

ICP Test Report Certification Packet

Company name:	Littelfuse, Inc.		
Product Series:	GDT		
Product #:	CG3 Series		
Issue Date:	June 24, 2010		
It is hereby certified 2002/95/EC)-restricted s packing/packaging mater In addition, it is hereby refor unit parts, the packing/processes, are all compo	ubstance nor such usials, and for additives a ported to you that the packaging materials, a	se, for materials to be and the like in the manufaparts and sub-materials, and the additives and the	used for unit parts, fo acturing processes. the materials to be used
	Issued :	Yldiguynan√ Kristine L. De Guznan	
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(1) Parts, sub-materials a This document cov Littelfuse, Inc.	·	oHS-Compliant series pro	oducts manufactured by
< Raw Materials U			
(2) The ICP data on all I	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	Ceramic Tube	3-7
2	NA	Copper Electrode	8-12
3	NA	Silver Ring	13-17
4	NA	Tin Plate Wire	18-22
5	NA	Black Ink	23-27



No. LPCI/08307/10

Date: 17/05/2010

Page: 1 of 5

CTS Ref. CTS/10/1650/Littelfuse

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

:

:

Testing Period

27/04/2010 to 07/05/2010

Date Completed Date Reported 07/05/2010 17/05/2010

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 & Yee Sook Wai

SGS LABORATORY SERVICES (M) SDN. BHD.

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

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Date: 17/05/2010

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CTS Ref. CTS/10/1650/Littelfuse

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.	12
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/08307/10

Date: 17/05/2010

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CTS Ref. CTS/10/1650/Littelfuse

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

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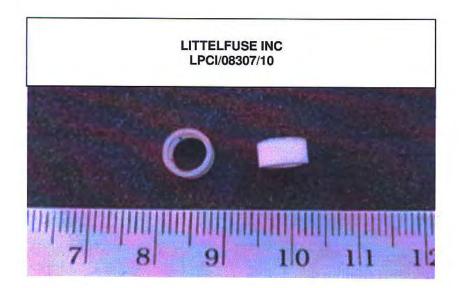
CTS Ref. CTS/10/1650/Littelfuse

Test Part Description:

Sample Description

Ceramic

:



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CTS Ref. CTS/10/1650/Littelfuse

Date: 17/05/2010

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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. <u>DETERMINATION OF LEAD CONTENT BY</u> 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. <u>DETERMINATION OF PBB/PBDE WITH GC-MS</u> BY IEC 62321 2008

Cut sample in small pieces

Weight sample (0.5-2g) 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/08308/10

Date: 17/05/2010

Page: 1 of 5

CTS Ref. CTS/10/1650/Littelfuse

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

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

Sample Description

Copper Electrode

Testing Period

27/04/2010 to 07/05/2010

Date Completed Date Reported 07/05/2010 17/05/2010

_ . _

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 & Yee Sook Wai

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Test Report No. LPCI/08308/10 Date: 17/05/2010 Page: 2 of 5

CTS Ref. CTS/10/1650/Littelfuse

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 Spectrophotometry (boiling water extraction only)	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/08308/10 Date: 17/05/2010

CTS Ref. CTS/10/1650/Littelfuse

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,	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

and performed by GC-MS

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

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.

(f) - = Not regulated

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Date: 17/05/2010

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CTS Ref. CTS/10/1650/Littelfuse

Test Part Description:

Sample Description

Copper Electrode

LITTELFUSE INC LPCI/08308/10



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CTS Ref. CTS/10/1650/Littelfuse

Date: 17/05/2010

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

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. <u>DETERMINATION OF LEAD CONTENT BY</u> 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> 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. <u>DETERMINATION OF HEXAVALENT CHROMIUM</u> BY IEC 62321 2008

Sample Receiving and Registration

Sample Preparation

Spot-test (Qualitative)

Boiling-water-extraction

Analyses by UV- Spectrophotometer

Test Report

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

Cut sample in small pieces

Weight sample (0.5-2g) 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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Date: 17/05/2010

Page: 1 of 5

CTS Ref. CTS/10/1650/Littelfuse

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

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

Sample Description

Silcer Ring

Testing Period

27/04/2010 to 07/05/2010

Date Completed

07/05/2010

Date Reported

17/05/2010

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 & Yee Sook Wai

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Date: 17/05/2010

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CTS Ref. CTS/10/1650/Littelfuse

Test results:

Test Part Description:

Sample Description

Silcer 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.	-
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/08319/10 Date: 17/05/2010

CTS Ref. CTS/10/1650/Littelfuse

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

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.

(f) - = Not regulated

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Page: 3 of 5



No. LPCI/08319/10

Date: 17/05/2010

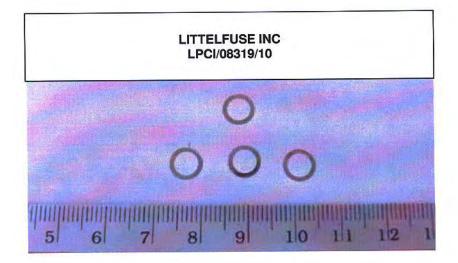
Page: 4 of 5

CTS Ref. CTS/10/1650/Littelfuse

Test Part Description:

Sample Description

Silcer Ring



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No. LPCI/08319/10

CTS Ref. CTS/10/1650/Littelfuse

Date: 17/05/2010

Page: 5 of 5

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

Sample Receiving and Registration

Sample Preparation

Spot-test (Qualitative)

Boiling-water-extraction

Analyses by UV- Spectrophotometer

Test Report

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

Cut sample in small pieces

Weight sample (0.5-2g) 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/08322/10

Date: 17/05/2010

Page: 1 of 5

CTS Ref. CTS/10/1650/Littelfuse

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

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

Sample Description

Tin Plated Wire

Testing Period

27/04/2010 to 07/05/2010

Date Completed

07/05/2010

Date Reported

17/05/2010

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

Please refer to next page(s).

Analysts

:

Ng Mei Kheng & Yee Sook Wai

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No. LPCI/08322/10

Date: 17/05/2010

Page: 2 of 5

CTS Ref. CTS/10/1650/Littelfuse

Test results:

Test Part Description:

Sample Description

Tin Plated Wire

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.	
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/08322/10 Date: 17/05/2010

CTS Ref. CTS/10/1650/Littelfuse

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) # = a. Positive means the presence of Cr(VI) on the tested areas

b. Negative means the absence of Cr(VI) on the tested areas

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.

(f) - = Not regulated

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No. LPCI/08322/10

Date: 17/05/2010

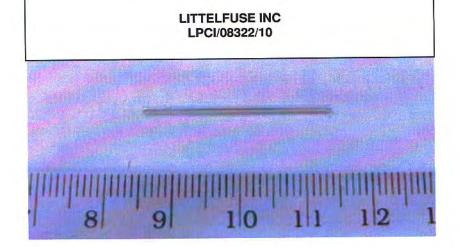
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CTS Ref. CTS/10/1650/Littelfuse

Test Part Description:

Sample Description :

Tin Plated Wire



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No. LPCI/08322/10

CTS Ref. CTS/10/1650/Littelfuse

Date: 17/05/2010

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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. <u>DETERMINATION OF MERCURY CONTENT BY</u> 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 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 (0.5-2g) 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/08304/10

Date: 17/05/2010

Page: 1 of 5

CTS Ref. CTS/10/1650/Littelfuse

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

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

Sample Description

Black Ink

Testing Period

27/04/2010 to 07/05/2010

Date Completed

07/05/2010

Date Reported

17/05/2010

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 & Yee Sook Wai

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No. LPCI/08304/10

Date: 17/05/2010

Page: 2 of 5

CTS Ref. CTS/10/1650/Littelfuse

Test results:

Test Part Description:

Sample Description

Black 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.	
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/08304/10

Date: 17/05/2010

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CTS Ref. CTS/10/1650/Littelfuse

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.	n
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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No. LPCI/08304/10

Date: 17/05/2010

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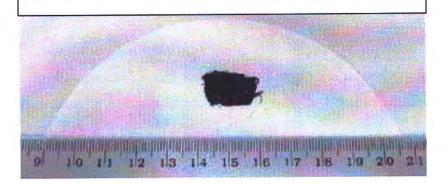
CTS Ref. CTS/10/1650/Littelfuse

Test Part Description:

Sample Description

Black Ink

LITTELFUSE INC LPCI/08304/10



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No. LPCI/08304/10

CTS Ref. CTS/10/1650/Littelfuse

Date: 17/05/2010

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1. DETERMINATION OF CADMIUM CONTENT BY IEC 62321 2008

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

Acidity 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 (0.5-2g) 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.

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

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