

#### Certificate of non-use of The Controlled Substances

Company name Littelfuse, LP (Subsidiary of Littelfuse, Inc.)

Product Covered Thyristor TO-202 Package

SIDAC TO-202 Package

Issue Date October 15, 2006

It is hereby certified by Littelfuse, LP, that there is neither RoHS (EU Directive 2002/95/EC)-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		
	< Product Engineer, Littelfuse,	L.P.>

(1) Parts, sub-materials and unit parts

This document covers Thyristor TO-202 Package series products manufactured by Littelfuse, LP. Actual values in this report are taken from S4015F2 and the result is generally applicable to all Thyristor TO-202 Package series products supplied by Littelfuse, LP. Please see page 2 for the complete list of part number covered by this report.

- < Homogeneous Materials used >
  Please see figure and table 1 on page 3 and table 2 on page 4 of this document.
- (2) The analytical data on all measurable substances
  Please see annex 1 through 10, attached to this document

#### Remarks:

1. Pb (lead) contained in die bonding solder (item 8 on page 3) and passivation glass (item 7) to be categorized as exempt in RoHS Annex 5 and 7.

Please refer to Annex 11 of this report for the extract of the applicable exemptions of RoHS (EU Directive 2002/95/EC)

October 15, 2006 Littelfuse, L.P. Page 1

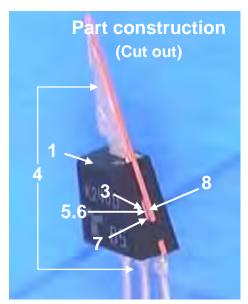


### **Littelfuse Part Number covered by this report**

All		lard (Catalog) Pa		n applied	SPECIAL DEVICE P/N
K2201F1	Q2010F4	S0306F	S2008F	T106D	
K2401F1	Q2010F5	S0306FS2	S2008FS2	T106E	Any Special P/N that has base
K2000F1	Q4004F3	S0306FS3	S2008FS3	T106F	standard P/N listed in this table
K2200F1	Q4004F4	S0308F	S2010F	T106M	
K2400F1	Q4004F5	S0308FS2	S2010FS2	T106Q	
K2500F1	Q4006F4	S0308FS3	S2010FS3	T106Y	
K3000F1	Q4006F5	S0310F	S4006F	T107A	
	Q4008F4	S0310FS2	S4006FS2	T107B	
	Q4008F5	S0310FS3	S4006FS3	T107C	
L2004F3	Q4010F4	S0506F	S4008F	T107D	
L2004F5	Q4010F5	S0506FS2	S4008FS2	T107E	
L2004F6	Q5004F3	S0506FS3	S4008FS3	T107F	OPTIONAL
L2004F8	Q5006F4	S0508F	S4010F	T107M	SUFFIX
L4004F3	Q5006F5	S0508FS2	S4010FS2	T107Q	Lead Form
L4004F5	Q5008F4	S0508FS3	S4010FS3	T107Y	Any P/N listed
L4004F6	Q5008F5	S0510F	S5008F		here may be followed by
L4004F8	Q5010F4	S0510FS2	S6006F		suffix for lead form options
L6004F3	Q5010F5	S0510FS3	S6006FS2		such as "2", "3",
L6004F5	Q6004F3	S1006F	S6006FS3		"4", "11", "12", "21", 32", 41"
L6004F6	Q6004F4	S1006FS2	S6008F		etc.
L6004F8	Q6004F5	S1006FS3	S6008FS2		
	Q6006F4	S1008F	S6008FS3		OPTIONAL
	Q6006F5	S1008FS2	S6010F		SUFFIX
Q2004F3	Q6008F4	S1008FS3	S6010FS2		
Q2004F4	Q6008F5	S1010F	S6010FS3		Any P/N listed
Q2004F5	Q6010F4	S1010FS2			here may be
Q2006F4	Q6010F5	S1010FS3			followed by suffix for
Q2006F5		S2006F	T106A		packing options
Q2008F4		S2006FS2	T106B		such as "LB", "TP", etc.
Q2008F5		S2006FS3	T106C		

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Material Used (where used)

**Table 1: Homogeneous Material Used** 

	Table 1. Homogeneous material osca							
#	Description	Name of Material	Type	Analysis data				
1	Molding compound	epoxy resin	plastic	annex 1				
2	Lead frame	copper alloy	metal	annex 2 TO-202 uses the same copper material as TO-220. ICP report is from TO-220 Material.				
3	Preform	copper alloy	metal	annex 3 TO-202 uses the same copper material as DO-214. ICP report is from DO-214 Material.				
4	Matte-Tin plating	Tin	metal	annex 4, tested as plating cathode				
5	Silicon die	silicon	metal	anney 5 tooted as Nickel plated water				
6	Nickel electrode	nickel	metal	annex 5, tested as Nickel-plated wafer.				
7	Passivation glass	glass	glass	annex 6. Pb in this glass is exempted by RoHS Annex 7.				
8	Die bonding solder	solder	metal	annex 7. Pb in this solder is exempted by RoHS Annex 5.				
9	Cardboard Box	cardboard	paper	annex 8, tested with label TO-202 uses the same paper material as DO-214. ICP report is from DO-214 Material.				
10	Product Label	paper	paper	annex 8, tested with box				
11	Poly Tubing Bag	polyethylene	plastic	annex 9				
12	Packing Foam	polystyrene	plastic	annex 10				



Table 2: RoHS-regulated substance in raw materials

Components		Analysis Result					
	Weight (typical)	Cd Cadmium	Cr Chromium	Hg Mercury	Pb Lead	PBB	PBDE
As Component Total (Values of S4015F2*1, as representative of Thyristor, TO-202 Package)	1,390mg	< 2ppm	< 2ppm	< 2ppm	<10 ppm* <sup>2</sup> (0.6% <sup>3</sup> )	< 5 ppm	< 5 ppm
Epoxy Resin compound (mixture of phenolix resin, epoxy resin, filler and Sb <sub>2</sub> O <sub>3</sub> as fire retardant) See Annex 1 for the detail.	420mg	< 2ppm	< 2ppm	< 2ppm	< 2ppm	< 5ppm	<5 ppm
Lead frame / Preform (Copper Alloy, C14420 / CDA110)  See Annex 2 & 3 for the detail.	930mg	< 2ppm	< 2ppm	< 2ppm	< 2ppm		
Outside lead finish (Matte-Tin plated, Sn 100%)  See Annex 4 for the detail.	25mg	< 1ppm	< 1ppm	< 0.5ppm	58ppm* <sup>4</sup>		
Silicon Die (Silicon + Ni electrode)  See Annex 5 for the detail.	7mg	< 2ppm	< 2ppm	< 2ppm	52ppm* <sup>4</sup>		
Passivation Glass  See Annex 6 for the detail.	0.2mg	< 2ppm	< 2ppm	< 2ppm	39% <sup>*5</sup>		
Die Bonding Solder (Pb/Sn=90/10) See Annex 7 for the detail.	8mg	< 2ppm	< 2ppm	< 2ppm	90% * <sup>6</sup>		
Packing Materials (Box, Reel, Tapes, Plastic bag) See Annex 8-10 for the detail		< 2ppm	< 2ppm	< 2ppm	< 2ppm	< 5ppm	< 5ppm

- \*1 Other products may contain equal or less amount of Pb as S4015F2 value shown here, but not more than the value shown here.
- \*2 Less than 10ppm Pb content overall, <u>excluding</u> Pb from the die bonding solder and the passivation glass on the silicon die.
- \*3 0.6wt% or 7.2mg of Pb (lead) content overall, including the RoHS-exempted use of Pb
- \*4 Pb (lead) contained in outside finish and Nickel-plated silicon wafer is <u>not</u> exempted from restriction by RoHS, but considered as process contamination. Littelfuse does not add Pb (lead) intentionally.
- \*5 Pb (lead) contained in passivation glass is exempted from restriction by RoHS Annex 5.
- \*6 Pb (lead) contained in die bonding solder is exempted from restriction by RoHS Annex 7, first item.

Please refer to Annex 11 of this report for the applicable exemptions of RoHS (EU Directive 2002/95/EC)

October 15, 2006 Littelfuse, L.P. Page 4



#### Annex 1: Analysis Result of Molding Compound (Page 1 of 4)



### **Test Report**

Report No : CE/2006/91634 Date : 2006/09/13

Page: 1 of 4

LITTELFUSE INC.

800 E. NORTHWEST HWY. DES PLAINES, IL 60016

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

Sample Description

MOLDING COMPOUND LS-16S

Style/Item No

1003010-16

Manufacturer/Supplier :

LITTELFUSE INC.

Name

Country of Destination : TAIWAN : USA

Country of Origin Sample Received

: 2006/09/06 Testing Period 2006/09/06 TO 2006/09/13

1

With reference to the RoHS Directive 2002/95/EC, and its

amendment directives.

Test Method

- (1) With reference to BS EN 1122:2001, Method B for Cadmium Content. Analysis was performed by ICP-
  - AES. (2) With reference to US EPA Method 3050B for Lead Content. Analysis was performed by ICP-AES.
  - (3) With reference to US EPA Method 3052 for Mercury Content. Analysis was performed by ICP-AES.
  - (4) With reference to US EPA Method 3060A & 7196A for Hexavalent Chromium. Analysis was performed by UV/Vis Spectrometry.
  - (5) With reference to US EPA 3540C, Analysis was performed by GC/MS and screening via US EPA 3550C with HPLC/DAD/MS.

Test Result(s)

- Please see the next page(s) -

gned for and on behalf of SGS TAIWAN LTD.

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Annex 1-1 October 15, 2006 Littelfuse, L.P.



### Annex 1: Analysis Result of Molding Compound (Page 2 of 4)



### **Test Report**

Report No: CE/2006/91634 Date: 2006/09/13

800 E. NORTHWEST HWY. DES PLAINES, IL 60016

Page: 2 of 4

#### Test Result(s)

LITTELFUSE INC.

Test results by chemical method (Unit: mg/kg)

	Method	Result	****
Test Item (s):	(Refer to)	No.1	MDL
Cadmium (Cd)	(1)	n.d.	2
Lead (Pb)	(2)	8.0	2
Mercury (Hg)	(3)	n.d.	2
Chromium VI (Cr+6)	(4)	n.d.	2
Total PBBs		n.d.	-
Monobromobiphenyl		n.d.	.5
Dibromobiphenyl		n.d.	5
Tribromobiphenyl		n.d.	5
Tetrabromobiphenyl		n.d.	5
Pentabromobiphenyl		n.d.	5
Hexabromobiphenyl		n.d.	5
Heptabromobiphenyl		n.d.	5
Octabromobiphenyl		n.d.	5
Nonabromobiphenyl		n.d.	5
Decabromobiphenyl		n.d.	5
Total PBBEs(PBDEs)	(5)	n.d.	- 1
Monobromobiphenyl ether		n,d,	5
Dibromobiphenyl ether		n.d.	5
Tribromobiphenyl ether		n.d.	5
Tetrabromobiphenyl ether		n.d.	5
Pentabromobiphenyl ether		n.d.	-5
Hexabromobiphenyl ether		n.d.	.5
Heptabromobiphenyl ether		n.d.	5
Octabromobiphenyl ether		n.d.	5
Nonabromobiphenyl ether		n.d.	5
Decabromobiphenyl ether		n.d.	5
Total of Mono to Nona(Note 5)		n.d.	-

#### Test Part Description

PART NAME NO.1 # BLACK LUMP

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### Annex 1: Analysis Result of Molding Compound (Page 3 of 4)



### **Test Report**

Report No: CE/2006/91634 Date: 2006/09/13

Page: 3 of 4

LITTELFUSE INC.

800 E. NORTHWEST HWY. DES PLAINES, IL 60016

Note: (1) mg/kg = ppm, 0.1% = 1000 ppm(mg/kg), 0.0005% = 5 ppm(mg/kg)

(2) n.d. = N.D. = ND = Not Detected

(3) MDL = Method Detection Limit

(4) Sample was totally digested for Pb, Cd, Hg

(5) Sum of Mono to NonaBDE & according to 2005/717/EC DecaBDE is exempt.

(6) "-" = Not Regulated

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### Annex 1: Analysis Result of Molding Compound (Page 4 of 4)



#### **Test Report**

Report No : CE/2006/91634 Date : 2006/09/13

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Page: 4 of 4



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#### Annex 2: Analysis Result of Lead frame (Page 1 of 3)



#### **Test Report**

Report No : CE/2006/91766 Date : 2006/09/12

Page: 1 of 3 TO SHARE THE PROPERTY OF THE P

LITTELFUSE INC.

800 E. NORTHWEST HWY. DES PLAINES, IL 60016

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

Sample Description

LEAD FRAME

Part No.

7001004-05 : LITTELFUSE INC.

Manufacturer/Supplier Name

Country of Destination Country of Origin Sample Received

USA : 2006/9/6 2

: TAIWAN

Testing Period

: 2006/9/6 TO 2006/09/12

Test Requested

- With reference to the RoHS Directive 2002/95/EC, and its
  - amendment directives.

Test Method

- (1) With reference to BS EN 1122:2001, Method B for Cadmium Content. Analysis was performed by ICP-
  - (2) With reference to US EPA Method 3050B for Lead Content. Analysis was performed by ICP-AES.
  - (3) With reference to US EPA Method 3052 for Mercury Content. Analysis was performed by ICP-AES.
  - (4) With reference to US EPA Method 3060A & 7196A for Hexavalent Chromium. Analysis was performed by UV/Vis Spectrometry.

Test Result(s)

: Please see the next page(s) -

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Annex 2-1 October 15, 2006 Littelfuse, L.P.



### Annex 2: Analysis Result of Lead frame (Page 2 of 3)



#### **Test Report**

Report No : CE/2006/91766 Date : 2006/09/12

Page: 2 of 3

LITTELFUSE INC.

800 E. NORTHWEST HWY. DES PLAINES, IL 60016

#### Test Result(s)

Test results by chemical method (Unit: mg/kg)

w	Method	Result		
Test Item (s):	(Refer to)	No.1	MDL	
Cadmium (Cd)	(1)	n.d.	2	
Lead (Pb)	(2)	n.d.	2	
Mercury (Hg)	(3)	n.d.	2	
Chromium VI (Cr+6)	(4)	n.d.	2	

#### Test Part Description

PART NAME NO.1

; COPPER COLORED METAL

Note: (1) mg/kg = ppm, 0.1% = 1000 ppm(mg/kg), 0.0005% = 5 ppm(mg/kg)

- (2) n.d. = N.D. = ND = Not Detected
- (3) MDL = Method Detection Limit
- (4) Sample was totally digested for Pb, Cd, Hg

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October 15, 2006 Littelfuse, L.P. Annex 2-2



### Annex 2: Analysis Result of Lead frame (Page 3 of 3)

SGS

# **Test Report**

Report No : CE/2006/91766 Date : 2006/09/12

LITTELFUSE INC.

800 E. NORTHWEST HWY. DES PLAINES, IL 60016

Page: 3 of 3



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October 15, 2006 Littelfuse, L.P. Annex 2-3



#### Annex 3: Analysis Result of Preform (Page 1 of 3)



### **Test Report**

LITTELFUSE INC.

Report No : CE/2006/91765 Date : 2006/09/12

800 E. NORTHWEST HWY. DES PLAINES, IL 60016

Page: 1 of 3

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

Sample Description

PREFORM

Part No.

7101814-00

Manufacturer/Supplier Name

: LITTELFUSE INC.

Country of Destination

: TAIWAN

Country of Origin Sample Received

USA : 2006/9/6 1

Testing Period

: 2006/9/6 TO 2006/09/12

Test Requested

- With reference to the RoHS Directive 2002/95/EC, and its
  - amendment directives.

Test Method

- (1) With reference to BS EN 1122:2001, Method B for Cadmium Content. Analysis was performed by ICP-

  - (2) With reference to US EPA Method 3050B for Lead Content. Analysis was performed by ICP-AES.
  - (3) With reference to US EPA Method 3052 for Mercury Content. Analysis was performed by ICP-AES.
  - (4) With reference to US EPA Method 3060A & 7196A for Hexavalent Chromium. Analysis was performed by

UV/Vis Spectrometry.

Test Result(s)

: - Please see the next page(s) -

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### Annex 3: Analysis Result of Preform (Page 2 of 3)



#### **Test Report**

Report No: CE/2006/91765 Date: 2006/09/12

LITTELFUSE INC.

800 E. NORTHWEST HWY. DES PLAINES, IL 60016

Page: 2 of 3

#### Test Result(s)

Test results by chemical method (Unit: mg/kg)

	Method	Result		
Test Item (s):	(Refer to)	No.1	MDL	
Cadmium (Cd)	(1)	n.d.	2	
Lead (Pb)	(2)	n.d.	2	
Mercury (Hg)	(3)	n.d.	2	
Chromium VI (Cr+6)	(4)	n.d.	2	

#### Test Part Description

PART NAME NO.1

; COPPER COLORED METAL

Note: (1) mg/kg = ppm, 0.1% = 1000 ppm(mg/kg), 0.0005% = 5 ppm(mg/kg)

- (2) n.d. = N.D. = ND = Not Detected
- (3) MDL = Method Detection Limit
- (4) Sample was totally digested for Pb, Cd, Hg

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October 15, 2006 Littelfuse, L.P. Annex 3-2



### Annex 3: Analysis Result of Preform (Page 3 of 3)



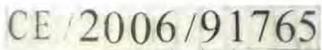
#### **Test Report**

Report No: CE/2006/91765 Date: 2006/09/12

LITTELFUSE INC.

800 E. NORTHWEST HWY. DES PLAINES, IL 60016

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IO 135-1, Wu Kung Road, Wuku Industrial Zone, Taper county, TakeineWS, 212203/979 (1996) 312290-2227. https://doi.org/10.1007/97.

October 15, 2006 Littelfuse, L.P. Annex 3-3



#### Annex 4: Analysis Result of Tin plating cathode (page 1 of 3)



#### **Test Report**

Report No: CE/2006/96119 Date: 2006/09/29

LITTELFUSE INC.

800 E. NORTHWEST HWY. DES PLAINES, IL 60016

Page: 1 of 3

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

Sample Description

TIN PLATING CATHODE BALL Style/Item No TIN PLATING CATHODE BALL : LITTELFUSE INC.

Manufacturer/Supplier

Name

Country of Destination TAIWAN Country of Origin USA Sample Received 2006/09/22 1

2006/09/22 TO 2006/09/29 Testing Period

Test Requested

With reference to the RoHS Directive 2002/95/EC, and its amendment directives.

**Test Method** 

- (1) With reference to BS EN 1122:2001, Method B for Cadmium Content. Analysis was performed by ICP-
  - (2) With reference to US EPA Method 3050B for Lead Content. Analysis was performed by ICP-AES.
- (3) With reference to US EPA Method 3052 for Mercury Content. Analysis was performed by ICP-AES.
- (4) With reference to US EPA Method 3060A & 7196A for Hexavalent Chromium. Analysis was performed by UV/Vis Spectrometry.

Test Result(s) - Please see the next page(s) -

signed for and on behalf of SGS TAIWAN LTD.

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### Annex 4: Analysis Result of Tin plating cathode (page 2 of 3)



### **Test Report**

Report No: CE/2006/96119 Date: 2006/09/29

LITTELFUSE INC.

800 E. NORTHWEST HWY. DES PLAINES, IL 60016

Page: 2 of 3

#### Test Result(s)

Test results by chemical method (Unit: mg/kg)

	Method	Result		
Test Item (s):	(Refer to)	No.1	MDL	
Cadmium (Cd)	(1)	n.d.	2	
Lead (Pb)	(2)	58.2	2	
Mercury (Hg)	(3)	n.d.	2	
Chromium VI (Cr+6)	(4)	n.d.	2	

#### Test Part Description

PART NAME NO.1

: SILVER COLORED TIN BALL

Note: (1) mg/kg = ppm, 0.1% = 1000 ppm(mg/kg), 0.0005% = 5 ppm(mg/kg)

- (2) n.d. = N.D. = ND = Not Detected
- (3) MDL = Method Detection Limit
- (4) Sample was totally digested for Pb, Cd, Hg

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October 15, 2006 Littelfuse, L.P. Annex 4-2



### Annex 4: Analysis Result of Tin plating cathode (page 3 of 3)



### **Test Report**

Report No: CE/2006/96119 Date: 2006/09/29

LITTELFUSE INC.

800 E. NORTHWEST HWY. DES PLAINES, IL 60016

Page: 3 of 3



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NO 135-1, Wu Kung Road, Wuku Industrial Zone, Taiper county, Taken-

October 15, 2006 Littelfuse, L.P. Annex 4-3



#### Annex 5: Analysis Result of Ni-plated Wafer (Page 1 of 3)



#### **Test Report**

Report No : CE/2006/91815A Date : 2006/09/14

LITTELFUSE INC.

800 EAST NORTHWEST HIGHWAY DES PLAINES.

IL 60016

Page: 1 of 3

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

Sample Description

SILICON WAFER ELECTRODE

Style/Item No

7101505xx

Manufacturer/Supplier : LITTELFUSE INC.

Name

Country of Destination Country of Origin

: TAIWAN USA :

Sample Received

2006/09/07 1

Testing Period

: 2006/09/07 TO 2006/09/14

Test Requested

With reference to the RoHS Directive 2002/95/EC, and its

amendment directives.

Test Method

(1) With reference to BS EN 1122:2001, Method B for Cadmium Content. Analysis was performed by ICP-

(2) With reference to US EPA Method 3050B for Lead Content. Analysis was performed by ICP-AES.

(3) With reference to US EPA Method 3052 for Mercury Content. Analysis was performed by ICP-AES.

(4) With reference to US EPA Method 3060A & 7196A for Hexavalent Chromium. Analysis was performed by

Annex 5-1

UV/Vis Spectrometry.

Test Result(s)

Please see the next page(s) -

oned for and on behalf of SGS TAIWAN LTD.

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October 15, 2006 Littelfuse, L.P.



#### Annex 5: Analysis Result of Ni-plated Wafer (Page 2 of 3)



### **Test Report**

Report No: CE/2006/91815A Date: 2006/09/14

LITTELFUSE INC.

800 EAST NORTHWEST HIGHWAY DES PLAINES,

IL 60016

Page: 2 of 3

#### Test Result(s)

Test results by chemical method (Unit: mg/kg)

	Method	Result		
Test Item (s):	(Refer to)	No.1	MDL	
Cadmium (Cd)	(1)	n.d.	2	
Lead (Pb)	(2)	52.4	2	
Mercury (Hg)	(3)	n.d.	2	
Chromium VI (Cr+6)	(4)	n.d.	2	

#### Test Part Description

PART NAME NO.1

SILICON WAFER WITH NICKEL ELECTRODE

Note: (1) mg/kg = ppm, 0.1% = 1000 ppm(mg/kg), 0.0005% = 5 ppm(mg/kg)

- (2) n.d. = N.D. = ND = Not Detected
- (3) MDL = Method Detection Limit
- (4) Sample was totally digested for Pb, Cd, Hg
- (5) The report number of CE/2006/91815 is invalid.

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136-1, Wu Sung Froad, WuRu Industrie. Zone, Tages incurris. Takesholder, 2: 2308/929 (1996), 7: 2309, 2337.

October 15, 2006 Littelfuse, L.P. Annex 5-2



### Annex 5: Analysis Result of Ni-plated Wafer (Page 3 of 3)



#### **Test Report**

Report No: CE/2006/91815A Date: 2006/09/14 LITTELFUSE INC.

800 EAST NORTHWEST HIGHWAY DES PLAINES, IL 60016

Page: 3 of 3





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NO 136-1 Wu Sung Road, WuRu Industrial Zone, Taipel nounty, Tatwon (2006-2) 2298/9379 (1)906-2) 2299-2237 www.tips.som.tw

October 15, 2006 Littelfuse, L.P. Annex 5-3



### Annex 6: Analysis Result of Passivation Glass (Page 1 of 4)



#### **Test Report**

LETTELFUSE, INC.

. .

Report No. : CE/2006/34224

800 E. NORTHWEST HIGHWAY DES PLAINES, IL 60016

116

: 2006/03/29

USA

Page

ge :1 of 4

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

Type of Product

: PASSIVATION GLASS POWDER

Style/Item No Manufacturer/Supplier : 110233600 : LITTELFUSE INC.

Name

· mirium o

Country of Destination Country of Origin : TAIWAN : USA

Sample Received

2006/03/14

Testing Date

2006/03/14 TO 2006/03/21 & 2006/03/26 TO 2006/03/29

Test Result

: Please see the next page -

Daniel Yen, M.R. / Operation Manager Signed for and on behalf of SGS TAIWAN LTD.

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TAXABLE PERSONS

NG. 136-1, Wo Kung Read, Wulfu Indoornal Züne, Teiper county, Terrer



# Annex 6: Analysis Result of Passivation Glass (Page 2 of 4)



# **Test Report**

LETTELFUSE, INC.

800 E. NORTHWEST HIGHWAY DES PLAINES, IL 60016

USA

Report No. : CE/2006/34224

Date : 2006/03/29

Page : 2 of 4

#### Test Result

PART NAME NO.1

WHITE POWDER

- Val. 199		6.5	20.2	Result
Test Item (s):	Unit	Method	MDL	No.1
Monobromobiphenyl	%		0.0005	N.D.
Dibromobiphenyl	96	1	0.0005	N.D.
Tribromobiphenyl	%	Language Comment	0.0005	N.D.
Tetrabromobiphenyl	%	With reference to USEPA3540C or USEPA3550C. Analysis was performed by HPLC/DAD, LC/MS or GC/MS. (prohibited by 2002/95/EC (RoHS), 83/264/EEC, and 76/769/EEC)	0.0005	N.D.
Pentabromobiphenyl	96		0.0005	N.D.
Hexabromobiphenyl	%		0.0005	N.D.
Heptabromobiphenyl	%		0.0005	N.D.
Octabromobiphenyl	%		0.0005	N.D.
Nonabromobiphenyl	%		0.0005	N.D.
Decabromobiphenyl	96		0.0005	N.D.
Total PBBs (Polybrominated biphenyls)/Sum of above	%			N.D.
Monobromobiphenyl ether	%		0.0005	N.D.
Dibromobiphenyl ether	96	1 1	0.0005	N.D.
Tribromobiphenyl ether	%	1	0.0005	N.D.
Tetrabromobiphenyl ether	%	1 1	0.0005	N.D.
Pentabromobiphenyl ether	96	With reference to	0.0005	N.D.
Hexabromobiphenyl ether	96	USEPA3540C or	0.0005	N.D.
Heptabromobiphenyl ether	%	USEPA3550C, Analysis was	0.0005	N.D.
Octobromobiphenyl ether	%	performed by HPLC/DAD,	0.0005	N.D.
Nonabromobiphenyl ether	%	LC/MS or GC/MS.	0.0005	N.D.
Decabromobiphenyl ether	96	(prohibited by 2002/95/EC (RoHS), 83/264/EEC, and	0,0005	N.D.
Total PBBEs(PBDEs) (Polybrominated biphenyl ethers)/Sum of above	%	76/769/EEC		N.D.
Total of Mono to Nona- brominated biphenyl ether. (Note 4)	%		*	N,D,

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and Delivered Party

NO. 136-1, Wu Kung Road, Wulfu Indoptral Ziline, Telepis county, Terrein

October 15, 2006 Littelfuse, L.P. Annex 6-2



### Annex 6: Analysis Result of Passivation Glass (Page 3 of 4)



#### **Test Report**

LETTELFUSE, INC.

800 E. NORTHWEST HIGHWAY DES PLAINES, IL 60016

USA

Report No. : CE/2006/34224

: 2006/03/29

Page :3 of 4

m	27.14		was	Result
Test Item (s):	Unit	Method	MDL	No.1
Chromium VI (Cr+6)	ppm	UV-VIS(US EPA 7196A) after reference to US EPA 3060A.	2	N.D.
Cadmium (Cd)	ppm	ICP-AES after reference to EN 1122, method B:2001 or other acid digestion.	2	N.D.
Mercury (Hg)	ppm	ICP-AES after reference to US EPA 3052 or other acid digestion.	2	N.D.
Lead (Pb)	ppm	ICP-AES after reference to US EPA 3050B or other acid digestion.	2	385475.0

- NOTE: (1) N.D. = Not detected (<MDL)
  - (2) ppm = mg/kg
  - (3) MDL = Method Detection Limit
  - (4) Decabromodiphenyl ether (DecaBDE) in polymeric applications is exempted by Commission Decision of 13 Oct 2005 amending Directive 2002/95/EC notified under document 2005/717/EC.
  - (5) PBBEs=PBDEs=Polybrominated Diphenyl Ethers=PBDOs=PBBOs.
  - (6) " " = Not Regulation

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Annex 6-3 October 15, 2006 Littelfuse, L.P.



# Annex 6: Analysis Result of Passivation Glass (Page 4 of 4)



#### **Test Report**

LETTELFUSE, INC.

800 E. NORTHWEST HIGHWAY DES PLAINES, IL 60016 USA

Report No. : CE/2006/34224

: 2006/03/29

Page : 4 of 4



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#### Annex 7: Analysis Result of Die Bonding Solder (Page 1 of 3)



### **Test Report**

Report No : CE/2006/91816 Date : 2006/09/14

LITTELFUSE INC.

800 EAST NORTHWEST HIGHWAY DES PLAINES.

IL 60016

Page: 1 of 3

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

Sample Description

: SOLDER PASTE (HIGH Pb)

Style/Item No

4102844-06

Manufacturer/Supplier : LITTELFUSE INC.

Name

Country of Destination

: TAIWAN

Country of Origin Sample Received

USA : 2006/09/07 1

Testing Period

: 2006/09/07 TO 2006/09/14

Test Requested

With reference to the RoHS Directive 2002/95/EC, and its

amendment directives.

Test Method

(1) With reference to BS EN 1122:2001, Method B for Cadmium Content. Analysis was performed by ICP-

(2) With reference to US EPA Method 3050B for Lead Content. Analysis was performed by ICP-AES.

(3) With reference to US EPA Method 3052 for Mercury Content. Analysis was performed by ICP-AES.

(4) With reference to US EPA Method 3060A & 7196A for Hexavalent Chromium. Analysis was performed by

Annex 7-1

UV/Vis Spectrometry.

Test Result(s)

Please see the next page(s) -

Operation Manager ned for and on behalf of

SGS TAIWAN LTD.

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October 15, 2006 Littelfuse, L.P.



#### Annex 7: Analysis Result of Die Bonding Solder (Page 2 of 3)



### **Test Report**

Report No : CE/2006/91816 Date : 2006/09/14

LITTELFUSE INC.

800 EAST NORTHWEST HIGHWAY DES PLAINES.

IL 60016

Page: 2 of 3

#### Test Result(s)

Test results by chemical method (Unit: mg/kg)

	Method	Result	*****	
Test Item (s):	(Refer to)	No.1	MDL	
Cadmium (Cd)	(1)	n.d.	2	
Lead (Pb)	(2)	821635.5	2	
Mercury (Hg)	(3)	n.d.	2	
Chromium VI (Cr+6)	(4)	n.d.	2	

#### **Test Part Description**

PART NAME NO.1

: DARK-GRAY SOLDER PASTE

Note: (1) mg/kg = ppm, 0.1% = 1000 ppm(mg/kg), 0.0005% = 5 ppm(mg/kg)

- (2) n.d. = N.D. = ND = Not Detected
- (3) MDL = Method Detection Limit
- (4) Sample was totally digested for Pb, Cd, Hg

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### Annex 7: Analysis Result of Die Bonding Solder (Page 3 of 3)



# **Test Report**

Report No : CE/2006/91816 Date : 2006/09/14 LITTELFUSE INC.

800 EAST NORTHWEST HIGHWAY DES PLAINES, IL 60016 Page: 3 of 3



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RD 135-1, Wu Kung Froad, WuRu Industrial Zone, Taiper county, Takein ENGS 21/2008/929 USWS, 21/2/2007/27 WARK Tool committee



#### Annex 8: Analysis Result of Packing Box (Page 1 of 4)



#### **Test Report**

Report No : CE/2006/91636 Date : 2006/09/13

LITTELFUSE INC.

800 E. NORTHWEST HWY. DES PLAINES, IL 60016

Page: 1 of 4

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

Sample Description Style/Item No : REEL BOX : 110233200

Manufacturer/Supplier :

LITTELFUSE INC.

Name

Country of Destination : TAIWAN Country of Origin : USA

Sample Received : 2006/09/06

Testing Period : 2006/09/06 TO 2006/09/13

**Test Requested** 

: With reference to the RoHS Directive 2002/95/EC, and its

amendment directives.

**Test Method** 

- With reference to BS EN 1122:2001, Method B for Cadmium Content. Analysis was performed by ICP-AES.
- (2) With reference to US EPA Method 3050B for Lead Content, Analysis was performed by ICP-AES.
- (3) With reference to US EPA Method 3052 for Mercury Content. Analysis was performed by ICP-AES.
- (4) With reference to US EPA Method 3060A & 7196A for Hexavalent Chromium. Analysis was performed by UV/Vis Spectrometry.
- (5) With reference to US EPA 3540C, Analysis was performed by GC/MS and screening via US EPA 3550C

with HPLC/DAD/MS.

Test Result(s) : Please see the next page(s) -

Daniel Yeh, M.R. / Operation Manager Signed for and on behalf of SGS TAIWAN LTD.

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(C) (35-1, Wu Kung Road, Wuku industrial Zone, Tapel nounty Tatelin 1996; 2) 220/1929 (1996); 7: 7:300, 27:37, Japan Rid (1997)

October 15, 2006 Littelfuse, L.P. Annex 8-1



### Annex 8: Analysis Result of Packing Box (Page 2 of 4)



### **Test Report**

Report No: CE/2006/91636 Date: 2006/09/13

LITTELFUSE INC.

800 E. NORTHWEST HWY. DES PLAINES, IL 60016

Page: 2 of 4

ACCOUNT OF THE PARTY OF THE PAR

#### Test Result(s)

Test results by chemical method (Unit: mg/kg)

T-474 (-)	Method	Result	Merc	
Test Item (s):	(Refer to)	No.1	MDL	
Cadmium (Cd)	(1)	n.d.	2	
Lead (Pb)	(2)	n.d.	2	
Mercury (Hg)	(3)	n.d.	2	
Chromium VI (Cr+6)	(4)	n.d.	2	
Total PBBs		n.d.	-	
Monobromobiphenyl		n.d.	. 5	
Dibromobiphenyl	1 1	n.d.	5	
Tribromobiphenyl	1 [	n.d.	5	
Tetrabromobiphenyl	] [	n.d.	5	
Pentabromobiphenyl	1 [	n.d.	5	
Hexabromobiphenyl	1 [	n.d.	5	
Heptabromobiphenyl		n.d.	5	
Octabromobiphenyl		n.d.	5	
Nonabromobiphenyl	(5)	n.d.	5	
Decabromobiphenyl		n.d.	5	
Total PBBEs(PBDEs)		n.d.	4	
Monobromobiphenyl ether		n,d.	5	
Dibromobiphenyl ether		n.d.	5	
Tribromobiphenyl ether		n.d.	5	
Tetrabromobiphenyl ether	] [	n.d.	5	
Pentabromobiphenyl ether	] [	n.d.	- 5	
Hexabromobiphenyl ether		n.d.	5	
Heptabromobiphenyl ether		n.d.	5	
Octabromobiphenyl ether		n.d.	5	
Nonabromobiphenyl ether	] [	n.d.	5	
Decabromobiphenyl ether		n.d.	5	
Total of Mono to Nona(Note 5)		n.d.		

#### Test Part Description

PART NAME NO.1 BROWN CARTON WITH BLACK PRINTING

Annex 8-2 October 15, 2006 Littelfuse, L.P.



### Annex 8: Analysis Result of Packing Box (Page 3 of 4)



#### **Test Report**

Report No : CE/2006/91636 Date : 2006/09/13

Page: 3 of 4

LITTELFUSE INC.

800 E. NORTHWEST HWY. DES PLAINES, IL 60016

manuscription and the second

Note: (1) mg/kg = ppm, 0.1% = 1000 ppm(mg/kg), 0.0005% = 5 ppm(mg/kg)

- (2) n.d. = N.D. = ND = Not Detected
- (3) MDL = Method Detection Limit
- (4) Sample was totally digested for Pb, Cd, Hg
- (5) Sum of Mono to NonaBDE & according to 2005/717/EC DecaBDE is exempt.
- (6) "-" = Not Regulated

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NO: 136-1, Wu Sung Froad, WuRu Industrie Zone, Tages county, Taken 1996, 2(2)2003(929) 0386, 7(2)299, 2227. Associated countries.

October 15, 2006 Littelfuse, L.P. Annex 8-3



### Annex 8: Analysis Result of Packing Box (Page 4 of 4)



# **Test Report**

Report No: CE/2006/91636 Date: 2006/09/13

LITTELFUSE INC.

800 E. NORTHWEST HWY. DES PLAINES, IL 60016

Page: 4 of 4



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NO: 135-1, Wu Kung Road, WuRu Industrial Zone, Taiper county, Tarkenstyle, 2(2008)939 (HWE, 7): 2399, 2007. West first county.



#### Annex 9: Analysis Result of Poly Tubing Bag (Page 1 of 4)



#### **Test Report**

Report No : CE/2006/91635 Date : 2006/09/13

LITTELFUSE INC.

800 E. NORTHWEST HWY. DES PLAINES, IL 60016

Page: 1 of 4

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

Sample Description

: PKOLY TUBING BAG : 110428901

Style/Item No : Manufacturer/Supplier :

LITTELFUSE INC.

Name

: TAIWAN : USA

Country of Destination Country of Origin Sample Received

: 2006/09/06

Testing Period

: 2006/09/06 TO 2006/09/13

**Test Requested** 

: With reference to the RoHS Directive 2002/95/EC, and its

amendment directives.

**Test Method** 

- With reference to BS EN 1122:2001, Method B for Cadmium Content. Analysis was performed by ICP-AES.
  - (2) With reference to US EPA Method 3050B for Lead Content, Analysis was performed by ICP-AES.
  - (3) With reference to US EPA Method 3052 for Mercury Content. Analysis was performed by ICP-AES.
  - (4) With reference to US EPA Method 3060A & 7196A for Hexavalent Chromium. Analysis was performed by UV/Vis Spectrometry.
  - (5) With reference to US EPA 3540C, Analysis was performed by GC/MS and screening via US EPA 3550C with HPLC/DAD/MS.

Test Result(s)

: Please see the next page(s) -

Danie Yeh, M.R. Operation Manager Signed for and on behalf of SGS TAIWAN LTD.

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October 15, 2006 Littelfuse, L.P. Annex 9-1



### Annex 9: Analysis Result of Poly Tubing Bag (Page 2 of 4)



### **Test Report**

Report No: CE/2006/91635 Date: 2006/09/13

LITTELFUSE INC.

800 E. NORTHWEST HWY. DES PLAINES, IL 60016

Page: 2 of 4

#### Test Result(s)

Test results by chemical method (Unit: mg/kg)

W-12 12 1-1	Method	Result	MEN	
Test Item (s):	(Refer to)	No.1	MDL	
Cadmium (Cd)	(1)	n.d.	2	
Lead (Pb)	(2)	n.d.	2	
Mercury (Hg)	(3)	n.d.	2	
Chromium VI (Cr+6)	(4)	n.d.	2	
Total PBBs		n.d.	+	
Monobromobiphenyl		n.d.	5	
Dibromobiphenyl		n.d.	5	
Tribromobiphenyl		n.d.	. 5	
Tetrabromobiphenyl	] [	n.d.	5	
Pentabromobiphenyl	1 [	n.d.	5	
Hexabromobiphenyl		n.d.	5	
Heptabromobiphenyl		n.d.	5	
Octabromobiphenyl		n.d.	5	
Nonabromobiphenyl	(5)	n.d.	5	
Decabromobiphenyl		n.d.	5	
Total PBBEs(PBDEs)		n.d.	4	
Monobromobiphenyl ether		n,d.	5	
Dibromobiphenyl ether		n.d.	5	
Tribromobiphenyl ether		n.d.	5	
Tetrabromobiphenyl ether		n.d.	5	
Pentabromobiphenyl ether		n.d.	-5	
Hexabromobiphenyl ether		n.d.	5	
Heptabromobiphenyl ether		n.d.	5	
Octabromobiphenyl ether		n.d.	5	
Nonabromobiphenyl ether		n.d.	5	
Decabromobiphenyl ether		n.d.	5	
Total of Mono to Nona(Note 5)		n.d.	-	

#### Test Part Description

PART NAME NO.1 1 TRANSPARENT PINK PLASTIC BAG

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Annex 9-2 October 15, 2006 Littelfuse, L.P.



### Annex 9: ICP/UV/GC Analysis Result of Poly Tubing Bag (Page 3 of 4)



#### **Test Report**

Report No: CE/2006/91636 Date: 2006/09/13

Page: 3 of 4

LITTELFUSE INC.

800 E. NORTHWEST HWY. DES PLAINES, IL 60016

Note: (1) mg/kg = ppm, 0.1% = 1000 ppm(mg/kg), 0.0005% = 5 ppm(mg/kg)

(2) n.d. = N.D. = ND = Not Detected

(3) MDL = Method Detection Limit

(4) Sample was totally digested for Pb, Cd, Hg

(5) Sum of Mono to NonaBDE & according to 2005/717/EC DecaBDE is exempt.

(6) "-" = Not Regulated

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40 135-1 Wu Sung Road, WuRu Industrial Zone, Tagel Inputs, Taken Intelligent 2008 (2018) 15 2000 2007. https://doi.org/10.1007/2018.

October 15, 2006 Littelfuse, L.P. Annex 9-3



### Annex 9: Analysis Result of Poly Tubing Bag (Page 4 of 4)



### **Test Report**

Report No: CE/2006/91635 Date: 2006/09/13

LITTELFUSE INC.

800 E. NORTHWEST HWY. DES PLAINES, IL 60016

Page: 4 of 4



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40: 136-1. Wu Kung Proof. WuRu Industrial Zone, Taiper nounty. Taken 1996, 21 230(1921) 01986, 31 2300, 2337. Asset for commu



### Annex 10: Analysis Result of Packing Foam (Page 1 of 4)



#### **Test Report**

LITTELFUSE, INC.

800 E. NORTHWEST HIGHWAY DES PLAINES, IL 60016

USA

Report No. : CE/2006/34166

Date : 2006/03/21

Page :1 of4

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

Type of Product : PACKING FOAM (PINK)

Style/Item No : 110202000 Manufacturer/Supplier : LITTELFUSE INC.

Name

Country of Destination : TAIWAN
Country of Origin : USA
Sample Received : 2006/03/14

Testing Date : 2006/03/14 TO 2006/03/21

Test Result : Please see the next page -

Deniel Yeh, M.R. Operation Manager Signed for and on behalf of SGS TAIWAN LTD.

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40 14 (May 1 + 17 )

NO. 136-1, Wo Kung Road, WuFu Industrial Zone, Taiper county, Taiwer



### Annex 10: Analysis Result of Packing Foam (Page 2 of 4)



# **Test Report**

LITTELFUSE, INC.

800 E. NORTHWEST HIGHWAY DES PLAINES, IL 60016

USA

Report No. : CE/2006/34166

Date : 2006/03/21

Page : 2 of 4

#### Test Result

PART NAME NO.1

PINK FOAM

Test Item (s):	Trate.		MDL	Result No.1	Spec.
	Unit	Method			
Monobromobiphenyl	ppm		5	N.D.	-
Dibromobiphenyl	ppm		5	N.D.	-
Tribromobiphenyl	ppm	With reference to	5	N.D.	
Tetrabromobiphenyl	ppm	USEPA3540C or	5	N.D.	(e)
Pentabromobiphenyl	ppm	USEPA3550C, Analysis was	5	N.D.	-
Hexabromobiphenyl	ppm	performed by HPLC/DAD,	5	N.D.	-
Heptabromobiphenyl	ppm	LC/MS or GC/MS.	5	N.D.	- 32
Octabromobiphenyl	ppm	(prohibited by 2002/95/EC	5	N.D.	
Nonabromobiphenyl	ppm	(RoHS), 83/264/EEC, and	5	N.D.	
Decabromobiphenyl	ppm	76/769/EEC)	5	N.D.	-
Total PBBs (Polybrominated biphenyls)/Sum of above	ppm		- 5	N.D.	×
Monobromobiphenyl ether	ppm		5	N.D.	-
Dibromobiphenyl ether	ppm	1	5	N.D.	1
Tribromobiphenyl ether	ppm	1 1	5	N.D.	
Tetrabromobiphenyl ether	ppm	1 1	5	N.D.	92.1
Pentabromobiphenyl ether	ppm	With reference to	5	N.D.	100
Hexabromobiphenyl ether	ppm	USEPA3540C or	5	N.D.	
Heptabromobiphenyl ether	ppm	USEPA3550C. Analysis was	5	N.D.	- ×
Octabromobiphenyl ether	ppm	performed by HPLC/DAD.	5	N.D.	1
Nonabromobiphenyl ether	ppm	LC/MS or GC/MS. (prohibited by 2002/95/EC (RoHS), 83/264/EEC, and 76/769/EEC)	5	N.D.	E
Decabromobiphenyl ether	ppm		5	N.D.	14
Total PBBEs(PBDEs) (Polybrominated biphenyl ethers)/Sum of above	ppm			N.D.	100
Total of Mono to Nona- brominated biphenyl ether. (Note 4)	ppm			N.D.	

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10 TATANS (10)

NO. 136-1, Wu Kung Road, WuFu Indostrial Jüne, Teiper county, Temen

October 15, 2006 Littelfuse, L.P. Annex 10-2



# Annex 10: Analysis Result of Packing Foam (Page 3 of 4)



#### **Test Report**

LITTELFUSE, INC.

Report No. : CE/2006/34166

800 E. NORTHWEST HIGHWAY DES PLAINES, IL 60016 USA

: 2006/03/21

Page :3 of 4

Test Item (s):	***	nit Method	MDL	Result No.1	Spec.
	Unit				
94/62/EC (Heavy metal content)					
Chromium VI (Cr+6)	ppm	UV-VIS(US EPA 7196A) after reference to US EPA 3060A.	2	N.D.	×
Cadmium (Cd)	ppm	ICP-AES after as per EN 1122, method B:2001 or other acid digestion.	2	N.D.	340
Lead (Pb)	ppm	ICP-AES after as per US EPA 3050B or other acid digestion.	2	N.D.	1.3
Mercury (Hg)	ppm	ICP-AES after as per US EPA 3052 or other acid digestion.	2	N.D.	×
Total Lead+Cadmium+Mercury+ Chromium VI	ppm	Total Lead+Cadmium+Mercury+ Chromium VI (94/62/EC)	T.P.	N.D.	100

NOTE: (1) N.D. = Not detected (<MDL)

- (2) ppm = mg/kg
- (3) MDL = Method Detection Limit
- (4) Decabromodiphenyl ether (DecaBDE) in polymeric applications is exempted by Commission Decision of 13 Oct 2005 amending Directive 2002/95/EC notified under document 2005/717/EC.
- (5) PBBEs=PBDEs=Polybrominated Diphenyl Ethers=PBDOs=PBBOs.
- (6) " " = Not Regulation

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Annex 10-3 October 15, 2006 Littelfuse, L.P.



### Annex 10: Analysis Result of Packing Foam (Page 4 of 4)



### **Test Report**

LITTELFUSE, INC.

800 E. NORTHWEST HIGHWAY DES PLAINES, IL 60016

USA

Report No. : CE/2006/34166

: 2006/03/21

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#### **Annex 11: Applicable RoHS exemptions**

