

ICP Test Report Certification Packet

Company name:	Littelfuse, Inc.		
Product Series:	GDT series		
Product #:	SL1002		
Issue Date:	August 10, 2011		
2002/95/EC)-restricted s packing/packaging mater In addition, it is hereby re	ubstance nor such us ials, and for additives a ported to you that the packaging materials, a	that there is neither Rose, for materials to be used and the like in the manufacture parts and sub-materials, the land the additives and the like emponents.	d for unit parts, for ring processes. materials to be used
	Issued by:	KRISTEEN BACILA <global ehs="" engineer=""></global>	_
(1) Parts, sub-materials a This document cov- by Littelfuse, Inc.	•	RoHS-Compliant series pro	oducts manufactured
< Raw Materials L Please see Tab			
(2) The ICP data on all Please see app	measurable substance propriate 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	NA	Silver Ring	3-7
2	NA	Ceramic	8-12
3	NA	Copper Electrode	13-17
4	NA	Blue Ink	18-22
5	NA	Tin plating	23-27



No. LPCI/08883(B)/11

CTS Ref. CTS/11/1372/LittelFuse

Date: 18/05/2011

Page: 1 of 5

LITTELFUSE INC. 800E. NORTHWEST HIGHWAY DES PLAINES, IL 60016, USA

The following merchandise was (were) submitted and identified by the client as:

Sample Description

: Silver Ring : 07/04/2011

Sample Receiving Date Testing Period

07/04/2011 07/04/2011 to 12/04/2011

Date Completed Date Reported

12/04/2011 18/05/2011

Test Requested

In accordance with the RoHS Directive 2002/95/EC, and its

amendment directives.

Test Method

Please refer to next page(s).

Test Results

Please refer to next page(s).

Analysts

Ng Mei Kheng & Loi Woan Yee

SGS LABORATORY SERVICES (M) SDN. BHD.

CHONG KIEN LEN B.Sc.(HONS) AMIC LAB MANAGER

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No. LPCI/08883(B)/11

CTS Ref. CTS/11/1372/LittelFuse

Page: 2 of 5

Date: 18/05/2011

Test results:

Test Part Description:

Sample Description

Silver Ring

RoHS Directive 2002/95/EC

Test Item(s):	Unit	Test Method	Results	MDL
Cadmium(Cd)	mg/kg	With reference to IEC 62321:2008, and performed by ICP-OES	N.D.	2
Lead (Pb)	mg/kg	With reference to IEC 62321:2008, and performed by ICP-OES	N.D.	2
Mercury (Hg)	mg/kg	With reference to IEC 62321:2008, and performed by ICP-OES	N.D.	2
Hexavalent Chromium (CrVI) by Spot test / boiling water extraction (optional) #		With reference to IEC 62321:2008, and performed by UV-VIS Spectrophotometry (boiling water extraction only)	Negative	
Sum of PBBs	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	Tø.
Monobromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Dibromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Tribromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Tetrabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Hexabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Pentabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Heptabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Octabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Nonabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Decabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5

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No. LPCI/08883(B)/11 CTS Ref. CTS/11/1372/LittelFuse

Date: 18/05/2011 Page: 3 of 5

Test Item(s):	Unit	Test Method	Results	MDL
Sum of PBDEs	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	
Monobromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Dibromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Tribromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Tetrabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Pentabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Hexabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Heptabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Octabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Nonabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Decabromodiphenyl ether ##	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5

Note: (a) mg/kg = ppm; (0.1wt% = 1000ppm)

(b) N.D. = Not Detected

(c) MDL = Method Detection Limit

(d) # = Spot-Test:

- a. Negative means the absence of Cr(VI) on the tested areas
- b. Positive means the presence of Cr(VI) on the tested areas

(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:

- a. Negative means the absence of Cr(VI) on the tested areas
- b. Positive means the presence of Cr(VI) on the tested areas; The detected concentration in 50 mL 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.

(e) - = Not regulated

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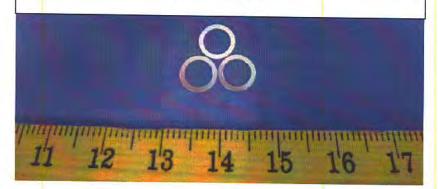
Date: 18/05/2011

Test Part Description:

Sample Description

Silver Ring

LITTELFUSE INC. LPCI/08883(B)/11



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No. LPCI/08883(B)/11 CTS Ref. CTS/11/1372/LittelFuse

Date: 18/05/2011

Page: 5 of 5

1. DETERMINATION OF CADMIUM CONTENT BY IEC 62321 2008

Sample Receiving and Registration

Cut sample in small pieces

Weight sample (0.2-0.5g) into digestion vessel

Acid digestion

"Totally Dissolved"

Filtration

Analyses by ICP

2. DETERMINATION OF LEAD CONTENT BY IEC 62321 2008

Sample Receiving and Registration

Cut sample in small pieces

Weight sample (0.2-0.5g) into digestion vessel

Wet digestion / Microwave digestion

"Totally Dissolved"

Filtration

Analyses by ICP

3. <u>DETERMINATION OF MERCURY CONTENT BY</u> <u>IEC 62321 2008</u>

Sample Receiving and Registration

Cut sample in small pieces

Weight sample (0.1-0.5g) into digestion vessel

Acid digestion (Microwave)

"Totally Dissolved"

Filtration

Analyses by ICP

4. DETERMINATION OF HEXAVALENT CHROMIUM BY IEC 62321 2008

Sample Receiving and Registration

Sample Preparation

Spot-test (Qualitative)

Boiling-water-extraction

Analyses by UV- Spectrophotometer

Test Report

5. DETERMINATION OF PBB/PBDE WITH GC-MS BY IEC 62321 2008

Cut sample in small pieces

Weight sample (0.5-4.0g) into extraction thimble

Soxhlet Extraction with Toluene

Filter through 0.45 um membrane filter

Analyses by GC-MS (with appropriate dilution)

**** End of Report ****

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No. LPCI/08870(B)/11

CTS Ref. CTS/11/1372/LittelFuse

Date: 18/05/2011

Page: 1 of 5

LITTELFUSE INC. 800E. NORTHWEST HIGHWAY DES PLAINES, IL 60016, USA

The following merchandise was (were) submitted and identified by the client as:

Sample Description

Ceramic Sample Receiving Date 07/04/2011

Testing Period 07/04/2011 to 12/04/2011

12/04/2011 **Date Completed** Date Reported 18/05/2011

Test Requested In accordance with the RoHS Directive 2002/95/EC, and its

amendment directives.

Test Method Please refer to next page(s).

Test Results Please refer to next page(s).

Analysts Ng Mei Kheng & Loi Woan Yee

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No. LPCI/08870(B)/11

CTS Ref. CTS/11/1372/LittelFuse

Page: 2 of 5

Date: 18/05/2011

Test results:

Test Part Description :

Sample Description

Ceramic

RoHS Directive 2002/95/EC

Test Item(s):	Unit	Test Method	Results	MDL
Cadmium(Cd)	mg/kg	With reference to IEC 62321:2008, and performed by ICP-OES	N.D.	2
Lead (Pb)	mg/kg	With reference to IEC 62321:2008, and performed by ICP-OES	N.D.	2
Mercury (Hg)	mg/kg	With reference to IEC 62321:2008, and performed by ICP-OES	N.D.	2
Hexavalent Chromium (CrVI)	mg/kg	With reference to IEC 62321:2008, and performed by UV-VIS Spectrophotometry	N.D.	2
Sum of PBBs	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	
Monobromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Dibromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Tribromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Tetrabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Hexabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Pentabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Heptabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Octabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Nonabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Decabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5

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No. LPCI/08870(B)/11 CTS Ref. CTS/11/1372/LittelFuse

Date: 18/05/2011 Page: 3 of 5

Test Item(s):	Unit	Test Method	Results	MDL
Sum of PBDEs	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	-
Monobromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Dibromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Tribromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Tetrabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Pentabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Hexabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Heptabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Octabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Nonabromodiphenyl eth <mark>e</mark> r	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Decabromodiphenyl ether ##	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5

- Note: (a) mg/kg = ppm; (0.1wt% = 1000ppm)
 - (b) N.D. = Not Detected
 - (c) MDL = Method Detection Limit
 - (d) ## = The exemption of DecaBDE in polymeric application according 2005/717/EC was overruled by the European Court of Justice by its decision of 01.04.2008. Subsequently DecaBDE is included in the sum of PBDE after 01.07.2008

(e) - = Not regulated

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No. LPCI/08870(B)/11

CTS Ref. CTS/11/1372/LittelFuse

Page: 4 of 5

Date: 18/05/2011

Test Part Description :

Sample Description

: Ceramic

LITTELFUSE INC. LPCI/08870(B)/11



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No. LPCI/08870(B)/11 CTS Ref. CTS/11/1372/LittelFuse

Date: 18/05/2011

Page: 5 of 5

1. DETERMINATION OF CADMIUM CONTENT BY IEC 62321 2008

Sample Receiving and Registration

Cut sample in small pieces

Weight sample (0.2-0.5g) into digestion vessel

Acid digestion

"Totally Dissolved"

Filtration

Analyses by ICP

2. DETERMINATION OF LEAD CONTENT BY IEC 62321 2008

Sample Receiving and Registration

Cut sample in small pieces

Weight sample (0.2-0.5g) into digestion vessel

Wet digestion / Microwave digestion

"Totally Dissolved"

Filtration

Analyses by ICP

3. DETERMINATION OF MERCURY CONTENT BY

IEC 62321 2008

Sample Receiving and Registration

Cut sample in small pieces

Weight sample (0.1-0.5g) into digestion vessel

Acid digestion (Microwave)

"Totally Dissolved"

Filtration

Analyses by ICP

4. DETERMINATION OF HEXAVALENT CHROMIUM
BY IEC 62321 2008

Sample Preparation

Add colour-developing reagent

Acidify with H2SO4

Let stand for 5-10 min

Analyses by UV- Spectrophotometer (540 nm)

5. DETERMINATION OF PBB/PBDE WITH GC-MS
BY IEC 62321 2008

Cut sample in small pieces

Weight sample (0.5-4.0g) into extraction thimble

Soxhlet Extraction with Toluene

Filter through 0.45 um membrane filter

Analyses by GC-MS (with appropriate dilution)

**** End of Report ****

SGS LABORATORY SERVICES (M) SDN. BHD.

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SGS Laboratory Services (M) Sdn. Bhd. (Company No. 63972-M)



No. LPCI/08871(B)/11

CTS Ref. CTS/11/1372/LittelFuse

Date: 18/05/2011

Page: 1 of 5

LITTELFUSE INC. 800E. NORTHWEST HIGHWAY DES PLAINES, IL 60016, USA

The following merchandise was (were) submitted and identified by the client as:

Sample Description

Sample Receiving Date Testing Period

Date Completed Date Reported

Copper Electrode

07/04/2011

07/04/2011 to 12/04/2011

12/04/2011 18/05/2011

Test Requested

In accordance with the RoHS Directive 2002/95/EC, and its

amendment directives.

Test Method

Please refer to next page(s).

Test Results

Please refer to next page(s).

Analysts

Ng Mei Kheng & Loi Woan Yee

SGS LABORATORY SERVICES (M) SDN. BHD.

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No. LPCI/08871(B)/11

CTS Ref. CTS/11/1372/LittelFuse

Page: 2 of 5

Date: 18/05/2011

Test results:

Test Part Description :

Sample Description

Copper Electrode

RoHS Directive 2002/95/EC

Test Item(s):	Unit	Test Method	Results	MDL
Cadmium(Cd)	mg/kg	With reference to IEC 62321:2008, and performed by ICP-OES	N.D.	2
Lead (Pb)	mg/kg	With reference to IEC 62321:2008, and performed by ICP-OES	N.D.	2
Mercury (Hg)	mg/kg	With reference to IEC 62321:2008, and performed by ICP-OES	N.D.	2
Hexavalent Chromium (CrVI) by Spot test / boiling water extraction (optional) #	-	With reference to IEC 62321:2008, and performed by UV-VIS Spectrophotomet (boiling water extraction only)	y Negative	-
Sum of PBBs	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	
Monobromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Dibromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Tribromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Tetrabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Hexabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Pentabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Heptabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Octabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Nonabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Decabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5

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No. LPCI/08871(B)/11 CTS Ref. CTS/11/1372/LittelFuse Date: 18/05/2011 Page: 3 of 5

Test Item(s):	Unit	Test Method	Results	MDL
Sum of PBDEs	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	T.,
Monobromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Dibromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Tribromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Tetrabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Pentabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Hexabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Heptabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Octabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Nonabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Decabromodiphenyl ether ##	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5

Note: (a) mg/kg = ppm; (0.1wt% = 1000ppm)

- (b) N.D. = Not Detected
- (c) MDL = Method Detection Limit
- (d) # = Spot-Test:
 - a. Negative means the absence of Cr(VI) on the tested areas
 - b. Positive means the presence of Cr(VI) on the tested areas

(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:

- a. Negative means the absence of Cr(VI) on the tested areas
- b. Positive means the presence of Cr(VI) on the tested areas;

The detected concentration in 50 mL 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.

(e) - = Not regulated

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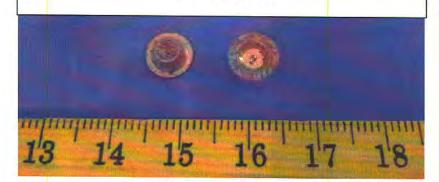
Date: 18/05/2011

Test Part Description :

Sample Description

Copper Electrode

LITTELFUSE INC. LPCI/08871(B)/11



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1. DETERMINATION OF CADMIUM CONTENT BY IEC 62321 2008

Sample Receiving and Registration

Cut sample in small pieces

Weight sample (0.2-0.5g) into digestion vessel

Acid digestion

"Totally Dissolved"

Filtration

Analyses by ICP

2. DETERMINATION OF LEAD CONTENT BY IEC 62321 2008

Sample Receiving and Registration

Cut sample in small pieces

Weight sample (0.2-0.5g) into digestion vessel

Wet digestion / Microwave digestion

"Totally Dissolved"

↓ Filtration

Analyses by ICP

3. DETERMINATION OF MERCURY CONTENT BY IEC 62321 2008

Sample Receiving and Registration

1

Cut sample in small pieces

Weight sample (0.1-0.5g) into digestion vessel

Acid digestion (Microwave)

"Totally Dissolved"

↓ Filtration

Analyses by ICP

4. DETERMINATION OF HEXAVALENT CHROMIUM BY IEC 62321 2008

Sample Receiving and Registration

Sample Preparation

Spot-test (Qualitative)

Boiling-water-extraction

Analyses by UV- Spectrophotometer

Test Report

5. DETERMINATION OF PBB/PBDE WITH GC-MS BY IEC 62321 2008

Cut sample in small pieces

Weight sample (0.5-4.0g) into extraction thimble

Soxhlet Extraction with Toluene

Filter through 0.45 um membrane filter

Analyses by GC-MS (with appropriate dilution)

**** End of Report ****

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LITTELFUSE INC. 800E. NORTHWEST HIGHWAY DES PLAINES, IL 60016, USA

The following merchandise was (were) submitted and identified by the client as:

Sample Description

Blue Ink

Sample Receiving Date

07/04/2011

Testing Period

07/04/2011 to 12/04/2011

Date Completed

12/04/2011

Date Reported

18/05/2011

Test Requested

In accordance with the RoHS Directive 2002/95/EC, and its

amendment directives.

Test Method

Please refer to next page(s).

Test Results

Please refer to next page(s).

Analysts

Ng Mei Kheng & Loi Woan Yee

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Date: 18/05/2011

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Test results:

Test Part Description :

Sample Description

Blue Ink

RoHS Directive 2002/95/EC

Test Item(s):	Unit	Test Method	Results	MDL
Cadmium(Cd)	mg/kg	With reference to IEC 62321:2008, and performed by ICP-OES	N.D.	2
Lead (Pb)	mg/kg	With reference to IEC 62321:2008, and performed by ICP-OES	N.D.	2
Mercury (Hg)	mg/kg	With reference to IEC 62321:2008, and performed by ICP-OES	N.D.	2
Hexavalent Chromium (CrVI)	mg/kg	With reference to IEC 62321:2008, and performed by UV-VIS Spectrophotometry	N.D.	2
Sum of PBBs	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	0-7
Monobromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Dibromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Tribromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
T <mark>etrabromobiphen</mark> yl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Hexabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Pentabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Heptabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Octabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Nonabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Decabromobiphenyl	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5

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No. LPCI/08867(B)/11 CTS Ref. CTS/11/1372/LittelFuse

Date: 18/05/2011 Page: 3 of 5

Test Item(s):	Unit	Test Method	Results	MDL
Sum of PBDEs	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	
Monobromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Dibromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N,D.	5
Tribromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Tetrabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Pentabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Hexabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Heptabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Octabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Nonabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5
Decabromodiphenyl ether ##	mg/kg	With reference to IEC 62321:2008, and performed by GC-MS	N.D.	5

Note: (a) mg/kg = ppm; (0.1wt% = 1000ppm)

(b) N.D. = Not Detected

(c) MDL = Method Detection Limit

(d) ## = The exemption of DecaBDE in polymeric application according 2005/717/EC was overruled by the European Court of Justice by its decision of 01.04.2008. Subsequently DecaBDE is included in the sum of PBDE after 01.07.2008

(e) - = Not regulated

(f) Testing based on original basis

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Date: 18/05/2011

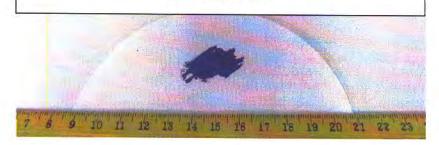
Page: 4 of 5

Test Part Description :

Sample Description

Blue Ink

LITTELFUSE INC. LPCI/08867(B)/11



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SGS Laboratory Services (M) Sdn. Bhd. (Company No. 63972-M)



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CTS Ref. CTS/11/1372/LittelFuse

Date: 18/05/2011

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1. <u>DETERMINATION OF CADMIUM CONTENT BY</u> <u>IEC 62321 2008</u>

Sample Receiving and Registration

Sample Preparation

Weight sample (0.2-0.5g) into digestion vessel

Acid digestion

"Totally Dissolved"

Filtration

Analyses by ICP

2. DETERMINATION OF LEAD CONTENT BY IEC 62321 2008

Sample Receiving and Registration

Sample Preparation

Weight sample (0.2-0.5g) into digestion vessel

Wet digestion / Microwave digestion

"Totally Dissolved"

Filtration

Analyses by ICP

3. DETERMINATION OF MERCURY CONTENT BY IEC 62321 2008

Sample Receiving and Registration

Sample Preparation

Weight sample (0.1-0.5g) into digestion vessel

Acid digestion (Microwave)

"Totally Dissolved"

Filtration

Analyses by ICP

4. DETERMINATION OF HEXAVALENT CHROMIUM
BY IEC 62321 2008

Sample Preparation

Add colour-developing reagent

Acidify with H2SO4

Let stand for 5-10 min

Analyses by UV- Spectrophotometer (540 nm)

5. DETERMINATION OF PBB/PBDE WITH GC-MS
BY IEC 62321 2008

Sample Preparation

Weight sample (0.5-4.0g) into extraction thimble

Soxhlet Extraction with Toluene

Filter through 0.45 um membrane filter

Analyses by GC-MS (with appropriate dilution)

**** End of Report ****

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SGS Laboratory Services (M) Sdn. Bhd. (Company No. 63972-M)



Test Report Number : TWNC00190797

Applicant: Littelfuse Inc. Date : Feb 10, 2011

LIMA Technology Center, Lipa City, Malvar, Batangas

Sample Description:

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

Part Description : Tin(for SMD)
Date Sample Received : Feb 01, 2011
Date Test Started : Feb 08, 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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Page 1 Of 5



Test Conducted

(I) Test Result Summary :

Testing Item	Result (ppm) Silvery Metal
Heavy Metal	
Cadmium (Cd) content	ND
Lead (Pb) content	14
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 testing.

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

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

Date Sample Received : Feb 01, 2011

Testing Period : Feb 08, 2011 To Feb 09, 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

(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

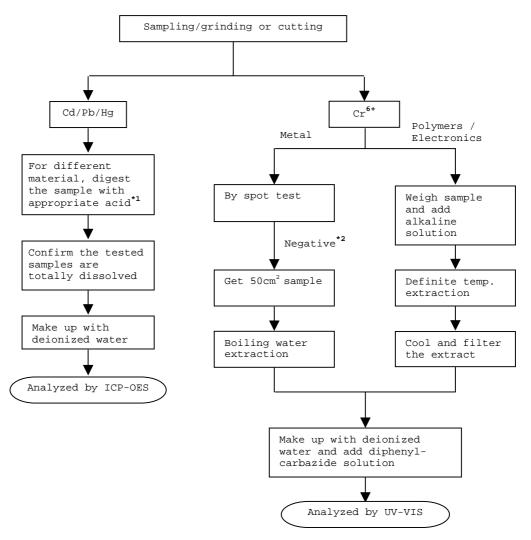


Test Conducted

(IV) Measurement Flowchart:

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

Reference Standard: IEC 62321 edition 1.0:2008



Remarks:

*1: List Of Appropriate Acid:

<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



