50 square centimeter

Negative = A negative test result indicated positive observation was not

found at the time of Test.

Responsibility of Chemist: Kevin Liu/ Irene Chiou

Date Sample Received : Feb 26, 2013

Test Period : Feb 26, 2013 To Mar 01, 2013

(Π) Limit: RoHS Limit

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

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





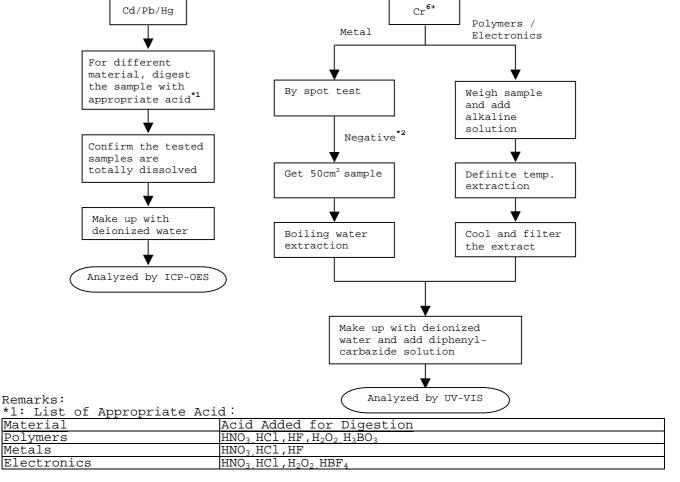
Test Conducted

(Ⅲ) Measurement Flowchart:

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

Reference Standard: IEC 62321 edition 1.0:2008

Sampling/grinding or cutting



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

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.



Intertek Testing Services Taiwan Ltd.



Test Conducted

<u>Photo</u>









Test Report Number: TWNC00279923

Applicant: Littelfuse, S.A. de C.V.

Blvd. Fausto Z. Martinez #1800 Col. Magisterio Seccion 38 C.P. 26070 Piedra Negras, Coahuila,

Mexico

Sample Description:

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

Part Description : CAP PLATED
Part Number : 923-001

Date Sample Received : Oct 04, 2012 Date Test Started : Oct 05, 2012

Test Conducted :

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

Authorized By:
On Behalf Of Intertek Testing Services
Taiwan Limited



K. Y. Liang
Director

This report shall not be reproduced except in full, without the written approval of the laboratory.



Date : Oct 12, 2012



Test Conducted

(I) Test Result Summary:

Most Thom	Result (ppm)		
Test Item	(1)	(2)	
Heavy Metal			
Cadmium (Cd) content	ND	ND	
Lead (Pb) content	ND	ND	
Mercury (Hg) content	ND	ND	
Chromium VI (Cr^{6+}) content (mg/kg with $50cm^2$)	Negative (< 0.02)	Negative (< 0.02)	

Remarks: ppm = Parts per million based on weight of tested sample = mg/kg

ND = Not detected
< = Less than</pre>

mg/kg with 50cm² = milligram per kilogram with 50 square centimetre Negative = A negative test result indicated positive observation was not found at the time of Test.

Tested Components

(1) Coppery Metal Base Material

(2) Silvery Plating Layer

Responsibility of Chemist : Irene Chiou / Kevin Liu

Date Sample Received : Oct 04, 2012

Test Period : Oct 05, 2012 To Oct 11, 2012

(Π) RoHS Limits:

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

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





Test Conducted

(Ⅲ) Test Method:

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

Remark: Reporting limit = Quantitation limit of analyte in sample



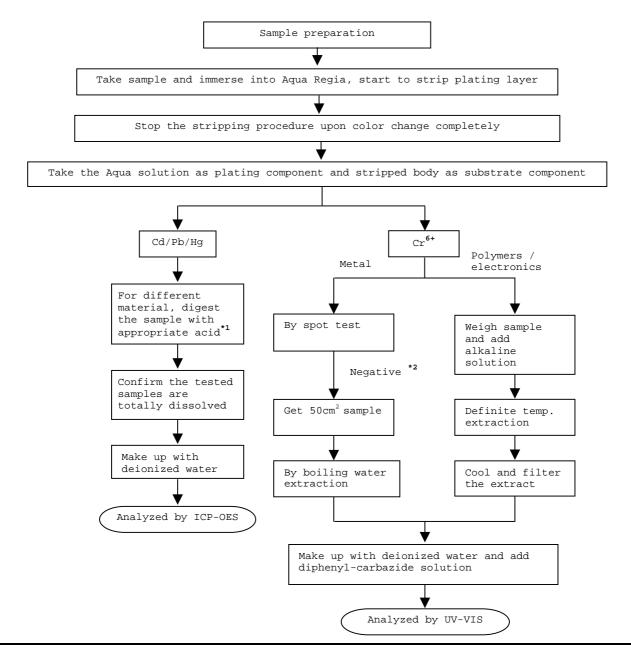


Test Conducted

(IV) Measurement Flowchart:

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

Reference Standard: IEC 62321 edition 1.0:2008





Page 4 of 6

Intertek Testing Services Taiwan Ltd.



Test Conducted

Remarks:

*1: List of Appropriate Acid:

<u>Material</u>	Acid Added for Digestion
Polymers	HNO ₃ ,HCl,HF,H ₂ O ₂ ,H ₃ BO ₃
Metals	HNO _{3,} HCl,HF
Electronics	HNO ₃ ,HCl,H ₂ O ₂ ,HBF ₄

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

End of Report

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.





Test Conducted

Photo









No. SHAEC1215842621

Date: 13 Sep 2012

Page 1 of 4

CHINALO LUOYANG COPPER CO., LTD.
NO.50, JIANSHE ROAD, LUOYANG, HENAN PROVINCE

The following sample(s) was/were submitted and identified on behalf of the clients as: C10100(TU1)

SGS Job No. :

SP12-027024 - SH

Date of Sample Received:

10 Sep 2012

Testing Period:

10 Sep 2012 - 13 Sep 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).

Conclusion:

Based on the performed tests on submitted samples, the results of Lead,

Mercury, Cadmium, Hexavalent chromium 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.

Fan Jingjie, JJ

Approved Signatory

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at http://www.sgs.com/terms_and_conditions. It is and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at www.sgs.com/terms-e-document.htm. Attention is drawn to the limitation of liability, and appropriately be naid provided that information contained hereon reflects the Company's floridings at the time of liability in the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exponent on a texperiate parties to a transaction its ignoration only and the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company are controlled in the content of appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

If the content is a content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



No. SHAEC1215842621

Date: 13 Sep 2012

Page 2 of 4

Test Results:

Test Part Description:

SGS Sample ID Specimen No.

Description

SHA12-158426.015

Copper metal sheet

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 Spot test / Colorimetric Method using UV-Vis.

Test Item(s)	<u>Limit</u>	<u>Unit</u>	MDL	<u>015</u>
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1000	mg/kg	2	ND
Mercury (Hg)	1000	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))		-	\Diamond	Negative

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 cm² sample surface area.

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

document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at http://www.sgs.com/terms_and_conditions and,for electronic Documents at www.sgs.com/terms e-document.htm. Attention is drawn to the limitation of and,for electronic Documents at www.sgs.com/terms e-document.htm. Attention is drawn to the limitation of and for electronic Documents are www.sgs.com/terms e-document.htm. Attention is drawn to the limitation of its province of the company's findings at the time of the company is on any jurisdiction lessues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of presention of the company is the strength of the company is to its Client and this document does not axonerate parties to a transaction of several province of the company. The Company is to its Client and this document document is unlawful and offenders may be prosecuted to the fullest extent of the law.

Our province of the company is a support of the company is a support of the company is unlawful and offenders may be prosecuted to the fullest extent of the law.



No. SHAEC1215842621

Date: 13 Sep 2012

Page 3 of 4

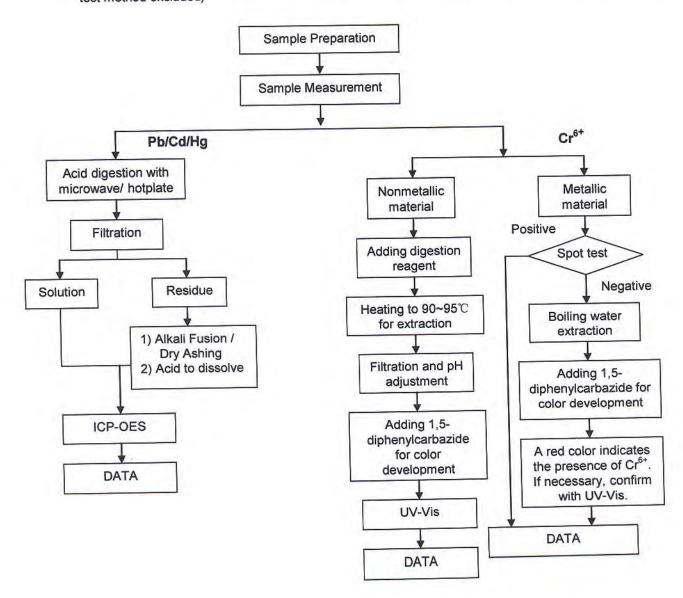
ATTACHMENTS

RoHS Testing Flow Chart

1) Name of the person who made testing: Jan Shi/Yoyo Wang/Allen Xiao

2) Name of the person in charge of testing: Jeff Zhang/George Xu

These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr⁶⁺ test method excluded)



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at http://www.sgs.com/terms_and_conditions. htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at www.sgs.com/terms-e-document.htm. Attention is drawn to the limitation of liability, and printed in the company's findings at the time of liability in the limits of Client in instructions, if any. The Company's sole responsibility is to its Client and this document does not exponent earner to a transaction from the subject of the subject in the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document on the subject in the

3°Building,No.889 Yishan Road Xuhul District,Shanghai China 200233 中国・上海・徐江区宜山路889号3号楼 邮编: 200233

retora Ca., d. 1

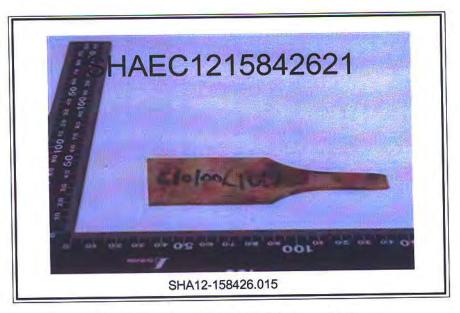


No. SHAEC1215842621

Date: 13 Sep 2012

Page 4 of 4

Sample photo:



SGS authenticate the photo on original report only

*** End of Report ***

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at http://www.sgs.com/terms_and_conditions full and for electronic format documents, subject to Terms and Conditions for Electronic Documents at www.sgs.com/terms-e-document.htm. Attention is drawn to the limitation of liability transporting tion and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of liability transporting to the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not expert aprice to a transaction from the produced except in full, without prior written approval of the Company, and unauthorized alternion, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

The company of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

3"Building,Na.889 Yishan Road Xuhui District,Shanghai China 200233 中国·上海·徐汇区宜山路889号3号楼 邮编: 200233 www.cn.sgs.com e sgs.china@sgs.com



Number: TWNC00282659 Test Report

Littelfuse, S.A. de C.V. Applicant:

> Blvd. Fausto Z. Martinez #1800 Col. Magisterio Seccion 38 C.P.

26070 Piedra Negras, Coahuila, Mexico

Sample Description:

One (1) group of submitted samples said to be : : MIDGET PAPER BODY Part Description

: 909-410 Part Number

: Oct 23, 2012 Date Sample Received Date Test Started : Oct 23, 2012

Test Conducted :

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

Authorized By: On Behalf Of Intertek Testing Services Taiwan Limited



K. Y. Liang Director



Date : Oct 30, 2012

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



Test Conducted

(I) Test Result Summary :

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

Remarks: ppm = Parts per million based on weight of tested sample = mg/kg

ND = Not detected

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

Date Sample Received : Oct 23, 2012

Test Period : Oct 23, 2012 To Oct 26, 2012



Intertek Testing Services Taiwan Ltd.



Test Conducted

(Π) RoHS Limits:

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

The above limits were quoted from Annex II of $2011/65/\mathrm{EU}$ for homogeneous material.

(Ⅲ) Test Method:

) Test Method:		
Test Item	Test Method	Reporting Limit
Cadmium (Cd) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Lead (Pb) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Mercury (Hg) content	With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Chromium VI (Cr ⁶⁺) content	With reference to IEC 62321 edition 1.0:2008 in annex 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-MS and further HPLC-DAD 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-MS and further HPLC-DAD confirmation when necessary.	5 ppm
Halogen Content	With reference to EN 14582:2007 by calorimetric bomb with oxygen and determined by Ion Chromatograph.	50 ppm

Remark: Reporting limit = Quantitation limit of analyte in sample

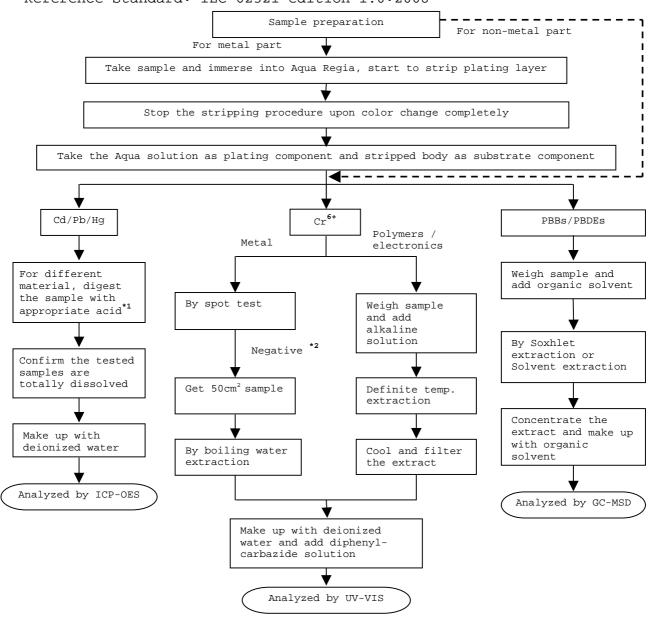




Test Conducted

(IV) Measurement Flowchart:

Test for Cd/Pb/Hg/Chromium (VI)/PBBS/PBDES Contents Reference Standard: IEC 62321 edition 1.0:2008





Intertek Testing Services Taiwan Ltd.



Test Conducted

Remarks:

*1: List of Appropriate Acid:

<u>Material</u>	Acid Added for Digestion
Polymers	HNO _{3,} HCl,HF,H ₂ O _{2,} H ₃ BO ₃
Metals	HNO _{3,} HCl,HF
Electronics	HNO _{3,} HCl,H ₂ O _{2,} HBF ₄

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

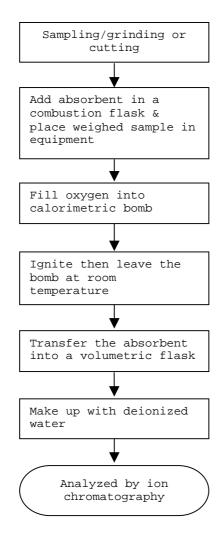




Test Conducted

(IV) Measurement Flowchart:

Test for Halogen Content Reference Standard: EN 14582



End of Report

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.



Intertek Testing Services Taiwan Ltd.



Test Conducted

Photo







Intertek Testing Services Taiwan Ltd.

8F., No. 423, Ruiguang Rd., Neihu District, Taipei 114, Taiwan, R.O.C. 全國公證檢驗股份有限公司



Number: TWNC00282419 Test Report

Applicant: Littelfuse, Inc. Date : Oct 30, 2012

: Oct 22, 2012

2110 S. Oak Street Champaign,

IL 61820

Sample Description:

Date Test Started

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

Part Description : SOLDER Part Number : 927-026 Date Sample Received : Oct 22, 2012

Test Conducted :

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

Authorized By: On Behalf Of Intertek Testing Services Taiwan Limited



K. Y. Liang Director





Test Conducted

(I) Test Result Summary :

Test Item	Result (ppm) Silvery Metal
Heavy Metal	
Cadmium (Cd) content	22
Lead (Pb) content	74
Mercury (Hg) content	ND
Chromium VI (Cr ⁶⁺) content (mg/kg with 50cm ²)	Negative(< 0.02)

Remarks: ppm = Parts per million based on weight of tested sample = mg/kg

ND = Not detected
< = Less than</pre>

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

Responsibility of Chemist : Irene Chiou / Kevin Liu

Date Sample Received : Oct 22, 2012

Test Period : Oct 22, 2012 To Oct 29, 2012

(Ⅱ) RoHS Limits:

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

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





Test Conducted

(Ⅲ) Test Method:

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

Remark: Reporting limit = Quantitation limit of analyte in sample



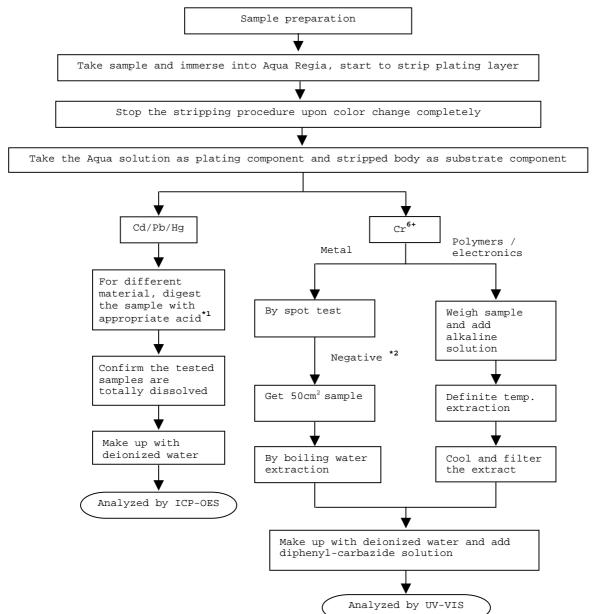


Test Conducted

(IV) Measurement Flowchart:

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

Reference Standard: IEC 62321 edition 1.0:2008





Intertek Testing Services Taiwan Ltd.



Test Conducted

Remarks:

*1: List of Appropriate Acid:

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

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

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.





Test Conducted

Photo





Page 6 of 6

Intertek Testing Services Taiwan Ltd.



Test Report Number: TWNC00279926

Applicant: Littelfuse, S.A. de C.V.

Blvd. Fausto Z. Martinez #1800 Col. Magisterio Seccion 38 C.P. 26070 Piedra Negras, Coahuila,

Mexico

Sample Description:

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

Part Description : SOLDER WIRE

Part Number : 692532

Date Sample Received : Oct 04, 2012 Date Test Started : Oct 24, 2012

Test Conducted :

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

Authorized By:
On Behalf Of Intertek Testing Services
Taiwan Limited



K. Y. Liang
Director

This report shall not be reproduced except in full, without the written approval of the laboratory.



Date : Oct 26, 2012



Test Conducted

(I) Test Result Summary :

Test Item	Result (ppm) Silvery Metal
Heavy Metal	
Cadmium (Cd) content	ND
Lead (Pb) content	284
Mercury (Hg) content	ND
Chromium VI (Cr ⁶⁺) content (mg/kg with 50cm ²)	Negative (< 0.02)

Remarks: ppm = Parts per million based on weight of tested sample = mg/kg

ND= Not detected = Less than

mg/kg with 50cm² = milligram per kilogram with 50 square centimetre Negative = A negative test result indicated positive observation was not found at the time of Test.

Responsibility of Chemist : Irene Chiou / Kevin Liu

Date Sample Received : Oct 04, 2012

Test Period : Oct 24, 2012 To Oct 25, 2012

(Ⅱ) RoHS Limits:

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

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





Test Conducted

(Ⅲ) Test Method:

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

Remark: Reporting limit = Quantitation limit of analyte in sample



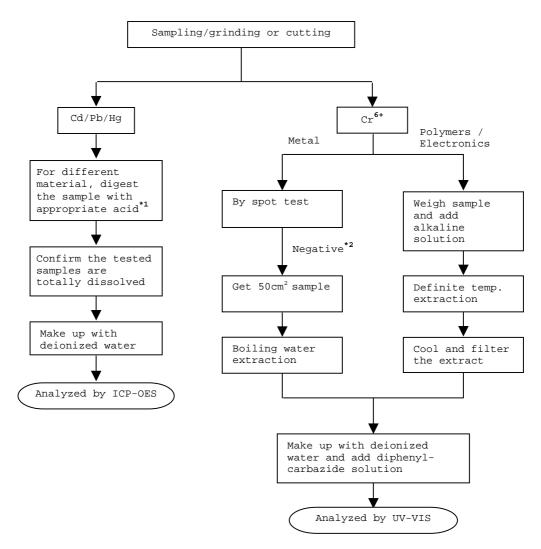


Test Conducted

(IV) Measurement Flowchart:

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

Reference Standard: IEC 62321 edition 1.0:2008







Test Conducted

Remarks:

*1: List Of Appropriate Acid:

<u>Material</u>	Acid Added For Digestion
Polymers	HNO ₃ ,HCl,HF,H ₂ O ₂ ,H ₃ BO ₃
Metals	HNO _{3,} HCl,HF
Electronics	HNO _{3,} HCl,H ₂ O _{2,} HBF ₄

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

End of Report

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 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.





Test Conducted

Photo







Intertek Testing Services Taiwan Ltd.



Test Report Number: TWNC00279929

Applicant: Littelfuse, S.A. de C.V.

Blvd. Fausto Z. Martinez #1800 Col. Magisterio Seccion 38 C.P.

26070 Piedra Negras, Coahuila, Mexico

Sample Description:

One (1) group of submitted samples said to be : Part Description : FULLER EARTH 692

Part Number : 090183

Date Sample Received : Oct 04, 2012 Date Test Started : Oct 05, 2012

Test Conducted :

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

Authorized By:
On Behalf Of Intertek Testing Services
Taiwan Limited



K. Y. Liang
Director

This report shall not be reproduced except in full, without the written approval of the laboratory.

Date : Oct 12, 2012





Test Conducted

(I) Test Result Summary :

Cadmium (Cd) content) Test Result Summary :	
Heavy Metal Cadmium (Cd) content ND Lead (Pb) content ND Mercury (Hg) content ND Polybrominated Biphenyls (PBBs) Monobrominated Biphenyls (MonoBB) ND Tribrominated Biphenyls (TetraBB) ND Tribrominated Biphenyls (TetraBB) ND Tetrabrominated Biphenyls (PentaBB) ND Hexabrominated Biphenyls (HexaBB) ND Hexabrominated Biphenyls (HexaBB) ND Octabrominated Biphenyls (HexaBB) ND Octabrominated Biphenyls (NonaBB) ND Octabrominated Biphenyls (NonaBB) ND Totrabrominated Biphenyls (HexaBB) ND Tribrominated Biphenyls (NonaBB) ND Octabrominated Biphenyls (NonaBB) ND Totrabrominated Biphenyl (DecaBB) ND Polybrominated Diphenyl Ethers (MonoBDE) ND Tribrominated Diphenyl Ethers (TriBDE) ND Tribrominated Diphenyl Ethers (TetraBDE) ND Tetrabrominated Diphenyl Ethers (TetraBDE) ND Hexabrominated Diphenyl Ethers (HexaBDE) ND Hexabrominated Diphenyl Ethers (NonaBDE) ND Docabrominated Diphenyl Ethers (NonaBDE) ND Nonabrominated Diphenyl Ethers (NonaB	Togt Itom	Result (ppm)
Cadmium (Cd) content Lead (Pb) content Mercury (Hg) content Mercury (Hg) content Chromium VI (Crb*) content Monobrominated Biphenyls (PBBs) Monobrominated Biphenyls (MonoBB) Dibrominated Biphenyls (DiBB) Tribrominated Biphenyls (TriBB) ND Tribrominated Biphenyls (TriBB) ND Tetrabrominated Biphenyls (TetraBB) ND Hexabrominated Biphenyls (HexaBB) ND Hexabrominated Biphenyls (HexaBB) ND Heptabrominated Biphenyls (HexaBB) ND Hootabrominated Biphenyls (OctaBB) ND Nonabrominated Biphenyls (OctaBB) ND Nonabrominated Biphenyls (NonaBB) ND Decabrominated Biphenyl (DecaBB) ND Polybrominated Diphenyl Ethers (PBDEs) Monobrominated Diphenyl Ethers (MonoBDE) Tribrominated Diphenyl Ethers (TriBDE) ND Tretrabrominated Diphenyl Ethers (TetraBDE) ND Tetrabrominated Diphenyl Ethers (PentaBDE) ND Hexabrominated Diphenyl Ethers (HeptaBDE) ND Nonabrominated Diphenyl Ethers (NonaBDE) ND ND Nonabr	Test Item	Submitted Samples
Lead (Pb) content Mercury (Hg) content Chromium VI (Cr ⁵⁺) content Polybrominated Biphenyls (PBBs) Monobrominated Biphenyls (MonoBB) Dibrominated Biphenyls (DiBB) Tribrominated Biphenyls (TriBB) Tribrominated Biphenyls (TetraBB) ND Pentabrominated Biphenyls (PentaBB) ND Hexabrominated Biphenyls (HexaBB) ND Heptabrominated Biphenyls (HexaBB) ND ND Nonabrominated Biphenyls (NonaBB) ND Nonabrominated Biphenyls (NonaBB) ND Polybrominated Biphenyl (DecaBB) ND Polybrominated Diphenyl Ethers (MonoBDE) Dibrominated Diphenyl Ethers (TriBDE) Tribrominated Diphenyl Ethers (TriBDE) Tribrominated Diphenyl Ethers (TetraBDE) ND Tetrabrominated Diphenyl Ethers (HexaBDE) ND Hexabrominated Diphenyl Ethers (HexaBDE) ND Pentabrominated Diphenyl Ethers (HexaBDE) ND Decabrominated Diphenyl Ethers (NonaBDE) ND ND Decabrominated Diphenyl Ethers (NonaBDE) ND Nonabrominated Diphenyl Ethers (NonaBDE) ND Nonabrominated Diphenyl Ethers (NonaBDE) ND Decabrominated Diphenyl Ethers (NonaBDE) ND Nonabrominated Diphenyl Ethers (NonaBDE) ND Decabrominated Diphenyl Ethers (NonaBDE) ND ND ND ND Halogen Content Fluorine (C1) ND ND Bromine (Br)	Heavy Metal	
Mercury (Hg) content Chromium VI (Cr*) content Polybrominated Biphenyls (PBBs) Monobrominated Biphenyls (MonoBB) Dibrominated Biphenyls (DiBB) Tribrominated Biphenyls (TriBB) Tribrominated Biphenyls (TriBB) ND Tetrabrominated Biphenyls (PentaBB) Pentabrominated Biphenyls (PentaBB) ND Hexabrominated Biphenyls (HexaBB) ND Heptabrominated Biphenyls (HexaBB) ND Octabrominated Biphenyls (OctaBB) ND Nonabrominated Biphenyls (NonaBB) ND Polybrominated Biphenyl (DecaBB) Monobrominated Biphenyl (DecaBB) Monobrominated Diphenyl Ethers (MonoBDE) Monobrominated Diphenyl Ethers (TriBDE) Tribrominated Diphenyl Ethers (TriBDE) Tetrabrominated Diphenyl Ethers (TetraBDE) Pentabrominated Diphenyl Ethers (PentaBDE) ND Tetrabrominated Diphenyl Ethers (PentaBDE) ND Pentabrominated Diphenyl Ethers (PentaBDE) ND Hexabrominated Diphenyl Ethers (HexaBDE) ND Heptabrominated Diphenyl Ethers (HexaBDE) ND ND Heptabrominated Diphenyl Ethers (HexaBDE) ND ND ND ND Doctabrominated Diphenyl Ethers (OctaBDE) ND ND Nonabrominated Diphenyl Ethers (NonaBDE) ND Decabrominated Diphenyl Ethers (NonaBDE) ND Nonabrominated Diphenyl Ethers (NonaBDE) ND ND ND Pecabrominated Diphenyl Ethers (NonaBDE) ND ND ND ND ND ND ND ND ND N	Cadmium (Cd) content	ND
Chromium VI (Cr*) content Polybrominated Biphenyls (PBBs) Monobrominated Biphenyls (MonoBB) Dibrominated Biphenyls (DiBB) Tribrominated Biphenyls (TriBB) Tribrominated Biphenyls (TetraBB) ND Tetrabrominated Biphenyls (PentaBB) Pentabrominated Biphenyls (PentaBB) Hexabrominated Biphenyls (HexaBB) Heptabrominated Biphenyls (HexaBB) ND Octabrominated Biphenyls (OctaBB) ND Octabrominated Biphenyls (NonaBB) ND Decabrominated Biphenyl (DecaBB) Polybrominated Biphenyl (DecaBB) ND Polybrominated Diphenyl Ethers (PBDEs) Monobrominated Diphenyl Ethers (MonoBDE) Dibrominated Diphenyl Ethers (TriBDE) ND Tribrominated Diphenyl Ethers (TriBDE) ND Tetrabrominated Diphenyl Ethers (TetraBDE) Pentabrominated Diphenyl Ethers (PentaBDE) ND Hexabrominated Diphenyl Ethers (HexaBDE) ND Hexabrominated Diphenyl Ethers (HexaBDE) ND Heptabrominated Diphenyl Ethers (HexaBDE) ND Heptabrominated Diphenyl Ethers (NonaBDE) ND Docabrominated Diphenyl Ethers (NonaBDE) ND Nonabrominated Diphenyl Ethers (NonaBDE) ND Nonabrominated Diphenyl Ethers (NonaBDE) ND Decabrominated Diphenyl Ethers (NonaBDE) ND Nonabrominated Diphenyl Ethers (NonaBDE) ND Decabrominated Diphenyl Ethers (NonaBDE) ND Nonabrominated Diphenyl Ethers (NonaBDE) ND Decabrominated Diphenyl Ethers (NonaBDE) ND Nonabrominated Diphenyl Ethers (NonaBDE) ND Decabrominated Diphenyl Ethers (NonaBDE) ND Nonabrominated Diphenyl Ethers (NonaBDE) ND Decabrominated Diphenyl Ethers (NonaBDE) ND Decabrominated Diphenyl Ethers (NonaBDE) ND Nonabrominated Diphenyl Ethers (NonaBDE) ND Decabrominated Diphenyl Ethers (NonaBDE) ND ND Nonabrominated Diphenyl Ethers (NonaBDE) ND	Lead (Pb) content	ND
Polybrominated Biphenyls (PBBs) Monobrominated Biphenyls (MonoBB) Dibrominated Biphenyls (DiBB) Tribrominated Biphenyls (TriBB) Tetrabrominated Biphenyls (TetraBB) Pentabrominated Biphenyls (PentaBB) Hexabrominated Biphenyls (PentaBB) MD Hexabrominated Biphenyls (HexaBB) MD Heptabrominated Biphenyls (OctaBB) ND Nonabrominated Biphenyls (NonaBB) Decabrominated Biphenyls (NonaBB) Decabrominated Biphenyl (DecaBB) Polybrominated Diphenyl Ethers (PBDES) Monobrominated Diphenyl Ethers (MonoBDE) Dibrominated Diphenyl Ethers (TriBDE) ND Tribrominated Diphenyl Ethers (TriBDE) Tetrabrominated Diphenyl Ethers (TetraBDE) Pentabrominated Diphenyl Ethers (HexaBDE) ND Hexabrominated Diphenyl Ethers (HexaBDE) ND Hexabrominated Diphenyl Ethers (HexaBDE) ND Octabrominated Diphenyl Ethers (HexaBDE) ND ND Nonabrominated Diphenyl Ethers (NonaBDE) ND ND Decabrominated Diphenyl Ether (DecaBDE) ND ND Bromine (Br)		ND
Monobrominated Biphenyls (MonoBB) Dibrominated Biphenyls (DiBB) Tribrominated Biphenyls (TriBB) ND Tetrabrominated Biphenyls (TetraBB) Pentabrominated Biphenyls (PentaBB) ND Hexabrominated Biphenyls (HexaBB) Hexabrominated Biphenyls (HexaBB) ND Heptabrominated Biphenyls (HeptaBB) ND Octabrominated Biphenyls (NonaBB) Docabrominated Biphenyls (NonaBB) ND Decabrominated Biphenyls (NonaBB) Decabrominated Biphenyl (DecaBB) ND Polybrominated Diphenyl Ethers (PBDES) Monobrominated Diphenyl Ethers (MonoBDE) Dibrominated Diphenyl Ethers (TriBDE) ND Tribrominated Diphenyl Ethers (TriBDE) ND Tetrabrominated Diphenyl Ethers (TetraBDE) Pentabrominated Diphenyl Ethers (PentaBDE) ND Hexabrominated Diphenyl Ethers (HexaBDE) ND Heptabrominated Diphenyl Ethers (HeptaBDE) ND Nonabrominated Diphenyl Ethers (OctaBDE) ND Nonabrominated Diphenyl Ethers (NonaBDE) ND	· · ·	ND
Dibrominated Biphenyls (DiBB) Tribrominated Biphenyls (TriBB) Tetrabrominated Biphenyls (TetraBB) ND Tetrabrominated Biphenyls (PentaBB) ND Pentabrominated Biphenyls (PentaBB) ND Hexabrominated Biphenyls (HexaBB) ND Heptabrominated Biphenyls (HeptaBB) ND Octabrominated Biphenyls (OctaBB) ND Nonabrominated Biphenyls (NonaBB) Decabrominated Biphenyl (DecaBB) ND Polybrominated Diphenyl Ethers (PBDES) Monobrominated Diphenyl Ethers (MonoBDE) Dibrominated Diphenyl Ethers (TriBDE) Tribrominated Diphenyl Ethers (TriBDE) ND Tetrabrominated Diphenyl Ethers (TetraBDE) Pentabrominated Diphenyl Ethers (PentaBDE) ND Hexabrominated Diphenyl Ethers (HexaBDE) Heptabrominated Diphenyl Ethers (HexaBDE) ND Octabrominated Diphenyl Ethers (NonaBDE) ND Octabrominated Diphenyl Ethers (NonaBDE) ND Decabrominated Diphenyl Ethers (NonaBDE) ND Nonabrominated Diphenyl Ethers (NonaBDE) ND Decabrominated Diphenyl Ether (DecaBDE) ND Halogen Content Fluorine (F) Chlorine (Cl) ND Bromine (Br)		
Tribrominated Biphenyls (TriBB) Tetrabrominated Biphenyls (TetraBB) Pentabrominated Biphenyls (PentaBB) Hexabrominated Biphenyls (HexaBB) Heptabrominated Biphenyls (HeptaBB) ND Heptabrominated Biphenyls (OctaBB) ND Octabrominated Biphenyls (NonaBB) ND Nonabrominated Biphenyls (NonaBB) Decabrominated Biphenyl (DecaBB) Polybrominated Diphenyl Ethers (PBDES) Monobrominated Diphenyl Ethers (MonoBDE) Dibrominated Diphenyl Ethers (TriBDE) Tribrominated Diphenyl Ethers (TriBDE) Tetrabrominated Diphenyl Ethers (TetraBDE) Pentabrominated Diphenyl Ethers (PentaBDE) Hexabrominated Diphenyl Ethers (HexaBDE) Hexabrominated Diphenyl Ethers (HexaBDE) ND Heptabrominated Diphenyl Ethers (HexaBDE) ND Octabrominated Diphenyl Ethers (OctaBDE) ND ND Nonabrominated Diphenyl Ethers (NonaBDE) Decabrominated Diphenyl Ether (DecaBDE) ND ND Halogen Content Fluorine (F) Chlorine (C1) Bromine (Br)		ND
Tetrabrominated Biphenyls (TetraBB) Pentabrominated Biphenyls (PentaBB) ND Hexabrominated Biphenyls (HexaBB) ND Heptabrominated Biphenyls (HexaBB) ND Octabrominated Biphenyls (OctaBB) ND Nonabrominated Biphenyls (NonaBB) Decabrominated Biphenyls (NonaBB) Decabrominated Biphenyl (DecaBB) ND Polybrominated Diphenyl Ethers (PBDES) Monobrominated Diphenyl Ethers (MonoBDE) Dibrominated Diphenyl Ethers (TriBDE) ND Tribrominated Diphenyl Ethers (TriBDE) ND Tetrabrominated Diphenyl Ethers (TetraBDE) ND Tetrabrominated Diphenyl Ethers (PentaBDE) ND Hexabrominated Diphenyl Ethers (HexaBDE) ND Hexabrominated Diphenyl Ethers (HexaBDE) ND Octabrominated Diphenyl Ethers (OctaBDE) ND Nonabrominated Diphenyl Ethers (NonaBDE) ND Decabrominated Diphenyl Ether (DecaBDE) ND Nonabrominated Diphenyl Ether (NonaBDE) ND Decabrominated Diphenyl Ether (DecaBDE) ND Chlorine (Cl) ND Bromine (Br)	Dibrominated Biphenyls (DiBB)	ND
Pentabrominated Biphenyls (PentaBB) Hexabrominated Biphenyls (HexaBB) ND Heptabrominated Biphenyls (HeptaBB) Octabrominated Biphenyls (OctaBB) ND Nonabrominated Biphenyls (NonaBB) Decabrominated Biphenyls (NonaBB) Decabrominated Biphenyl (DecaBB) Polybrominated Diphenyl Ethers (PBDES) Monobrominated Diphenyl Ethers (MonoBDE) Dibrominated Diphenyl Ethers (DiBDE) Tribrominated Diphenyl Ethers (TriBDE) ND Tetrabrominated Diphenyl Ethers (TetraBDE) ND Pentabrominated Diphenyl Ethers (PentaBDE) Hexabrominated Diphenyl Ethers (HexaBDE) Heptabrominated Diphenyl Ethers (HexaBDE) Octabrominated Diphenyl Ethers (OctaBDE) ND Nonabrominated Diphenyl Ethers (OctaBDE) ND Nonabrominated Diphenyl Ethers (NonaBDE) ND Decabrominated Diphenyl Ether (DecaBDE) ND Halogen Content Fluorine (F) ND Chlorine (C1) Bromine (Br)	Tribrominated Biphenyls (TriBB)	ND
Hexabrominated Biphenyls (HexaBB) Heptabrominated Biphenyls (HeptaBB) Octabrominated Biphenyls (OctaBB) ND Nonabrominated Biphenyls (NonaBB) Decabrominated Biphenyl (DecaBB) ND Polybrominated Diphenyl Ethers (PBDES) Monobrominated Diphenyl Ethers (MonoBDE) Dibrominated Diphenyl Ethers (DiBDE) Tribrominated Diphenyl Ethers (TriBDE) Tetrabrominated Diphenyl Ethers (TetraBDE) Pentabrominated Diphenyl Ethers (PentaBDE) Hexabrominated Diphenyl Ethers (HexaBDE) Hexabrominated Diphenyl Ethers (HexaBDE) ND Heptabrominated Diphenyl Ethers (HeptaBDE) Octabrominated Diphenyl Ethers (OctaBDE) ND Nonabrominated Diphenyl Ethers (NonaBDE) ND Decabrominated Diphenyl Ether (DecaBDE) ND Halogen Content Fluorine (F) Chlorine (C1) Bromine (Br)	Tetrabrominated Biphenyls (TetraBB)	ND
Heptabrominated Biphenyls (HeptaBB) Octabrominated Biphenyls (OctaBB) ND Nonabrominated Biphenyls (NonaBB) Decabrominated Biphenyl (DecaBB) Polybrominated Diphenyl Ethers (PBDES) Monobrominated Diphenyl Ethers (MonoBDE) Dibrominated Diphenyl Ethers (DiBDE) Tribrominated Diphenyl Ethers (TriBDE) Tetrabrominated Diphenyl Ethers (TetraBDE) Pentabrominated Diphenyl Ethers (PentaBDE) Hexabrominated Diphenyl Ethers (PentaBDE) Heptabrominated Diphenyl Ethers (HexaBDE) ND Heptabrominated Diphenyl Ethers (HeptaBDE) ND Octabrominated Diphenyl Ethers (OctaBDE) ND Nonabrominated Diphenyl Ethers (NonaBDE) ND Decabrominated Diphenyl Ethers (NonaBDE) ND Halogen Content Fluorine (F) Chlorine (C1) Bromine (Br)	Pentabrominated Biphenyls (PentaBB)	ND
Octabrominated Biphenyls (OctaBB) Nonabrominated Biphenyls (NonaBB) Decabrominated Biphenyl (DecaBB) ND Polybrominated Diphenyl Ethers (PBDES) Monobrominated Diphenyl Ethers (MonoBDE) Dibrominated Diphenyl Ethers (DiBDE) Tribrominated Diphenyl Ethers (TriBDE) ND Tetrabrominated Diphenyl Ethers (TetraBDE) Pentabrominated Diphenyl Ethers (PentaBDE) Hexabrominated Diphenyl Ethers (HexaBDE) Heptabrominated Diphenyl Ethers (HeptaBDE) ND Heptabrominated Diphenyl Ethers (HeptaBDE) ND Octabrominated Diphenyl Ethers (OctaBDE) Nonabrominated Diphenyl Ethers (NonaBDE) Decabrominated Diphenyl Ethers (NonaBDE) ND Decabrominated Diphenyl Ether (DecaBDE) ND Halogen Content Fluorine (F) Chlorine (Cl) Bromine (Br)	Hexabrominated Biphenyls (HexaBB)	ND
Nonabrominated Biphenyls (NonaBB) Decabrominated Biphenyl (DecaBB) Polybrominated Diphenyl Ethers (PBDEs) Monobrominated Diphenyl Ethers (MonoBDE) Dibrominated Diphenyl Ethers (DiBDE) Tribrominated Diphenyl Ethers (TriBDE) Tetrabrominated Diphenyl Ethers (TetraBDE) Pentabrominated Diphenyl Ethers (PentaBDE) Hexabrominated Diphenyl Ethers (PentaBDE) Hexabrominated Diphenyl Ethers (HexaBDE) Heptabrominated Diphenyl Ethers (HeptaBDE) Octabrominated Diphenyl Ethers (OctaBDE) ND Nonabrominated Diphenyl Ethers (NonaBDE) Decabrominated Diphenyl Ether (DecaBDE) ND Halogen Content Fluorine (F) Chlorine (C1) Bromine (Br)	Heptabrominated Biphenyls (HeptaBB)	ND
Decabrominated Biphenyl (DecaBB) Polybrominated Diphenyl Ethers (PBDEs) Monobrominated Diphenyl Ethers (MonoBDE) Dibrominated Diphenyl Ethers (DiBDE) Tribrominated Diphenyl Ethers (TriBDE) Tetrabrominated Diphenyl Ethers (TetraBDE) Pentabrominated Diphenyl Ethers (PentaBDE) Hexabrominated Diphenyl Ethers (HexaBDE) Heptabrominated Diphenyl Ethers (HexaBDE) ND Octabrominated Diphenyl Ethers (HeptaBDE) ND Nonabrominated Diphenyl Ethers (OctaBDE) ND Nonabrominated Diphenyl Ethers (NonaBDE) Decabrominated Diphenyl Ether (DecaBDE) ND Halogen Content Fluorine (F) Chlorine (C1) Bromine (Br)		ND
Monobrominated Diphenyl Ethers (MonoBDE) Monobrominated Diphenyl Ethers (MonoBDE) Tribrominated Diphenyl Ethers (TriBDE) Tribrominated Diphenyl Ethers (TetraBDE) Pentabrominated Diphenyl Ethers (PentaBDE) Hexabrominated Diphenyl Ethers (HexaBDE) Heytabrominated Diphenyl Ethers (HexaBDE) ND Heptabrominated Diphenyl Ethers (HeptaBDE) Octabrominated Diphenyl Ethers (OctaBDE) Nonabrominated Diphenyl Ethers (NonaBDE) Nonabrominated Diphenyl Ethers (NonaBDE) Nobel Decabrominated Diphenyl Ether (DecaBDE) ND Halogen Content Fluorine (F) Chlorine (C1) Bromine (Br)		
Monobrominated Diphenyl Ethers (MonoBDE) Dibrominated Diphenyl Ethers (DiBDE) Tribrominated Diphenyl Ethers (TriBDE) Tetrabrominated Diphenyl Ethers (TetraBDE) Pentabrominated Diphenyl Ethers (PentaBDE) Hexabrominated Diphenyl Ethers (HexaBDE) Heptabrominated Diphenyl Ethers (HexaBDE) Octabrominated Diphenyl Ethers (OctaBDE) ND Nonabrominated Diphenyl Ethers (NonaBDE) ND Decabrominated Diphenyl Ethers (NonaBDE) Decabrominated Diphenyl Ether (DecaBDE) ND Halogen Content Fluorine (F) Chlorine (Cl) Bromine (Br)		
Dibrominated Diphenyl Ethers (DiBDE) Tribrominated Diphenyl Ethers (TriBDE) Tetrabrominated Diphenyl Ethers (TetraBDE) Pentabrominated Diphenyl Ethers (PentaBDE) Hexabrominated Diphenyl Ethers (HexaBDE) Heptabrominated Diphenyl Ethers (HeptaBDE) Octabrominated Diphenyl Ethers (OctaBDE) Nonabrominated Diphenyl Ethers (NonaBDE) Nonabrominated Diphenyl Ethers (NonaBDE) Decabrominated Diphenyl Ether (DecaBDE) Halogen Content Fluorine (F) Chlorine (Cl) Bromine (Br)		
Tribrominated Diphenyl Ethers (TriBDE) Tetrabrominated Diphenyl Ethers (TetraBDE) Pentabrominated Diphenyl Ethers (PentaBDE) Hexabrominated Diphenyl Ethers (HexaBDE) Heptabrominated Diphenyl Ethers (HeptaBDE) Octabrominated Diphenyl Ethers (OctaBDE) Nonabrominated Diphenyl Ethers (NonaBDE) Nonabrominated Diphenyl Ethers (NonaBDE) Decabrominated Diphenyl Ether (DecaBDE) ND Halogen Content Fluorine (F) Chlorine (Cl) Bromine (Br)		ND
Tetrabrominated Diphenyl Ethers (TetraBDE) Pentabrominated Diphenyl Ethers (PentaBDE) ND Hexabrominated Diphenyl Ethers (HexaBDE) ND Heptabrominated Diphenyl Ethers (HeptaBDE) Octabrominated Diphenyl Ethers (OctaBDE) Nonabrominated Diphenyl Ethers (NonaBDE) Decabrominated Diphenyl Ethers (NonaBDE) Decabrominated Diphenyl Ether (DecaBDE) ND Halogen Content Fluorine (F) Chlorine (Cl) Bromine (Br) ND		ND
Pentabrominated Diphenyl Ethers (PentaBDE) Hexabrominated Diphenyl Ethers (HexaBDE) ND Heptabrominated Diphenyl Ethers (HeptaBDE) Octabrominated Diphenyl Ethers (OctaBDE) Nonabrominated Diphenyl Ethers (NonaBDE) Decabrominated Diphenyl Ether (DecaBDE) ND Halogen Content Fluorine (F) Chlorine (Cl) Bromine (Br)	Tribrominated Diphenyl Ethers (TriBDE)	ND
Hexabrominated Diphenyl Ethers (HexaBDE) Heptabrominated Diphenyl Ethers (HeptaBDE) Octabrominated Diphenyl Ethers (OctaBDE) Nonabrominated Diphenyl Ethers (NonaBDE) Decabrominated Diphenyl Ether (DecaBDE) ND Halogen Content Fluorine (F) Chlorine (Cl) Bromine (Br)	Tetrabrominated Diphenyl Ethers (TetraBDE)	ND
Heptabrominated Diphenyl Ethers (HeptaBDE) Octabrominated Diphenyl Ethers (OctaBDE) Nonabrominated Diphenyl Ethers (NonaBDE) Decabrominated Diphenyl Ether (DecaBDE) ND Halogen Content Fluorine (F) Chlorine (Cl) Bromine (Br)		ND
Octabrominated Diphenyl Ethers (OctaBDE) Nonabrominated Diphenyl Ethers (NonaBDE) Decabrominated Diphenyl Ether (DecaBDE) Halogen Content Fluorine (F) Chlorine (Cl) Bromine (Br)	Hexabrominated Diphenyl Ethers (HexaBDE)	ND
Nonabrominated Diphenyl Ethers (NonaBDE) Decabrominated Diphenyl Ether (DecaBDE) ND Halogen Content Fluorine (F) Chlorine (Cl) Bromine (Br) ND ND ND ND		ND
Decabrominated Diphenyl Ether (DecaBDE) Halogen Content Fluorine (F) Chlorine (Cl) Bromine (Br) ND		ND
Halogen Content Fluorine (F) ND Chlorine (Cl) ND Bromine (Br) ND		ND
Fluorine (F) ND Chlorine (Cl) ND Bromine (Br) ND		
Chlorine (Cl) ND Bromine (Br) ND	Halogen Content	
Bromine (Br) ND	` '	ND
` '	Chlorine (Cl)	ND
Iodine (I) ND	· ,	ND
	Iodine (I)	ND

Remarks: ppm = Parts per million based on weight of tested sample = mg/kg

ND = Not detected

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

Date Sample Received : Oct 04, 2012

Test Period : Oct 05, 2012 To Oct 11, 2012





Test Conducted

(Π) RoHS Limits:

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

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





Test Conducted

(Ⅲ) Test Method:

Test Item	Test Method	Reporting Limit
Cadmium (Cd) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Lead (Pb) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Mercury (Hg) content	With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Chromium VI (Cr ⁶⁺) content	With reference to IEC 62321 edition 1.0:2008 in annex 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-MS and further HPLC-DAD 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-MS and further HPLC-DAD confirmation when necessary.	5 ppm
Halogen Content	With reference to EN 14582:2007 by calorimetric bomb with oxygen and determined by Ion Chromatograph.	50 ppm

Remark: Reporting limit = Quantitation limit of analyte in sample

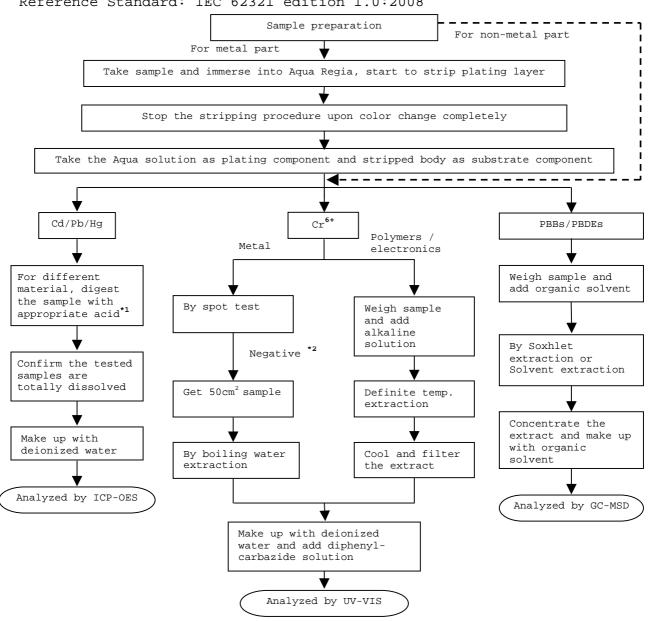




Test Conducted

(IV) Measurement Flowchart:

Test for Cd/Pb/Hg/Chromium (VI)/PBBS/PBDES Contents Reference Standard: IEC 62321 edition 1.0:2008





Intertek Testing Services Taiwan Ltd.



Test Conducted

Remarks:

*1: List of Appropriate Acid:

<u>Material</u>	Acid Added for Digestion
Polymers	HNO _{3,} HCl,HF,H ₂ O _{2,} H ₃ BO ₃
Metals	HNO _{3,} HCl,HF
Electronics	HNO _{3,} HCl,H ₂ O _{2,} HBF ₄

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

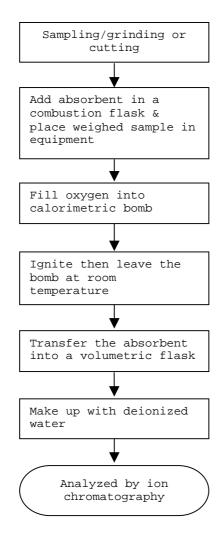




Test Conducted

(IV) Measurement Flowchart:

Test for Halogen Content Reference Standard: EN 14582



End of Report

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.



Intertek Testing Services Taiwan Ltd.

8F., No. 423, Ruiguang Rd., Neihu District, Taipei 114, Taiwan, R.O.C. 全國公證檢驗股份有限公司



Test Conducted

Photo







Intertek Testing Services Taiwan Ltd.



Number

: TWNC00323871

Applicant:

Littelfuse Philippines Inc.

Date

: Jul 24, 2013

LIMA Technology Center, Lipa City, Malvar, Batangas

Sample Description:

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

Part Description : Ceramic Yarn Part Number 648102 Date Sample Received Jul 18, 2013 Date Test Started Jul 19, 2013

Test Conducted:

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

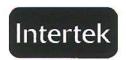
Authorized by: On Behalf of Intertek Testing Services Taiwan Limited





K. Y. Liang Director

Page 1 of 8



Number:

TWNC00323871

Test Conducted

Test Result Summary:

Tost Itom	Unit	Unit Test Method	Result	RL	
Test Item	OIIIL	<u>rest Mediod</u>	White ceramic yarn	- KL	
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 ⁶⁺) 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	



Number:

TWNC00323871

Test Conducted

Test Item	<u>Unit</u>	Test Method	Result White ceramic yarn	— RL
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
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

Remarks:

ppm = parts per million based on weight of tested sample = mg/kg

= Not detected ND

RL = Reporting Limit, Quantitation limit of analyte in sample

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

Date Sample Received

Test Period

: Jul 18, 2013 : Jul 19, 2013 To Jul 23, 2013

RoHS Limit

Restricted Substances	<u>Limits</u>
Cadmium (Cd) content	0.01% (100ppm)
Lead (Pb) content	0.1% (1000ppm)
Mercury (Hg) content	0.1% (1000ppm)
Chromium VI (Cr ⁶⁺) content	0.1% (1000ppm)
Polybrominated Biphenyls (PBBs)	0.1% (1000ppm)
Polybrominated Diphenyl Ethers (PBDEs)	0.1% (1000ppm)
The above limits were quoted from Annex II of 2011/65	/EU for homogeneous material.

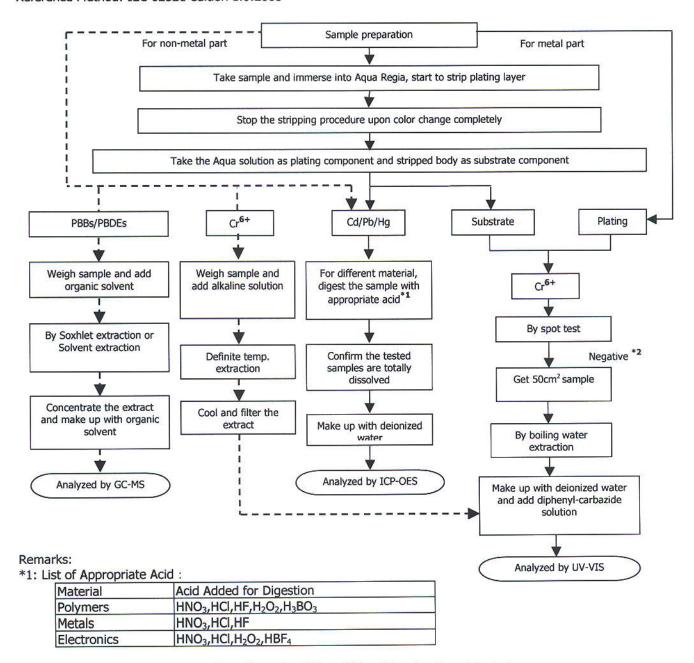
Page 3 of 8



Number: TWNC00323871

Test Conducted Measurement Flowchart:

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



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



Page 4 of 8

Intertek Testing Services Taiwan Ltd.

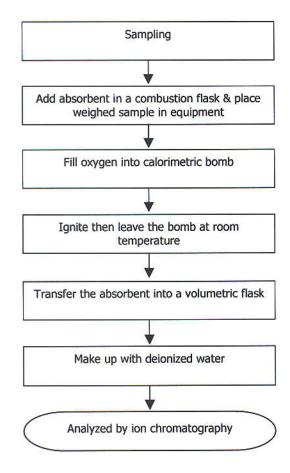
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C. 全國公證檢驗股份有限公司



Number: TWNC00323871

Test Conducted

Test for Halogen Contents Reference Method: EN 14582





TWNC00323871 Number:



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 onlyaccepts liability to the Client insofar as is expressly contained in the terms and conditions governing Intertek's provision of services to you. Intertek makes nowarranties or representations either express or implied with respect to this report save as provided for in those terms and conditions. We have aimed to conductthe 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: TWNC00277407 Test Report

Littelfuse, S.A. de C.V. Applicant:

> Blvd. Fausto Z. Martinez #1800 Col. Magisterio Seccion 38 C.P. 26070 Piedra Negras, Coahuila,

Mexico

Sample Description:

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

Part Description : ATO SKIVED ZINC STRIPS

Part Number : 955412-XXX:

> 955412-113 955412-111 955412-112 955412-101 955412-106 955412-107 955412-105

955412-103 955412-109 955412-102 955412-104 955412-108 955412-110

: Sep 20, 2012 Date Sample Received : Sep 20, 2012 Date Test Started

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



Date : Nov 12, 2012



Test Conducted

(I) Test Result Summary :

Togt Itom	Result (ppm)	
Test Item	(1)	(2)
Heavy Metal		
Cadmium (Cd) content	6	ND
Lead (Pb) content	38	ND
Mercury (Hg) content	ND	ND
Chromium VI (Cr^{6+}) content (mg/kg with $50cm^2$)	Negative (< 0.02)(#)	Negative (< 0.02)(#)

Remarks: ppm = Parts per million based on weight of tested sample = mg/kg

ND = Not detected
< = Less than</pre>

mg/kg with 50cm² = milligram per kilogram with 50 square centimetre Negative = A negative test result indicated positive observation was not found at the time of Test.

= Due to the insufficient sample area, reduced total sample surface of 10 cm² was used and the dilution factor was adjusted accordingly.

Tested Components

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

Responsibility of Chemist : Irene Chiou / Kevin Liu

Date Sample Received : Sep 20, 2012

Test Period : Nov 08, 2012 To Nov 12, 2012

(Π) RoHS Limits:

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

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





Test Conducted

(Ⅲ) Test Method:

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

Remark: Reporting limit = Quantitation limit of analyte in sample



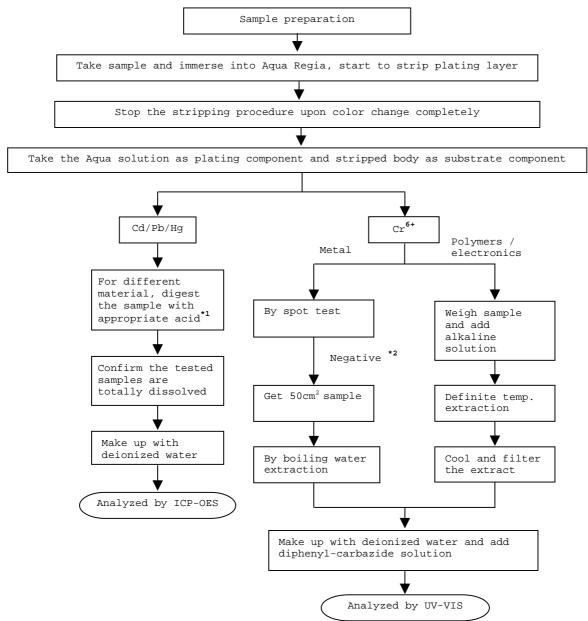


Test Conducted

(IV) Measurement Flowchart:

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

Reference Standard: IEC 62321 edition 1.0:2008





Intertek Testing Services Taiwan Ltd.



Test Conducted

(IV) Measurement Flowchart:

Remarks:

*1: List of Appropriate Acid:

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

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

End of Report

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.





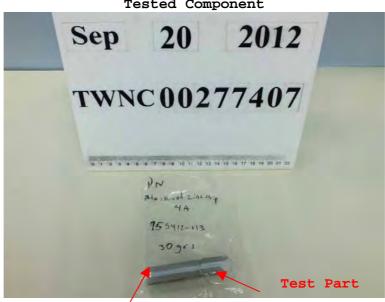
Test Conducted

Photo

Submitted Sample



Tested Component



Test Part



Intertek Testing Services Taiwan Ltd.

8F., No. 423, Ruiguang Rd., Neihu District, Taipei 114, Taiwan, R.O.C. 全國公證檢驗股份有限公司