

ICP Test Report Certification Packet

Company name: Littelfuse, Inc.

Product Series: Midget Fuse

Product #: KLKR Series

Issue Date: October 22, 2012

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

Issued by: KRISTEEN BACILA

<Global EHS Coordinator>

(1) Parts, sub-materials and unit parts

This document covers the CCMR-Fuse with Cap/Lead RoHS-Compliant series products manufactured by Littelfuse, Inc.

< Raw Materials Used
Please see Table 1

(2) The ICP data on all measurable substances

Please see appropriate pages as identifed in Table 1

Remarks: RoHS Compliant with exemption 6C: Lead in Copper Alloy whose concentration is not greater than 4% in rejection cap for KLKR003.



Table 1: List of Raw Materials covered by this report

Total Parts	Raw Material Part Number	Raw Material Description	Page(s)
1	923-080	Сар	3-9
2	927-293	Solder	10-14
3	882-363-001	Brass Disc	15-18
4	692532	Solder	19-23
5	090169	Filler-Silica Sand	24-31
6	082xxx-001	Element – 99% Cu Sn plated (082201-001)	32-38
7	685xxx	Element-Pure Ag	39-43
8	909-5x (039144-039145)	Body Melamine	44-50
9	082394	55% Cu 45% Ni	51-60
10	090190	Filler	61-67
11	082xxx	Element-5% by weight Ag Clad Cu (082342)	68-72
12	082xxx	Element- Ag plated Cu (082363)	73-78
13	901-182	Rubber	79-87
14	692264	Solder Overlay	88-93
15	923-088	Rejection Cap	94-98



Test Report Number: TWNC00279924

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 KLK FUSE

Part Number : 923-080

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

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Date : Oct 12, 2012



Intertek Testing Services Taiwan Ltd.



Test Conducted

(I) Test Result Summary :

Mark Thom	Result (ppm)	
Test Item	(1)	<u>(2)</u>
Heavy Metal		
Cadmium (Cd) content	ND	ND
Lead (Pb) content	ND	ND
Mercury (Hg) content	ND	ND
Chromium VI (Cr ⁶⁺) content (mg/kg with 50cm ²)	Negative	Negative
Chromitum vi (Ci) concent (mg/kg with 50cm)	(< 0.02)(#)	(< 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 25 cm² was used and the dilution factor was adjusted accordingly.

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:

<u>Test Item</u>	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
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



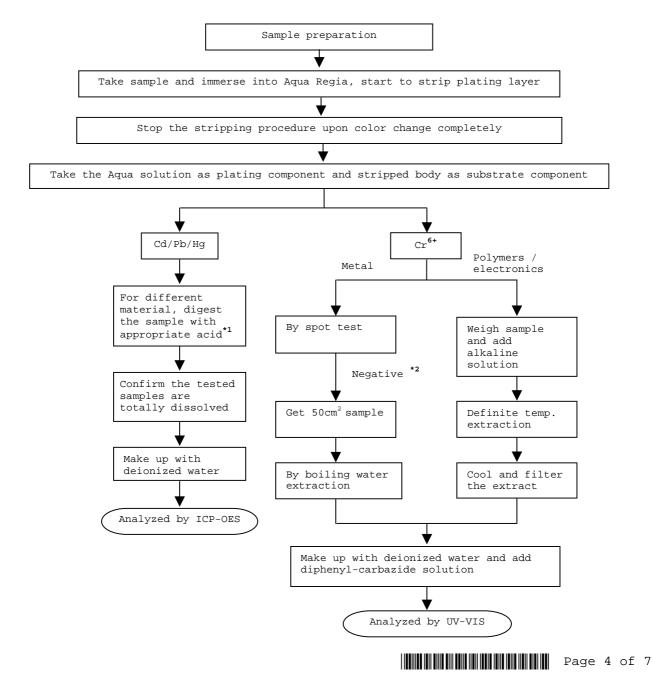


Test Conducted

(IV) Measurement Flowchart:

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

Reference Standard: IEC 62321 edition 1.0:2008



Intertek Testing Services Taiwan Ltd.

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





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









Test Report Number: TWNC00216205

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 Solder
Part Number : 927-293
Date Sample Received : Jul 14, 2011
Date Test Started : Jul 14, 2011

Test Conducted :

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

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K. Y. Liang
Director

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Date : Jul 20, 2011

Page 1 of 5



Test Conducted

(I) Test Result Summary :

Togt Itom	Result (ppm)
Test Item	<u>Grey Metal</u>
Heavy Metal	
Cadmium (Cd) content	ND
Lead (Pb) content	353
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 / Cathy Chen

Date Sample Received : Jul 14, 2011

Test Period : Jul 14, 2011 To Jul 20, 2011

(Ⅱ) RoHS Requirement:

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

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



Test Conducted

(Ⅲ) Test Method:

<u>Test Item</u>	Test Method	Reporting Limit
Cadmium (Cd)	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

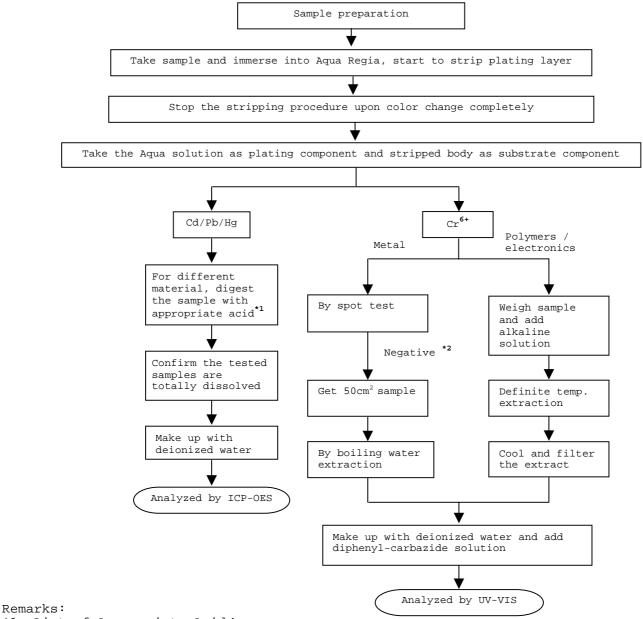


Test Conducted

(IV) Measurement Flowchart:

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

Reference Standard: IEC 62321 edition 1.0:2008



*1: List of Appropriate Acid:

disc 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

Page 4 of 5

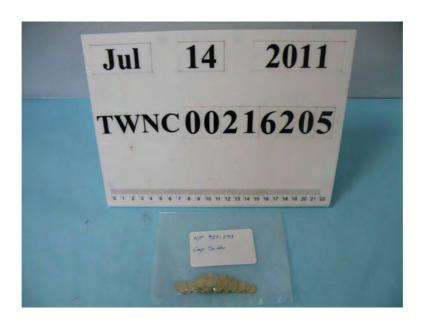
Intertek Testing Services Taiwan Ltd.



Test Conducted

Number: TWNC00216205

Photo







Test Report Number: TWNC00216207

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 : Disc

Part Number : 882-363-001 Date Sample Received : Jul 14, 2011 Date Test Started : Jul 14, 2011

Test Conducted :

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

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K. Y. Liang
Director

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Date : Jul 19, 2011

Page 1 of 5



Test Conducted

(I) Test Result Summary :

,			
Mark Than	Result	Result (ppm)	
<u>Test Item</u>		(2)	
Heavy Metal			
Cadmium (Cd) content	ND	ND	
Lead (Pb) content		562	
Mercury (Hg) content	ND	ND	
	Negative	Negative	
Chromium VI (Cr ⁶⁺) content (mg/kg with 50cm ²)	(< 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) Silvery Metal Base Material
- (2) Silvery Plating Layer

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

Date Sample Received : Jul 14, 2011

Test Period : Jul 14, 2011 To Jul 19, 2011

(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 ⁶⁺) Content	0.1% (1000ppm)

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

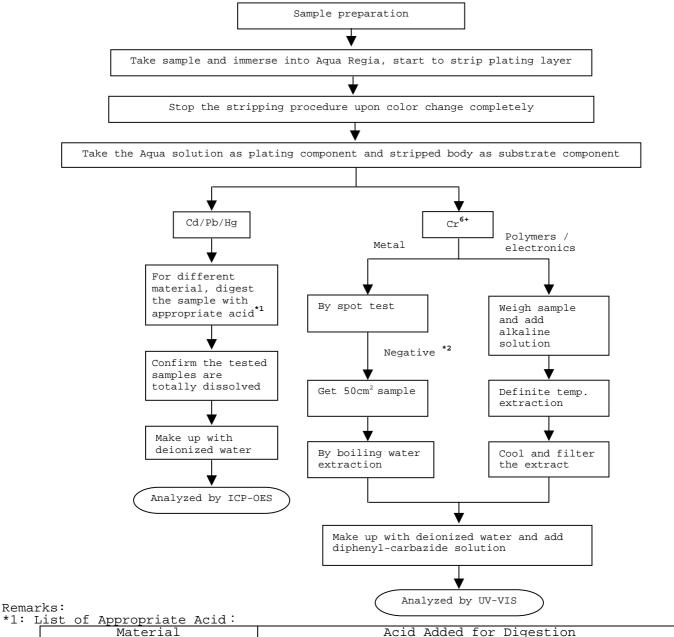


Test Conducted

(IV) Measurement Flowchart:

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

Reference Standard: IEC 62321 edition 1.0:2008



dist of Appropriate Acid:	
Material	Acid Added for Digestion
Polymers	HNO_3 , $HC1$, HF , H_2O_2 , H_3BO_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

Page 4 of 5



Test Conducted

Number: TWNC00216207

Photo







Test Report Number : TWNC00213351

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

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

Mexico

Sample Description:

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

Part Description : WIRE SOLDER .100 DIA - ROHS

Part Number : 692532

Date Sample Received : Jun 28, 2011
Date Test Started : Jun 28, 2011

Test Conducted :

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

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Taiwan Limited

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K. Y. Liang
Director

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Date : Jul 01, 2011

Page 1 Of 5



Test Conducted

(I) Test Result Summary :

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

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

ND = Not detected
< = Less than</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.

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

Date Sample Received : Jun 28, 2011

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

(Π) 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 ⁶⁺) Content	0.1% (1000ppm)

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



Test Conducted

(Ⅲ) Test Method:

Test Item	Test Method	Reporting Limit			
Cadmium (Cd) content	Imicrowave digestion until the tested				
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

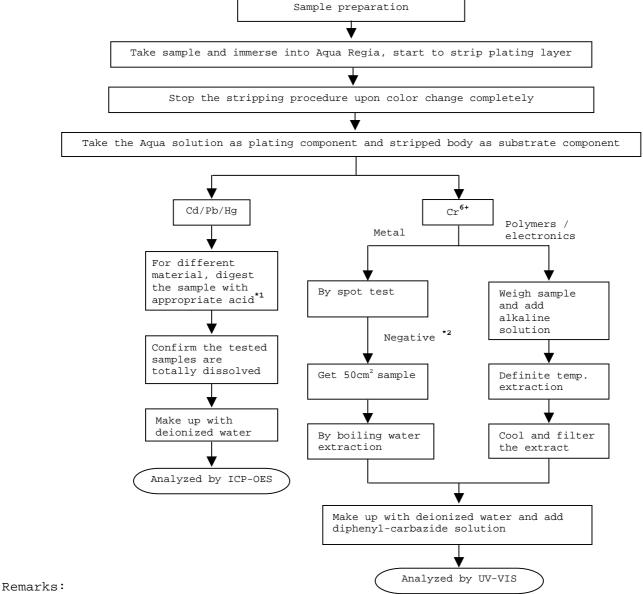


Test Conducted

(IV) Measurement Flowchart:

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

Reference Standard: IEC 62321 edition 1.0:2008



*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



Test Conducted

Photo







Number: TWNC00279928 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 :

: SILICA SAND Part Description

: 090169 Part Number

: Oct 04, 2012 Date Sample Received 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

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Date : Oct 12, 2012





Test Conducted

(I) Test Result Summary:

Test Item) Test Result Summary :	
Heavy Metal Cadmium (Cd) content Lead (Pb) content MD Lead (Pb) content MD Mercury (Hg) content Chromium VI (Cr ⁶⁺) content Polybrominated Biphenyls (PBBs) Monobrominated Biphenyls (MonoBB) Dibrominated Biphenyls (TriBB) Tribrominated Biphenyls (TriBB) Tetrabrominated Biphenyls (TetraBB) Pentabrominated Biphenyls (PentaBB) MD Hexabrominated Biphenyls (HexaBB) MD Heptabrominated Biphenyls (HeptaBB) ND Octabrominated Biphenyls (NonaBB) ND Octabrominated Biphenyls (NonaBB) ND Polybrominated Biphenyl (DecaBB) ND Polybrominated Diphenyl Ethers (MonoBDE) Dibrominated Diphenyl Ethers (MonoBDE) Tribrominated Diphenyl Ethers (TriBDE) ND Tetrabrominated Diphenyl Ethers (TetraBDE) ND Tetrabrominated Diphenyl Ethers (HexaBDE) ND Hexabrominated Diphenyl Ethers (HexaBDE) ND Heptabrominated Diphenyl Ethers (HexaBDE) ND Honoabrominated Diphenyl Ethers (NonaBDE) ND Nonabrominated Diphenyl Ethers (NonaBDE) ND Nonabrominated Diphenyl Ethers (NonaBDE) ND Nonabrominated Diphenyl Ethers (NonaBDE) ND Helogen Content Fluorine (F) Chlorine (C1) ND	Togt Itom	Result (ppm)
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Decabrominated Diphenyl Ether (DecaBDE) Halogen Content Fluorine (F) Chlorine (Cl) Bromine (Br) ND ND		ND
Halogen Content Fluorine (F) Chlorine (Cl) Bromine (Br) ND ND		ND
Fluorine (F) ND Chlorine (Cl) ND Bromine (Br) ND	Decabrominated Diphenyl Ether (DecaBDE)	ND
Chlorine (C1) ND Bromine (Br) ND		
Bromine (Br) ND	1 ,	ND
	Chlorine (Cl)	ND
Iodine (I)		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

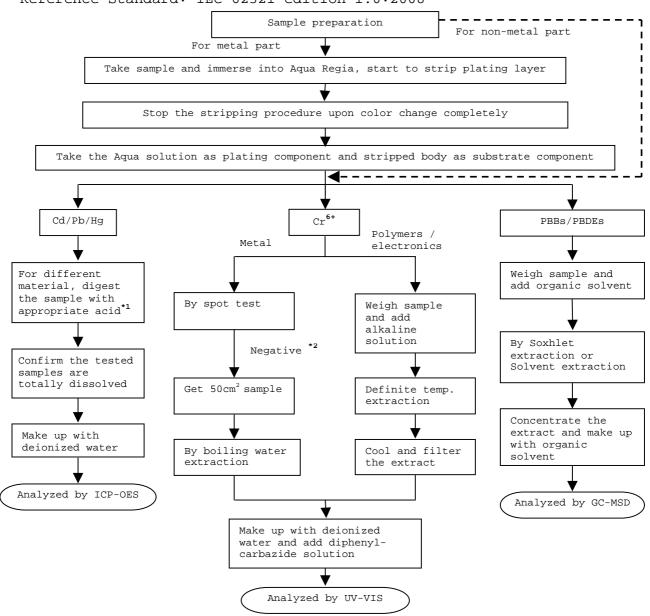




Test Conducted

(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:

TIPE OF THEFT AND THOSE	
<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.

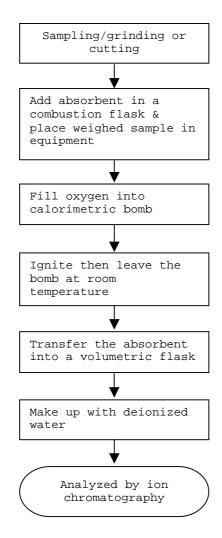




Test Conducted

(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.

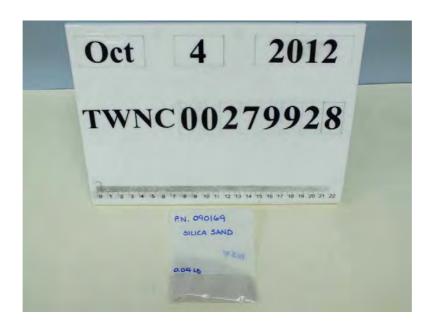


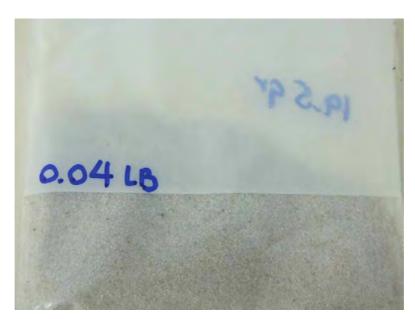
Intertek Testing Services Taiwan Ltd.



Test Conducted

Photo







Intertek Testing Services Taiwan Ltd.



Please Contact with SGS www.tw.sgs.com

Test Report

No.: CE/2011/B4950

Date: 2011/12/01

Page: 1 of 7

POLYFIL AG

OBERALLMENDSTRASSE 20A, CH-6300 ZUG / SWITZERLAND

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

Sample Description

: Cu99.9MSn

Buyer/Order No.

: 11-0595

Sample Receiving Date

: 2011/11/25

Testing Period

: 2011/11/25 TO 2011/12/01

Test Result(s)

: Please refer to next page(s).



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Test Report

No.: CE/2011/B4950

Date: 2011/12/01

Page: 2 of 7

POLYFIL AG

OBERALLMENDSTRASSE 20A, CH-6300 ZUG / SWITZERLAND

Test Result(s)

PART NAME No.1

: SILVER COLORED METAL WIRE (INCLUDING THE PLATING LAYER)

Toot Itom(c)	T48(-) U-is Mash-ad	Mothed	MDI	Result
Test Item(s)	Unit	Method	MDL	No.1
Cadmium (Cd)	mg/kg	With reference to IEC 62221, 2009 and	2	n.d.
Lead <mark>(</mark> Pb)	mg/kg	With reference to IEC 62321: 2008 and	2	24
Mercu <mark>ry (Hg)</mark>	mg/kg	performed by ICP-AES.	2	n.d.
Hexavalent Chromium Cr(VI)	**	With reference to IEC 62321: 2008 and performed by Boiling water extraction Method.#	#	Negative
Sum of PBBs			1.47	n.d.
Mono <mark>b</mark> romobiphenyl			5	n.d.
Dibromobiphenyl			5	n.d.
Tribro <mark>mobiphenyl</mark>			5	n.d.
Tetrabromobiphenyl			5	n.d.
Pentabromobiphenyl			5	n.d.
Hexa <mark>b</mark> romobiphenyl		With reference to IEC 62321: 2008 and performed by GC/MS.	5	n.d.
Heptabromobiphenyl			5	n.d.
Octab <mark>romobiphenyl</mark>			5	n.d.
Nona <mark>b</mark> romobiphenyl			5	n.d.
Decabromobiphenyl			5	n.d.
Sum of PBDEs	mg/kg			n.d.
Monopromodiphenyl ether			5	n.d.
Dibromodiphenyl ether			5	n.d.
Tribromodiphenyl ether			5	n.d.
Tetrabromodiphenyl ether			5	n.d.
Pentabromodiphenyl ether			5	n.d.
Hexabromodiphenyl ether			5	n.d.
Heptabromodiphenyl ether			5	n.d.
Octabromodiphenyl ether			5	n.d.
Nonabromodiphenyl ether			5	n.d.
Decapromodiphenyl ether			5	n.d.

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Test Report

No.: CE/2011/B4950

Date: 2011/12/01

Page: 3 of 7

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Test Item(s)	Unit	Method	MDL	Result
	Unit	Wethod		No.1
Halogen		T a sale of the sa		
Halogen-Fluorine (F) (CAS No.: 14762-94-8)			50	n.d.
Halogen-Chlorine (CI) (CAS No.: 22537-15-1)		With reference to BS EN 14582:2007.	50	n.d.
Halogen-Bromine (Br) (CAS No.: 10097-32-2)	mg/kg	Analysis was performed by IC.	50	n.d.
Halog <mark>en-lodine (I)</mark> (CAS No.: 14362-44-8)			50	n.d.

Note

- 1. mg/kg = ppm : 0.1wt% = 1000ppm
- 2. n.d. = Not Detected
- 3. MDL = Method Detection Limit
- 4. " " = Not Regulated
- 5. ** = Qualitative analysis (No Unit)
- 6. # = a. Positive means the presence of CrVI on the tested areas
 - b. Negative means the absence of CrVI on the tested areas

The detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm² tested areas.

7. The sample(s) was/were analyzed on behalf of the applicant as mixing sample in one testing. The above result(s) was/were only given as the informality value.

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Test Report Page: 4 of 7 Date: 2011/12/01 No.: CE/2011/B4950 POLYFIL AG OBERALLMENDSTRASSE 20A, CH-6300 ZUG / SWITZERLAND 1) These samples were dissolved totally by pre-conditioning method according to below flow chart (Cr6+ test method excluded) 2) Name of the person who made measurement: Climbgreat Yang 3) Name of the person in charge of measurement: Troy Chang Cutting / Preparation Sample Measurement Hg Pb · Cd Acid digestion by suitable acid Microwave digestion with Add appropriate amount depended on different sample HNO₃/HCI/HF digestion reagent material (as below table) Filtration Heat to appropriate temperature to extract Residue Solution Cool, filter digestate Alkali Fusion through filter HCI to dissolve ICP-AES Add diphenyl-carbazide for color development Digestion Acid Sample Material Agua regia, HNO₃, HCl, HF, H₂O₂ Steel, copper, aluminum, solder measure the absorbance HNO₃/HF Glass at 540 nm by UV-VIS Gold, platinum, palladium, ceramic Aqua regia HNO₃ Silver H₂SO₄, H₂O₂, HNO₃, HCI Plastic Any acid to total digestion Others

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Test Report

No.: CE/2011/B4950

Date: 2011/12/01

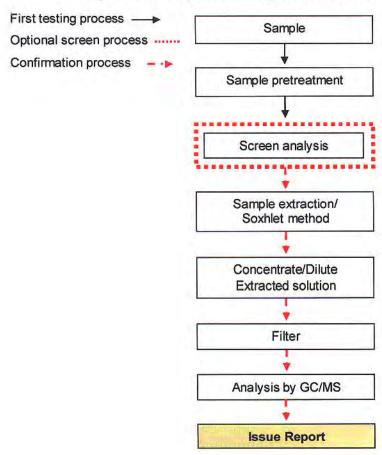
Page: 5 of 7

POLYFIL AG OBERALLMENDSTRASSE 20A, CH-6300 ZUG / SWITZERLAND



PBB/PBDE analytical FLOW CHART

- 1) Name of the person who made measurement: Roman Wong
- 2) Name of the person in charge of measurement: Troy Chang



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Test Report

No.: CE/2011/B4950

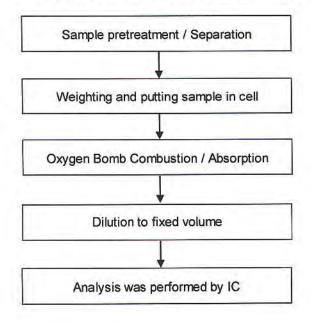
Date: 2011/12/01

Page: 6 of 7

POLYFIL AG OBERALLMENDSTRASSE 20A, CH-6300 ZUG / SWITZERLAND

Analytical flow chart of halogen content

- 1) Name of the person who made measurement: Rita Chen
- 2) Name of the person in charge of measurement: Troy Chang



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Test Report

No.: CE/2011/B4950

Date: 2011/12/01

Page: 7 of 7

POLYFIL AG OBERALLMENDSTRASSE 20A, CH-6300 ZUG / SWITZERLAND



* The tested sample / part is marked by an arrow if it's shown on the photo. *

CE/2011/B4950



** End of Report **

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Test Report Number: TWNC00240910

Applicant: Littelfuse Philippines Inc.

Date : Jan 20, 2012 LIMA Technology Center, Lipa City,

Malvar, Batangas

Sample Description:

One (1) group of submitted samples said to be : Part Description : Pure Silver Strip

Part Number : 685xxx

Date Sample Received : Jan 16, 2012 Date Test Started : Jan 16, 2012

Test Conducted:

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

Authorized By: On Behalf Of Intertek Testing Services Taiwan Limited



K. Y. Liang Director

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Page 1 of 5



Test Conducted

(I) Test Result Summary:

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

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

ND = Not detected
< = Less than</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 : Jan 16, 2012

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

(Ⅱ) RoHS Requirement:

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

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



Test Conducted

(Ⅲ) Test Method:

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

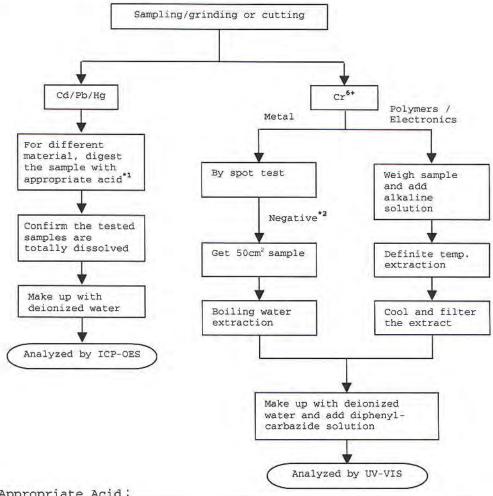
Remark: Reporting limit = Quantitation limit of analyte in sample



Test Conducted

(IV) Measurement Flowchart:

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



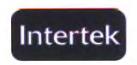
Remarks:

*1: List Of Appropriate Acid:

Material	Acid Added For Digestion
Polymers	HNO3, HC1, HF, H2O2, H3BO3
Metals	HNO3, HC1, HF
Electronics	HNO ₃ , HC1, H ₂ O ₂ , HBF ₄

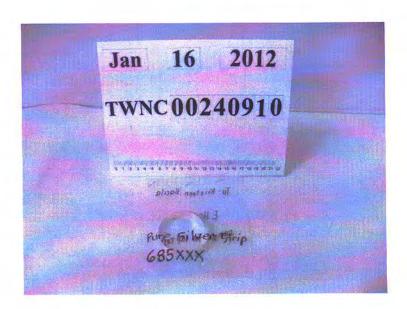
*2: If the result of spot test is positive, Chromium VI would be determined as detected.

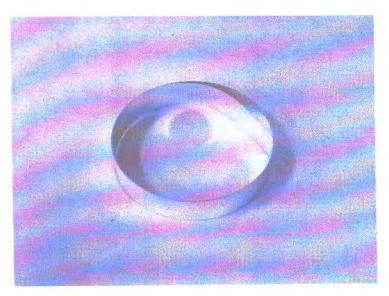
End of Report



Test Conducted

Photo







Test Report Number: TWNC00269229

Applicant: Littelfuse Philippines Inc.

Date : Aug 06, 2012

LIMA Technology Center, Lipa City,

Malvar, Batangas

Sample Description:

One (1) group of submitted samples said to be : Part Description : Body (Melamine)

Part Number : 039144

Date Sample Received : Jul 30, 2012
Date Test Started : Jul 30, 2012

Test Conducted :

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

Authorized By: On Behalf Of Intertek Testing Services Taiwan Limited



K. Y. Liang
Director

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Page 1 of 7



Test Conducted

(I) Test Result Summary :

) Test Result Summary :	
Togt Itom	Result (ppm)
<u>Test Item</u>	White Plastic
Heavy Metal	
Cadmium (Cd) content	ND
Lead (Pb) content	ND
Mercury (Hg) content	ND
Chromium VI (Cr ⁶⁺) content	ND
Polybrominated Biphenyls (PBBs)	
Monobrominated Biphenyls (MonoBB)	ND
Dibrominated Biphenyls (DiBB)	ND
Tribrominated Biphenyls (TriBB)	ND
Tetrabrominated Biphenyls (TetraBB)	ND
Pentabrominated Biphenyls (PentaBB)	ND
Hexabrominated Biphenyls (HexaBB)	ND
Heptabrominated Biphenyls (HeptaBB)	ND
Octabrominated Biphenyls (OctaBB)	ND
Nonabrominated Biphenyls (NonaBB)	ND
Decabrominated Biphenyl (DecaBB)	ND
Polybrominated Diphenyl Ethers (PBDEs)	
Monobrominated Diphenyl Ethers (MonoBDE)	ND
Dibrominated Diphenyl Ethers (DiBDE)	ND
Tribrominated Diphenyl Ethers (TriBDE)	ND
Tetrabrominated Diphenyl Ethers (TetraBDE)	ND
Pentabrominated Diphenyl Ethers (PentaBDE)	ND
Hexabrominated Diphenyl Ethers (HexaBDE)	ND
Heptabrominated Diphenyl Ethers (HeptaBDE)	ND
Octabrominated Diphenyl Ethers (OctaBDE)	ND
Nonabrominated Diphenyl Ethers (NonaBDE)	ND
Decabrominated Diphenyl Ether (DecaBDE)	ND
Halogen Content	
Fluorine (F)	264
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 : Jul 30, 2012
Test Period : Jul 30, 2012 To Aug 03, 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.

$(\hspace{.05cm} \coprod \hspace{.05cm})$ Test Method:

Test Item <u>Test Method</u>		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



Test Conducted

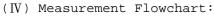
(Ⅲ) Test Method:

Test Item	Test Method	Reporting Limit
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

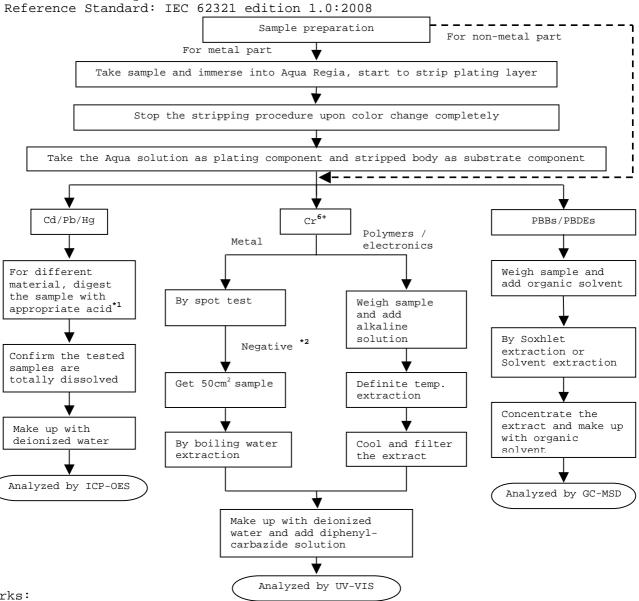
Remark: Reporting limit = Quantitation limit of analyte in sample



Test Conducted



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



Remarks:

*1: List of Appropriate Acid:

Τ	<u>ist of Appropriate Acid.</u>	
	<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

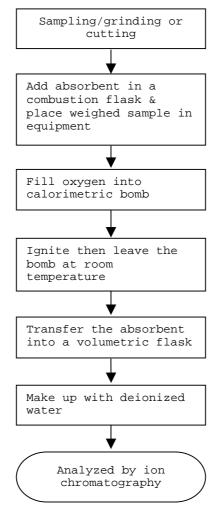
*2: If the result of spot test is positive, Chromium VI would be determined as detected.



Test Conducted

(IV) Measurement Flowchart:

Test for Halogen Content Reference Standard: EN 14582



End of Report

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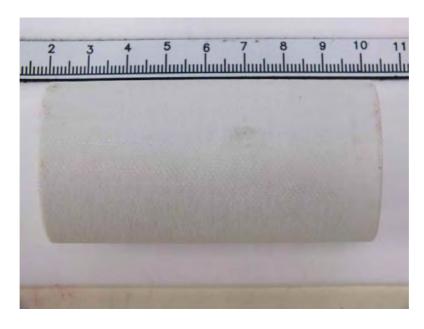


Test Conducted

Number: TWNC00269229

Photo







號碼(No.): CE/2012/10837

日期(Date): 2012/01/11

頁数(Page): 1 of 10

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樣品名稱(Sample Description)

: COPPER NICKEL ALLOY WIRES, NICKEL PLATED WIRES

樣品型號(Style/Item No.)

: 請參考第5頁 (PLEASE REFER TO PAGE 5)

原產國(Country of Origin)

: 德國 (GERMANY)

收件日期(Sample Receiving Date)

2012/01/04

測試期間(Testing Period)

: 2012/01/04 TO 2012/01/11

測試結果(Test Results)

: 請見下一頁 (Please refer to next pages).



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號碼(No.): CE/2012/10837

日期(Date): 2012/01/11 頁數(Page): 2 of 10

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測試結果(Test Results)

測試部位(PART NAME) No.1: 混测所有颜色金屬線(含鍍層)(共10款) (MIXED ALL COLOR METAL WIRE (INCLUDING THE PLATING LAYER) (10 TYPES))

測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限値 (MDL)	結果 (Result) No.1
鎬 / Cadmium (Cd)	mg/kg	參考IEC 62321: 2008方法, 以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.
鉛 / Lead (Pb)	mg/kg	參考IEC 62321: 2008方法, 以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.
乘 / Mercury (Hg)	mg/kg	參考IEC 62321: 2008方法,以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.
六價鉻 / Hexavalent Chromium Cr(VI)	**	参考IEC 62321: 2008方法,以沸水萃取法檢測. / With reference to IEC 62321: 2008 and performed by Boiling water extraction Method.#	#	Negative
全氣辛烷磺酸 / Perfluorooctane sulfonates (PFOS-Acid, Metal Salt, Amide)	mg/kg	參考US EPA 3540C: 1996方法, 以液相層析質譜儀檢測全氣辛烷磺酸含量. / With reference to US EPA 3540C: 1996 method for PFOS Content. Analysis was performed by LC/MS.	10	n.d.
全氟辛酸(銨) / PFOA (CAS No.: 335-67- 1)	mg/kg	參考US EPA 3540C: 1996方法,以液相層析質譜儀檢測全氯辛酸(銨)含量./ With reference to US EPA 3540C: 1996 method for PFOA Content. Analysis was performed by LC/MS.	10	n.d.

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日期(Date): 2012/01/11

頁數(Page): 3 of 10

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测試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限値 (MDL)	結果 (Result) No.1
多溴聯苯總和 / Sum of PBBs			(MDL)	n.d.
一溴聯苯 / Monobromobiphenyl			5	n.d.
二溴聯苯 / Dibromobiphenyl			5	n.d.
三溴聯苯 / Tribromobiphenyl			5	n.d.
四溴聯苯 / Tetrabromobiphenyl			5	n.d.
五溴聯苯 / Pentabromobiphenyl			5	n.d.
六溴聯苯 / Hexabromobiphenyl		1	5	n.d.
七溴聯苯 / Heptabromobiphenyl		10.0	5	n.d.
入溴聯苯 / Octabromobiphenyl			5	n.d.
九溴聯苯 / Nonabromobiphenyl		參考IEC 62321: 2008方法, 以氣相層	5	n.d.
十溴聯苯 / Decabromobiphenyl	/1	析儀/質譜儀檢測. / With reference	5	n.d.
多溴聯苯醚總和 / Sum of PBDEs	mg/kg	to IEC 62321: 2008 and performed	-	n.d.
一溴聯苯醚 / Monobromodiphenyl ether		by GC/MS.	5	n.d.
二溴聯苯醚 / Dibromodiphenyl ether			5	n.d.
三溴聯苯醚 / Tribromodiphenyl ether			5	n.d.
四溴聯苯醚 / Tetrabromodiphenyl ether			5	n.d.
五溴聯苯醚 / Pentabromodiphenyl ether			5	n.d.
六溴聯苯醚 / Hexabromodiphenyl ether		1 4	5	n.d.
七溴聯苯醚 / Heptabromodiphenyl ether			5	n.d.
八溴聯苯醚 / Octabromodiphenyl ether			5	n.d.
九溴聯苯醚 / Nonabromodiphenyl ether			5	n.d.
十溴聯苯醚 / Decabromodiphenyl ether			5	n.d.
鹵素 / Halogen				
鹵素(氣)/ Halogen-Fluorine (F) (CAS No.: 14762-94-8)			50	n.d.
鹵素(氣)/ Halogen-Chlorine (C1) (CAS No.: 22537-15-1)	mg/kg	參考BS EN 14582:2007, 以離子層析 儀分析. / With reference to BS EN	50	n.d.
鹵素(溴)/ Halogen-Bromine (Br) (CAS No.: 10097-32-2)		14582:2007. Analysis was performed by IC.	50	n.d.
鹵素 (碘) / Halogen-Iodine (I) (CAS No.: 14362-44-8)			50	n.d.

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Company ISSUE TO SECULATION SUBSCIENCE SECULATION OF THE ACT OF THE PROPERTY OF THE ACT OF THE ACT

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號碼(No.): CE/2012/10837

日期(Date): 2012/01/11

頁数(Page): 4 of 10

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

備註(Note):

- 1. mg/kg = ppm; 0.1wt% = 1000ppm
- 2. n.d. = Not Detected (未檢出)
- 3. MDL = Method Detection Limit (方法偵測極限值)
- 4. "-" = Not Regulated (無規格值)
- 5. **= Qualitative analysis (No Unit) 定性分析(無單位)
- 6.# = a. Positive means the presence of CrVI on the tested areas (Positive表示測試區域偵測到六價鉻)
 - b. Negative means the absence of CrVI on the tested areas (Negative表示測試區域未偵測到六價鉻)

The detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm² tested areas. / 該溶液濃度≧0.02 mg/kg with 50 cm² (tested areas)

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

PFOS參考資訊(Reference Information): 指令 2006/122/EC (Directive 2006/122/EC)

- (1) 該物質不可置於市場上或使用於特殊物質或配置成分重量濃度等於或大於0.005%.
 (May not be placed on the market or used as a substance or constituent of preparations in a concentration equal to or higher than 0.005 % by mass.)
- (2) 該物質不可置於市場上的半成品或商品或其物件; 假若零件上明顯地具有PFOS並參照結構上及微細構造上計算PFOS重量 濃度等於或大於0.1%, 而紡織品或其他覆蓋物質, 如果PFOS在覆蓋物質中含量等於或大於1μg/m². (May not be placed on the market in semi-finished products or articles, or parts thereof, if the concentration of PFOS is equal to or higher than 0.1% by mass calculated with reference to the mass of structurally or microstructurally distinct parts that contain PFOS or, for textiles or other coated materials, if the amount of PFOS is equal to or higher than 1μg/m² of the coated material.)

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號碼(No.): CE/2012/10837 日期(Date): 2012/01/11 頁数(Page): 5 of 10

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



```
樣品型就(Style/Item No.)

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

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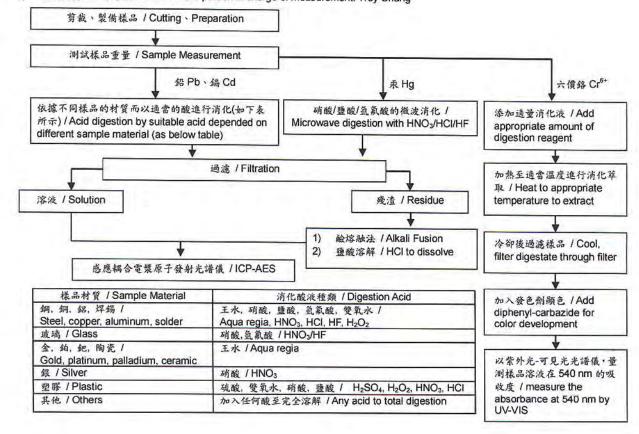
日期(Date): 2012/01/11

頁數(Page): 6 of 10

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



- 根據以下的流程圖之條件,樣品已完全溶解。(六價絡測試方法除外) / These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr5+ test method excluded)
- 测试人員:楊登偉 / Name of the person who made measurement: Climbgreat Yang
- 测試負責人:張啓興 / Name of the person in charge of measurement: Troy Chang



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頁数(Page): 7 of 10

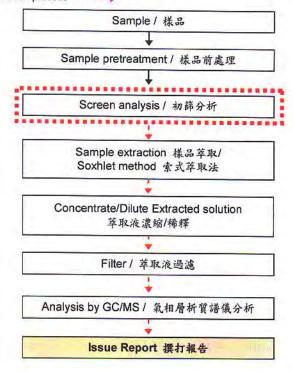
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多溴聯苯/多溴聯苯醚分析流程圖 / PBB/PBDE analytical FLOW CHART

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

初次测试程序 / First testing process -選擇性篩檢程序 / Optional screen process ------

確認程序 / Confirmation process - - - →



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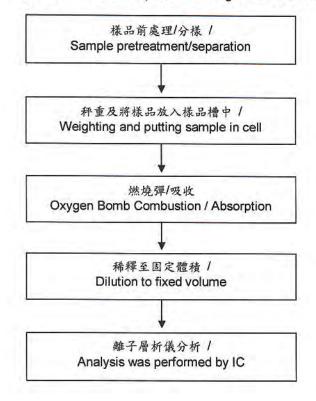
頁数(Page): 8 of 10

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

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



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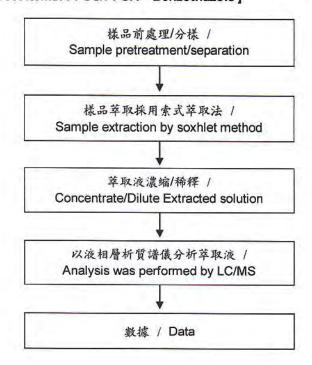
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索式萃取分析流程圖 / Analytical flow chart of Soxhlet extraction (LC/MS) procedure

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

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



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號碼(No.): CE/2012/10837 日期(Date): 2012/01/11 頁數(Page): 10 of 10

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* 照片中如有箭頭標示,則表示爲實際檢測之樣品/部位. *

(The tested sample / part is marked by an arrow if it's shown on the photo.)

CE/2012/10837



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** 報告結尾(End of Report) **

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Number: TWNC00269228 Test Report

Applicant: Littelfuse Philippines Inc.

Date : Aug 06, 2012 LIMA Technology Center, Lipa City,

Malvar, Batangas

Sample Description:

One (1) group of submitted samples said to be : Part Description : Filler (silica sand)

: 090190 Part Number

: Jul 30, 2012 Date Sample Received Date Test Started : Jul 30, 2012

Test Conducted :

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

Authorized By: On Behalf Of Intertek Testing Services Taiwan Limited



K. Y. Liang Director

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Page 1 of 7



Test Conducted

(I) Test Result Summary :

) lest result summary .	
	Result (ppm)
Test Item	Transparent Silica
	Sand
Heavy Metal	
Cadmium (Cd) content	ND
Lead (Pb) content	ND
Mercury (Hg) content	ND
Chromium VI (Cr ⁶⁺) content	ND
Polybrominated Biphenyls (PBBs)	
Monobrominated Biphenyls (MonoBB)	ND
Dibrominated Biphenyls (DiBB)	ND
Tribrominated Biphenyls (TriBB)	ND
Tetrabrominated Biphenyls (TetraBB)	ND
Pentabrominated Biphenyls (PentaBB)	ND
Hexabrominated Biphenyls (HexaBB)	ND
Heptabrominated Biphenyls (HeptaBB)	ND
Octabrominated Biphenyls (OctaBB)	ND
Nonabrominated Biphenyls (NonaBB)	ND
Decabrominated Biphenyl (DecaBB)	ND
Polybrominated Diphenyl Ethers (PBDEs)	
Monobrominated Diphenyl Ethers (MonoBDE)	ND
Dibrominated Diphenyl Ethers (DiBDE)	ND
Tribrominated Diphenyl Ethers (TriBDE)	ND
Tetrabrominated Diphenyl Ethers (TetraBDE)	ND
Pentabrominated Diphenyl Ethers (PentaBDE)	ND
Hexabrominated Diphenyl Ethers (HexaBDE)	ND
Heptabrominated Diphenyl Ethers (HeptaBDE)	ND
Octabrominated Diphenyl Ethers (OctaBDE)	ND
Nonabrominated Diphenyl Ethers (NonaBDE)	ND
Decabrominated Diphenyl Ether (DecaBDE)	ND
Halogen Content	
Fluorine (F)	ND
Chlorine (Cl)	153
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 : Jul 30, 2012

Test Period : Jul 30, 2012 To Aug 03, 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.

(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



Test Conducted

(Ⅲ) Test Method:

Test Item	Test Method	Reporting Limit
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

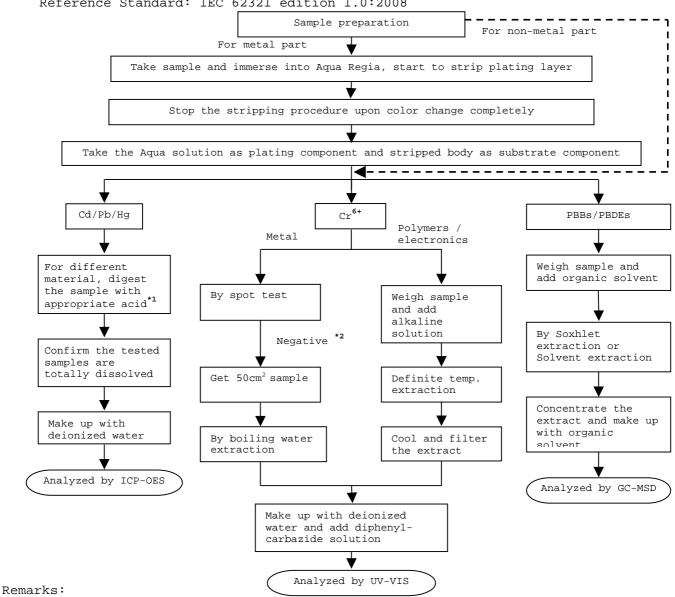
Remark: Reporting limit = Quantitation limit of analyte in sample



Test Conducted

(IV) Measurement Flowchart:

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



*1: List of Appropriate Acid:

_	ist of appropriate acid:	
	Material	Acid Added for Digestion
	Polymers	HNO ₃ ,HCl,HF,H ₂ O ₂ ,H ₃ BO ₃
	Metals	HNO _{3,} HCl,HF
	Electronics	HNO _{3.} HCl,H ₂ O _{2.} HBF ₄

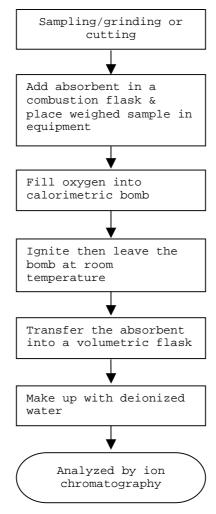
*2: If the result of spot test is positive, Chromium VI would be determined as detected.



Test Conducted

(IV) Measurement Flowchart:

Test for Halogen Content Reference Standard: EN 14582



End of Report

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Test Conducted

Photo







Test Report Number: TWNC00249177

Applicant: Littelfuse Philippines Inc. Date: Mar 26, 2012

LIMA Technology Center, Lipa City,

Malvar, Batangas

Sample Description:

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

Part Description : Silver Clad Cu Wire with 5% Ag

Part Number : 082xxx(082375)

Date Sample Received : Mar 22, 2012

Date Test Started : Mar 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

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Page 1 of 5



Test Conducted

(I) Test Result Summary :

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

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

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

mg/kg with 50cm² = milligram per kilogram with 50 square centimetre

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

Date Sample Received : Mar 22, 2012

Test Period : Mar 22, 2012 To Mar 26, 2012

(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 ⁶⁺) Content	0.1% (1000ppm)

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



Test Conducted

(Ⅲ) Test Method:

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

Remark: Reporting limit = Quantitation limit of analyte in sample

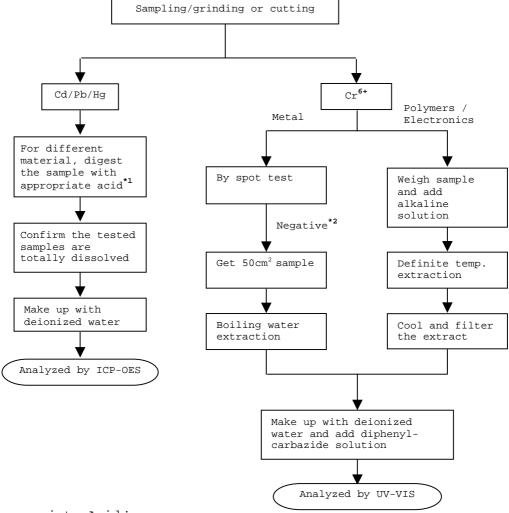


Test Conducted

(IV) Measurement Flowchart:

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

Reference Standard: IEC 62321 edition 1.0:2008



*1: List Of Appropriate Acid:

Remarks:

<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.

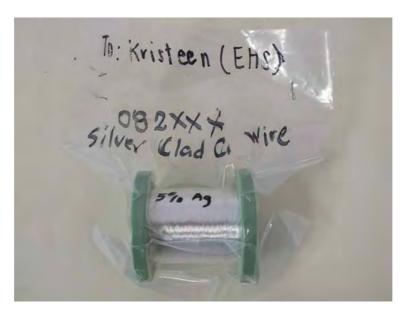
End of Report



Test Conducted

Photo







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TEST REPORT NUMBER: SHAH00320463

APPLICANT: LITTELFUSE, INC. DATE: JUN 06, 2012

800 E. NORTHWEST HWY

ATTN: A. CESISTA/ K. BACILA

SAMPLE DESCRIPTION:

ONE(1) SUBMITTED SAMPLE SAID TO BE WIRE WITH PLATING.

PART DESCRIPTION : AG PLATED CU WIRE.

PART NUMBER : 082555.

DATE SAMPLE RECEIVED : MAY.30, 2012.
DATE TEST STARTED : MAY.30, 2012.

TESTS CONDUCTED:

TO BE CONTINUED

AUTHORIZED BY:

FOR INTERTEK TESTING SERVICES

LTD., SHANGHAI

Tand

JACOB LIN GENERAL MANAGER



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TEST REPORT

NUMBER: SHAH00320463

TESTS CONDUCTED

(I) TEST RESULT SUMMARY:

TESTING ITEM	RESULT (PPM)	
HEAVY METAL	(1)	
CADMIUM (Cd) CONTENT	ND	
LEAD (Pb) CONTENT	ND	
MERCURY (Hg) CONTENT	ND	
CHROMIUM VI (Cr ⁶⁺) CONTENT (mg/kg WITH 50cm ²)	NEGATIVE (< 0.02)	

TESTING ITEM	RESULT (PPM)
HEAVY METAL	(2)
CADMIUM (Cd) CONTENT / PLATING	ND
LEAD (Pb) CONTENT / PLATING ND	
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

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 TESTING.

TESTED COMPONENTS:

(1) SUBSTRATE.

(2) PLATING.



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TEST REPORT NUMBER: SHAH00320463

TESTS CONDUCTED

(II) ROHS REQUIREMENT:

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

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

(III) TEST METHOD:

TESTING ITEM	TESTING METHOD	REPORTING LIMIT
CADMIUM (Cd) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0:2008 IN CLAUSE 8/9/10, BY MICROWAVE DIGESTION UNTIL THE TESTED SAMPLES ARE TOTALLY DISSOLVED AND DETERMINED BY ICP-OES.	2 ppm
LEAD (Pb) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0:2008 IN CLAUSE 8/9/10, BY MICROWAVE DIGESTION UNTIL THE TESTED SAMPLES ARE TOTALLY DISSOLVED AND DETERMINED BY ICP-OES.	2 ppm
MERCURY (Hg) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0:2008 IN CLAUSE 7, BY MICROWAVE DIGESTION UNTIL THE TESTED SAMPLES ARE TOTALLY DISSOLVED AND DETERMINED BY ICP-OES.	2 ppm
CHROMIUM VI (Cr 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

DATE SAMPLE RECEIVED : JUN.1, 2012

TESTING PERIOD : JUN.1, 2012 TO JUN.4, 2012



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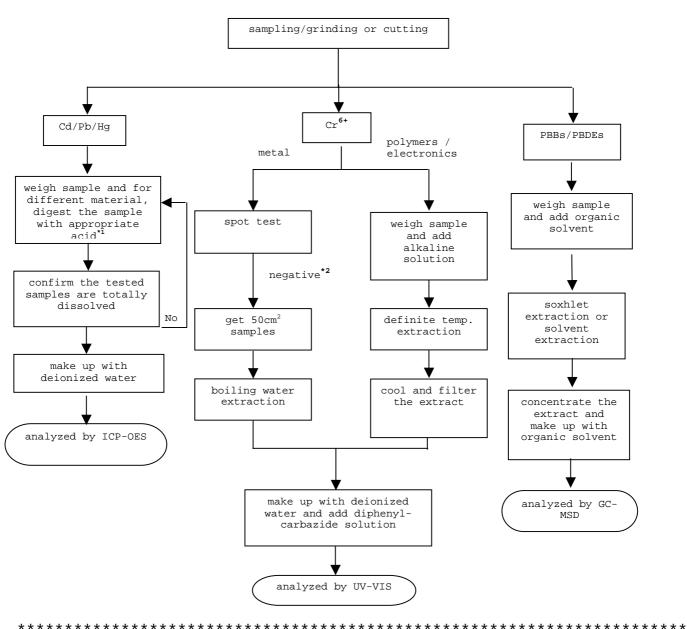
TEST REPORT

NUMBER: SHAH00320463

TESTS CONDUCTED

(IV) MEASUREMENT FLOWCHART:

TEST FOR Cd/Pb/Hg/Chromium (VI)/PBBs/PBDEs CONTENTS REFERENCE STANDARD: IEC 62321 EDITION 1.0:2008





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NUMBER: SHAH00320463

TEST REPORT

TESTS CONDUCTED

REMARKS:

*1: LIST OF APPROPRIATE ACID:

MATERIAL	ACID ADDED FOR DIGESTION
POLYMERS	HNO ₃ ,HCl,HF,H ₂ O ₂ ,H ₃ BO ₃
METALS	HNO _{3,} HCl,HF
ELECTRONICS	HNO _{3,} HCl,H ₂ O _{2,} HBF ₄

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



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NUMBER: SHAH00320463

TEST REPORT

TESTS CONDUCTED



END OF REPORT



Test Report Number: TWNC00279927

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 : RUBBER PLUG
Part Number : 901-182

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

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Date : Oct 12, 2012





Test Conducted

 $(\ I\)$ Test Result Summary :

) lest result summary .		
Test Item	Result (ppm)	
<u>lest item</u>	Orange Rubber	
Heavy Metal		
Cadmium (Cd) content	ND	
Lead (Pb) content	ND	
Mercury (Hg) content	ND	
Chromium VI (Cr ⁶⁺) content	ND	
Polybrominated Biphenyls (PBBs)		
Monobrominated Biphenyls (MonoBB)	ND	
Dibrominated Biphenyls (DiBB)	ND	
Tribrominated Biphenyls (TriBB)	ND	
Tetrabrominated Biphenyls (TetraBB)	ND	
Pentabrominated Biphenyls (PentaBB)	ND	
Hexabrominated Biphenyls (HexaBB)	ND	
Heptabrominated Biphenyls (HeptaBB)	ND	
Octabrominated Biphenyls (OctaBB)	ND	
Nonabrominated Biphenyls (NonaBB)	ND	
Decabrominated Biphenyl (DecaBB)	ND	
Polybrominated Diphenyl Ethers (PBDEs)		
Monobrominated Diphenyl Ethers (MonoBDE)	ND	
Dibrominated Diphenyl Ethers (DiBDE)	ND	
Tribrominated Diphenyl Ethers (TriBDE)	ND	
Tetrabrominated Diphenyl Ethers (TetraBDE)	ND	
Pentabrominated Diphenyl Ethers (PentaBDE)	ND	
Hexabrominated Diphenyl Ethers (HexaBDE)	ND	
Heptabrominated Diphenyl Ethers (HeptaBDE)	ND	
Octabrominated Diphenyl Ethers (OctaBDE)	ND	
Nonabrominated Diphenyl Ethers (NonaBDE)	ND	
Decabrominated Diphenyl Ether (DecaBDE)	ND	
Halogen Content		
Fluorine (F)	188	
Chlorine (Cl)	446	
Bromine (Br)		
Iodine (I)		
Phthalates		
Di(2-ethylhexyl) Phthalate (DEHP)	ND	
Dibutyl Phthalate (DBP)	ND	
Benzyl Butyl Phthalate (BBP)	ND	





Test Conducted

(I) Test Result Summary :

Test Item	Result (ppm)		
	Orange Rubber		
Others			
Hexabromocyclododecane (HBCDD)	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 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)
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
Phthalates	With reference to EN 14372: 2004, by solvent extraction and determined by GC-MS.	50 ppm
Hexabromocyclododec ane (HBCDD)	With reference to USEPA 3540C, by solvent extraction and determined by GC-MSD.	10 ppm

Remark: Reporting limit = Quantitation limit of analyte in sample

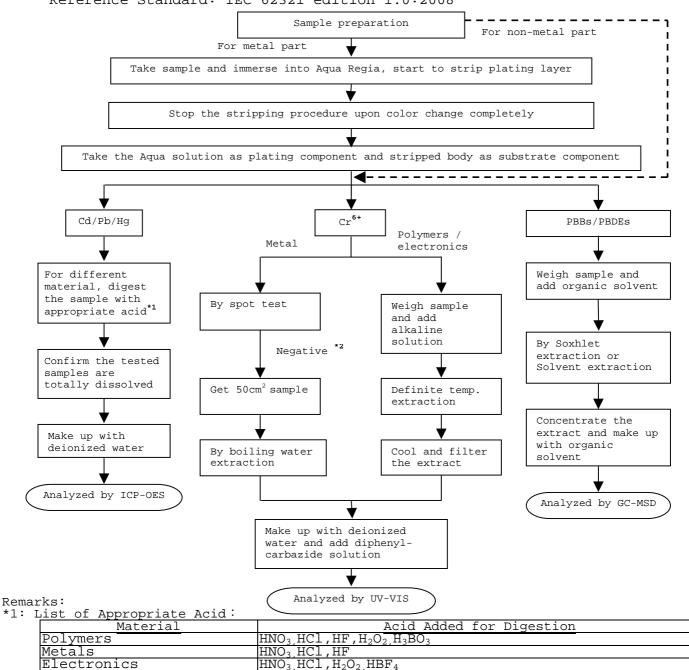




Test Conducted

(IV) Measurement Flowchart:

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



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



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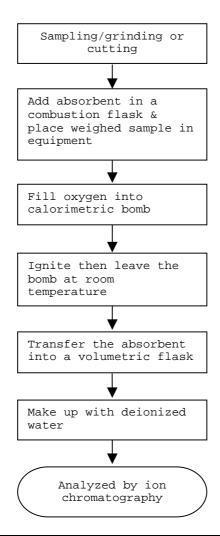
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Test Conducted

(IV) Measurement Flowchart:

Test for Halogen Content Reference Standard: EN 14582



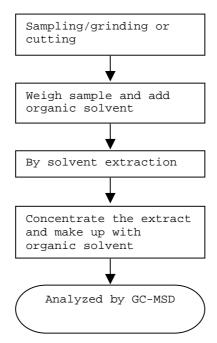




Test Conducted

 $({
m I\!V})$ Measurement Flowchart:

Test For Phthalates Contents Reference Method: EN 14372: 2004



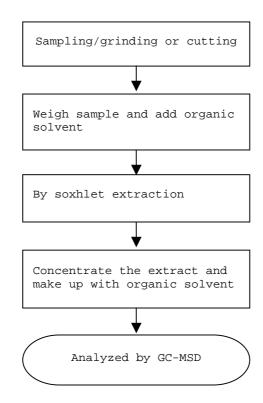




Test Conducted

(N) Measurement Flowchart:

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



End of Report

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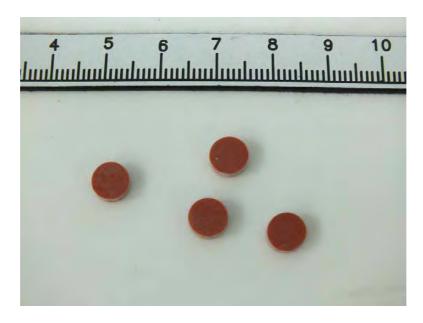


Test Conducted

Number: TWNC00279927

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Intertek Testing Services Taiwan Ltd.



Test Report Number: TWNC00269232

Applicant: Littelfuse Philippines Inc.

Date : Aug 07, 2012

LIMA Technology Center, Lipa City,

Malvar, Batangas

Sample Description:

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

Part Description : Overlay
Part Number : 692264

Date Sample Received : Jul 30, 2012 Date Test Started : Jul 30, 2012

Test Conducted:

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

Authorized By: On Behalf Of Intertek Testing Services Taiwan Limited



K. Y. Liang
Director

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Page 1 of 6



Test Conducted

(I) Test Result Summary :

Test Item	Result (ppm) Silvery Metal
Heavy Metal	
Cadmium (Cd) content	ND
Lead (Pb) content	102
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 50cm² = milligram per kilogram with 50 square centimetre Negative = A negative test result indicated positive observation was not found at the time of Test.

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

Date Sample Received : Jul 30, 2012

Test Period : Jul 30, 2012 To Aug 07, 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)	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

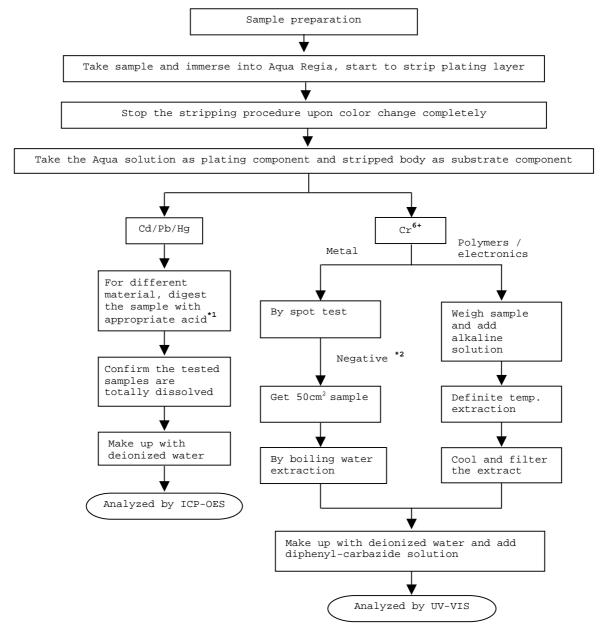


Test Conducted

(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:

Tipe of impropriate incid	
<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

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Test Conducted

Photo







Test Report Number: TWNC00228752

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
Part Number : 923-088
Date Sample Received : Oct 18, 2011
Date Test Started : Oct 18, 2011

Test Conducted :

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

Authorized By: On Behalf Of Intertek Testing Services Taiwan Limited



K. Y. Liang
Director

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Date : Nov 16, 2011

Page 1 of 5



Test Conducted

(I) Test Result Summary :

Test Item		Result (ppm)	
		(2)	
Heavy Metal	·		
Cadmium (Cd) content	7	ND	
Lead (Pb) content	20626	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 / Cathy Chen

Date Sample Received : Oct 18, 2011

Test Period : Oct 18, 2011 To Oct 20, 2011

(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 ⁶⁺) Content	0.1% (1000ppm)

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



Test Conducted

$(\hspace{.05cm} \coprod \hspace{.05cm})$ 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

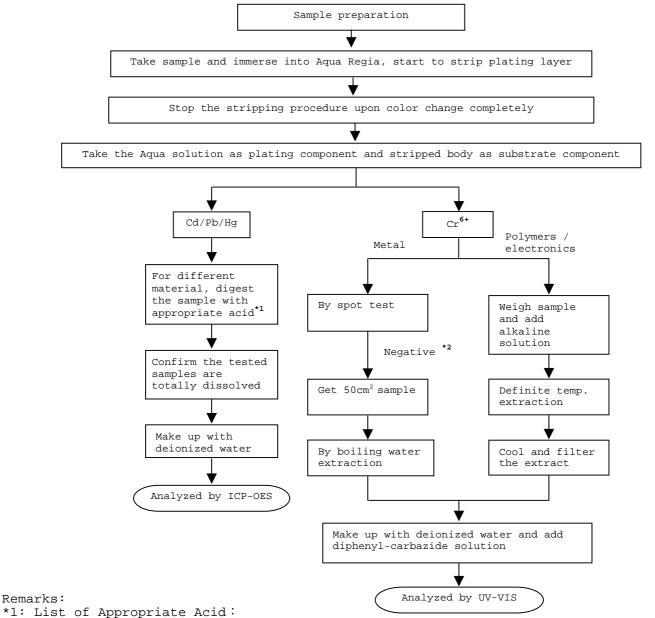


Test Conducted

$(\mathrm{\,I\hspace{-.1em}V})$ Measurement Flowchart:

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

Reference Standard: IEC 62321 edition 1.0:2008



*1: List of Appropriate Acid:

dibe of hppropriace hera	
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



Test Conducted

Number: TWNC00228752

Photo



