



## ICP Test Report Certification Packet

Company name: Littelfuse, Inc.

Product Series: GDT

Product #: SL1021

Issue Date: January 16, 2009

It is hereby certified by Littelfuse, Inc. 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:

A handwritten signature in purple ink that reads 'Anna Di Vietro'.

<Environmental Data Analyst>

(1) Parts, sub-materials and unit parts

This document covers the SL1021 GDT RoHS-Compliant series products manufactured by Littelfuse, Inc.

< Raw Materials Used

Please see Table 1

(2) The ICP data on all measurable substances

Please see appropriate pages as identified in Table 1

Remarks : Only 25 and 30 Amperages are RoHS compliant.

**Table 1: List of Raw Materials covered by this report**

<b>Total Parts</b>	<b>Raw Material Part Number</b>	<b>Raw Material Description</b>	<b>Page(s)</b>
1	927-305	Washer	3-6
2	061001-063002-063003	CU Clad Steel Wire	7-11
3	APD0638	Ceramic	12-16
4	889-136	Electrode	17-20
5	889-135	End Electrode	21-24
6	883-063	Failsafe Clip	25-28
7	868-116	Styrene Insert	29-35
8	883-064	Clip	36-39
9	927-310	Solder Insert	40-43

# Test Report

No. : CE/2008/C5686

Date : 2008/12/25

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LITTELFUSE INC.

800 E. NORTHWEST HIGHWAY, DES PLAINES, IL 60016



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


Sample Description : WASHER  
Style/Item No. : 927-305-001  
Sample Receiving Date : 2008/12/22  
Testing Period : 2008/12/22 TO 2008/12/25

Test Requested : In accordance with the RoHS Directive 2002/95/EC, and its amendment directives.

Test Method :

- (1) With reference to IEC 62321/2nd CDV (111/95/CDV). Determination of Cadmium by ICP-AES.
- (2) With reference to IEC 62321/2nd CDV (111/95/CDV). Determination of Lead by ICP-AES.
- (3) With reference to IEC 62321/2nd CDV (111/95/CDV). Determination of Mercury 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 refer to next page(s).

  
**Nicole Chien / Supervisor**  
**Signed for and on behalf of**  
**SGS TAIWAN LTD.**  
**Chemical Laboratory - Taipei**

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# Test Report

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LITTELFUSE INC.

800 E. NORTHWEST HIGHWAY, DES PLAINES, IL 60016



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

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

## TEST PART DESCRIPTION:

NO.1 : SILVER COLORED METAL WASHER

Note : 1. mg/kg = ppm ; 0.1wt% = 1000ppm

2. n.d. = Not Detected

3. MDL = Method Detection Limit

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## Test Report

No. : CE/2008/C5686 Date : 2008/12/25

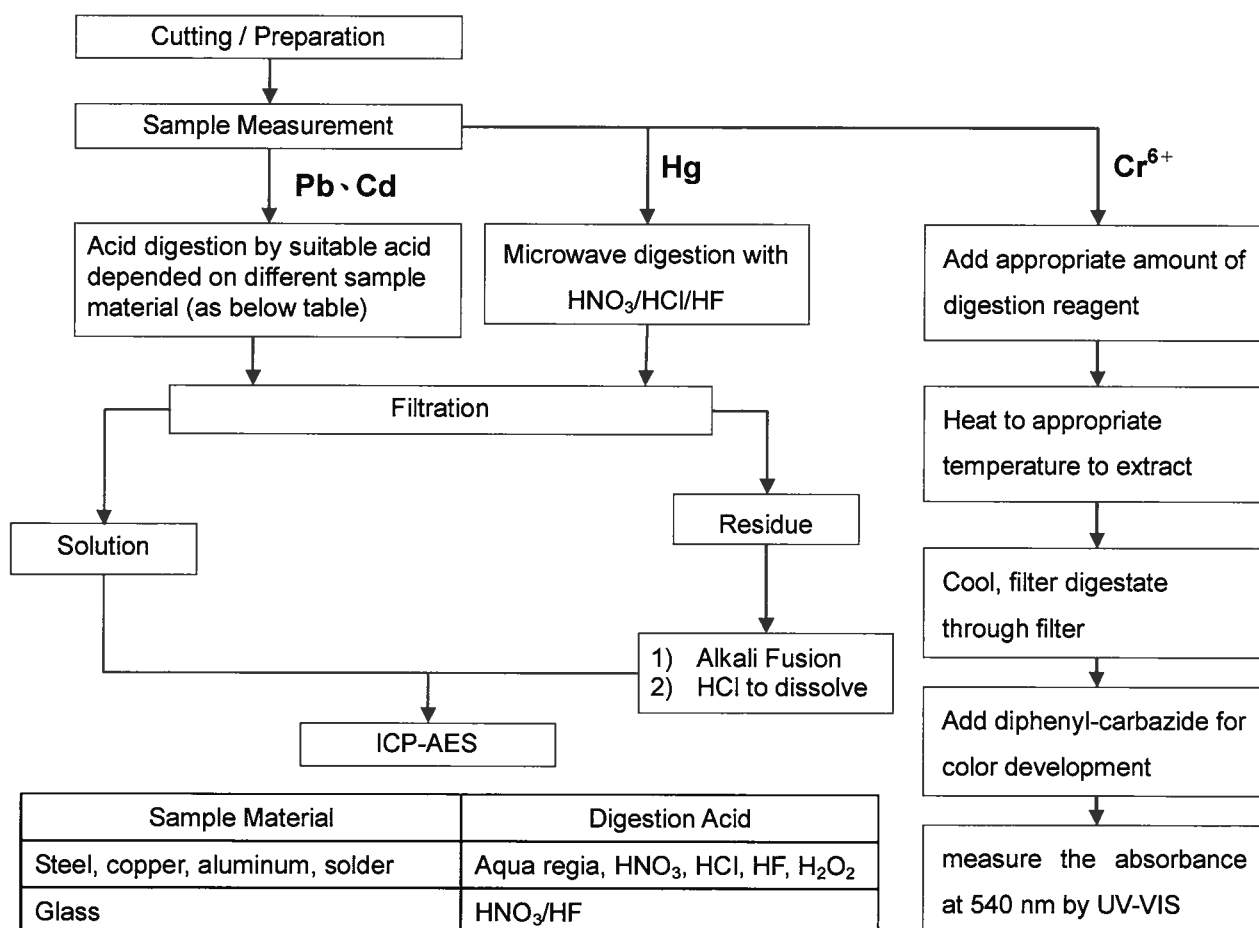
Page : 3 of 4

LITTELFUSE INC.

800 E. NORTHWEST HIGHWAY, DES PLAINES, IL 60016



- 1) These samples were dissolved totally by pre-conditioning method according to below flow chart.  
(Cr<sup>6+</sup> test method excluded)
- 2) Name of the person who made measurement: Climbgreat Yang
- 3) Name of the person in charge of measurement: Troy Chang



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## Test Report

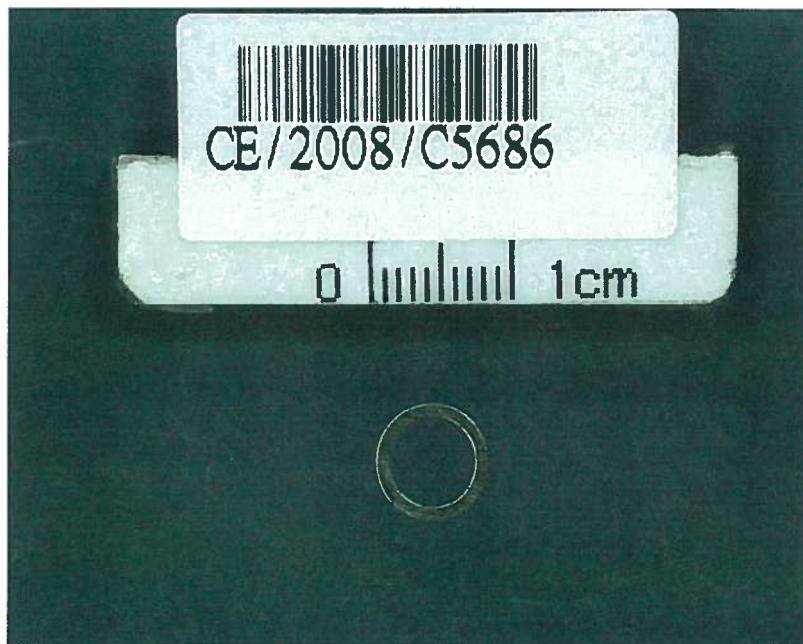
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\*\* End of Report \*\*

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# Test Report

No. : CE/2008/67013 Date : 2008/06/27

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



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

Sample Description	:	Cu CLAD STEEL WIRE
Part Number	:	061001 / 063002 / 063003
Facility	:	SUZHOU
Sample Receiving Date	:	2008/06/24
Testing Period	:	2008/06/24 TO 2008/06/27

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Test Requested	:	In accordance with the RoHS Directive 2002/95/EC, and its amendment directives.
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Test Method	:	With reference to IEC 62321/2nd CDV (111/95/CDV) Procedures for the Determination of Levels of Regulated Substances in Electrotechnical Products.
		(1) Determination of Cadmium by ICP-AES.
		(2) Determination of Lead by ICP-AES.
		(3) Determination of Mercury by ICP-AES.
		(4) Determination of Hexavalent Chromium for metallic samples by Spot test / boiling water extraction Method.

Test Result(s)	:	Please refer to next page(s).
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*Nicole Chien*  
Nicole Chien / Supervisor  
Signed for and on behalf of  
SGS TAIWAN LTD.  
Chemical Laboratory - Taipei

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# Test Report

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



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

Test Item (s):	Method (Refer to)	Result		MDL
		No.1	No.2	
Cadmium (Cd)	(1)	n.d.	n.d.	2
Lead (Pb)	(2)	n.d.	22	2
Mercury (Hg)	(3)	n.d.	n.d.	2
Hexavalent Chromium Cr(VI) by Spot test / boiling water extraction	(4)	Negative	Negative	See Note 4

## TEST PART DESCRIPTION:

NO.1 : PLATING LAYER OF COPPER COLORED METAL WIRE  
NO.2 : BASE MATERIAL OF COPPER COLORED METAL WIRE

Note : 1. mg/kg = ppm

2. n.d. = Not Detected

3. MDL = Method Detection Limit

4. Spot-test:

Negative = Absence of Cr(VI) coating / surface layer,

Positive = Presence of Cr(VI) coating / surface layer;

(The tested sample should be further verified by boiling-water-extraction method if the spot test result cannot be confirmed.)

Boiling-water-extraction:

Negative = Absence of Cr(VI) coating / surface layer.

Positive = Presence of Cr(VI) coating / surface layer;

the detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm<sup>2</sup> sample surface area.

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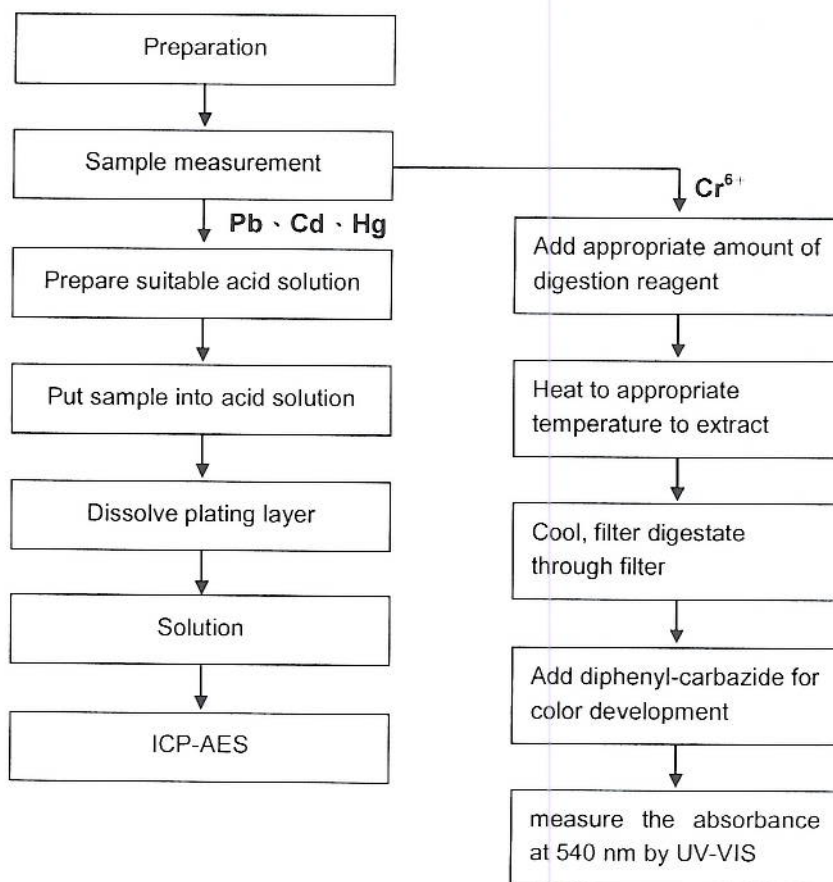
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800 E. NORTHWEST HIGHWAY, DES PLAINES, IL 60016



- NO.1
- 1) These samples were dissolved totally by pre-conditioning method according to below flow chart. (  $\text{Cr}^{6+}$  test method excluded )
  - 2) Name of the person who made measurement: Climbgreat Yang
  - 3) Name of the person in charge of measurement: Troy Chang

### Flow Chart of Stripping method for metal analysis



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## Test Report

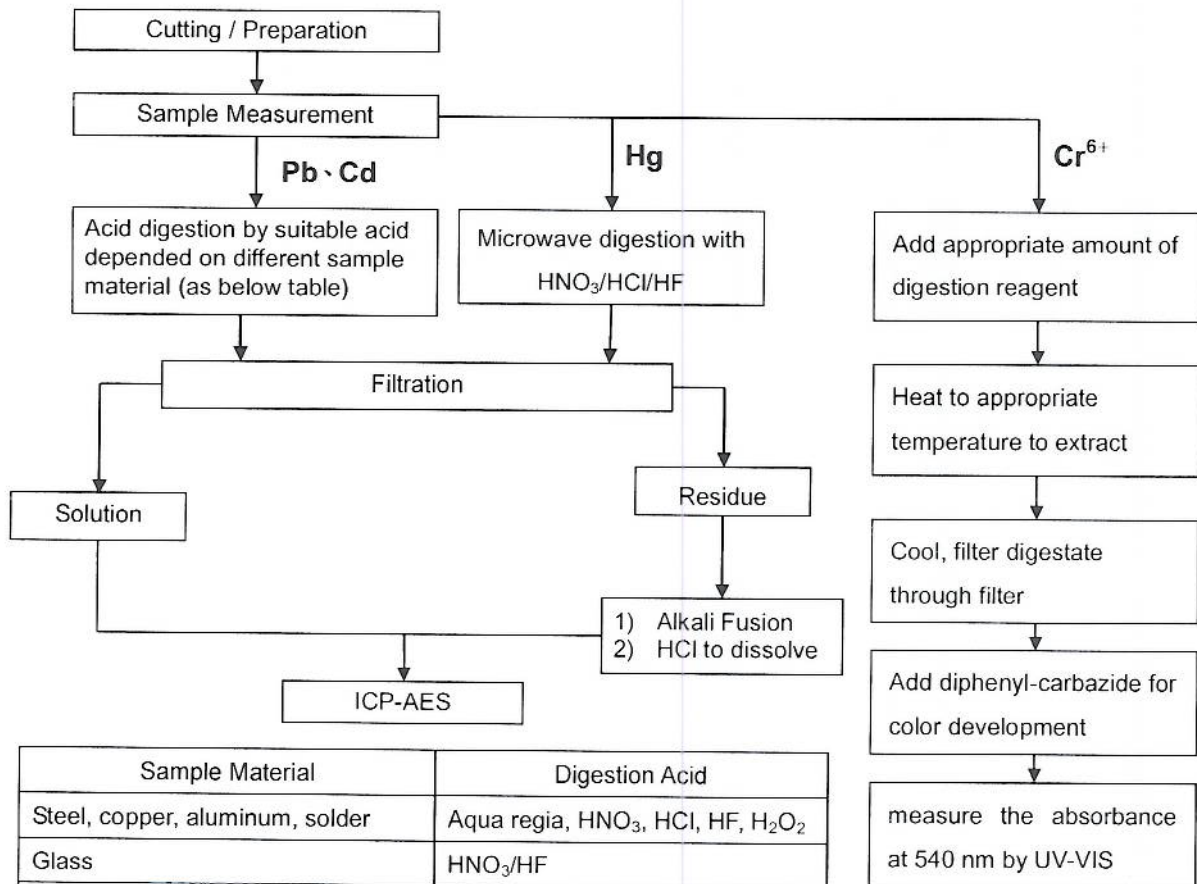
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LITTELFUSE INC.  
800 E. NORTHWEST HIGHWAY, DES PLAINES, IL 60016



- NO.2
- 1) These samples were dissolved totally by pre-conditioning method according to below flow chart.  
(Cr<sup>6+</sup> test method excluded)
  - 2) Name of the person who made measurement: Climbgreat Yang
  - 3) Name of the person in charge of measurement: Troy Chang



Sample Material	Digestion Acid
Steel, copper, aluminum, solder	Aqua regia, HNO <sub>3</sub> , HCl, HF, H <sub>2</sub> O <sub>2</sub>
Glass	HNO <sub>3</sub> /HF
Gold, platinum, palladium, ceramic	Aqua regia
Silver	HNO <sub>3</sub>
Plastic	H <sub>2</sub> SO <sub>4</sub> , H <sub>2</sub> O <sub>2</sub> , HNO <sub>3</sub> , HCl
Others	Any acid to total digestion

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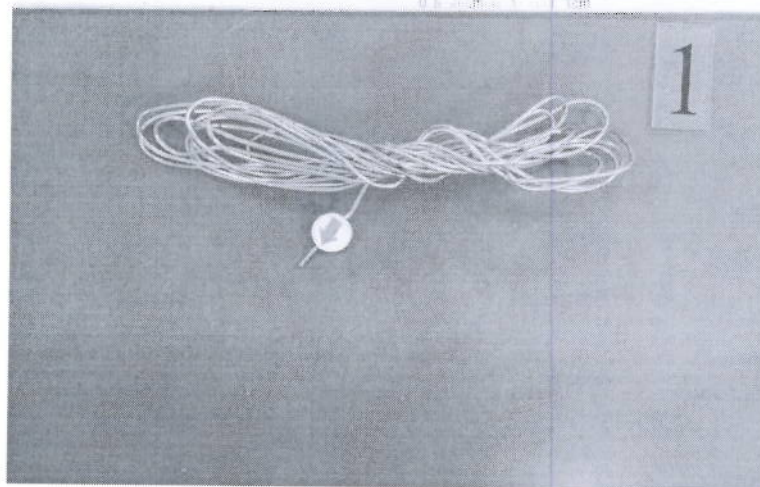
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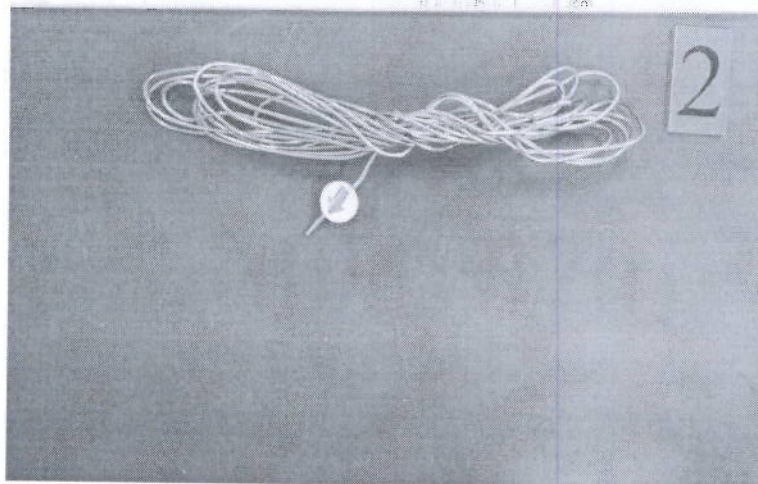
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**\*\* End of Report \*\***

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# Test Report

No. : CE/2008/C5642

Date : 2008/12/25

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LITTELFUSE INC.

800 E. NORTHWEST HIGHWAY, DES PLAINES, IL 60016



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


Sample Description : CERAMIC TUBE  
Style/Item No. : APD0638  
Sample Receiving Date : 2008/12/22  
Testing Period : 2008/12/22 TO 2008/12/25

Test Requested : In accordance with the RoHS Directive 2002/95/EC, and its amendment directives.

Test Method :

- (1) With reference to IEC 62321/2nd CDV (111/95/CDV). Determination of Cadmium by ICP-AES.
- (2) With reference to IEC 62321/2nd CDV (111/95/CDV). Determination of Lead by ICP-AES.
- (3) With reference to IEC 62321/2nd CDV (111/95/CDV). Determination of Mercury by ICP-AES.
- (4) With reference to US EPA Method 3060A & 7196A for Hexavalent Chromium for non-metallic samples. Analysis was performed by UV/Vis Spectrometry.
- (5) With reference to IEC 62321/2nd CDV (111/95/CDV). Determination of PBB and PBDE by GC/MS.

Test Result(s) : Please refer to next page(s).

  
Chenyu Kung / Operation Manager  
Signed for and on behalf of  
SGS TAIWAN LTD.  
Chemical Laboratory – Taipei

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



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

Test Item (s):	Method (Refer to)	Result	MDL
		No.1	
Cadmium (Cd)	(1)	n.d.	2
Lead (Pb)	(2)	n.d.	2
Mercury (Hg)	(3)	n.d.	2
Hexavalent Chromium Cr(VI)	(4)	n.d.	2
Sum of PBBs	(5)	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
Sum of PBDEs		n.d.	-
Monobromodiphenyl ether		n.d.	5
Dibromodiphenyl ether		n.d.	5
Tribromodiphenyl ether		n.d.	5
Tetrabromodiphenyl ether		n.d.	5
Pentabromodiphenyl ether		n.d.	5
Hexabromodiphenyl ether		n.d.	5
Heptabromodiphenyl ether		n.d.	5
Octabromodiphenyl ether		n.d.	5
Nonabromodiphenyl ether		n.d.	5
Decabromodiphenyl ether		n.d.	5

## TEST PART DESCRIPTION:

NO.1 : WHITE / SILVER COLORED CERAMIC TUBE

Note : 1. mg/kg = ppm ; 0.1wt% = 1000ppm

2. n.d. = Not Detected

3. MDL = Method Detection Limit

4. "-" = Not Regulated

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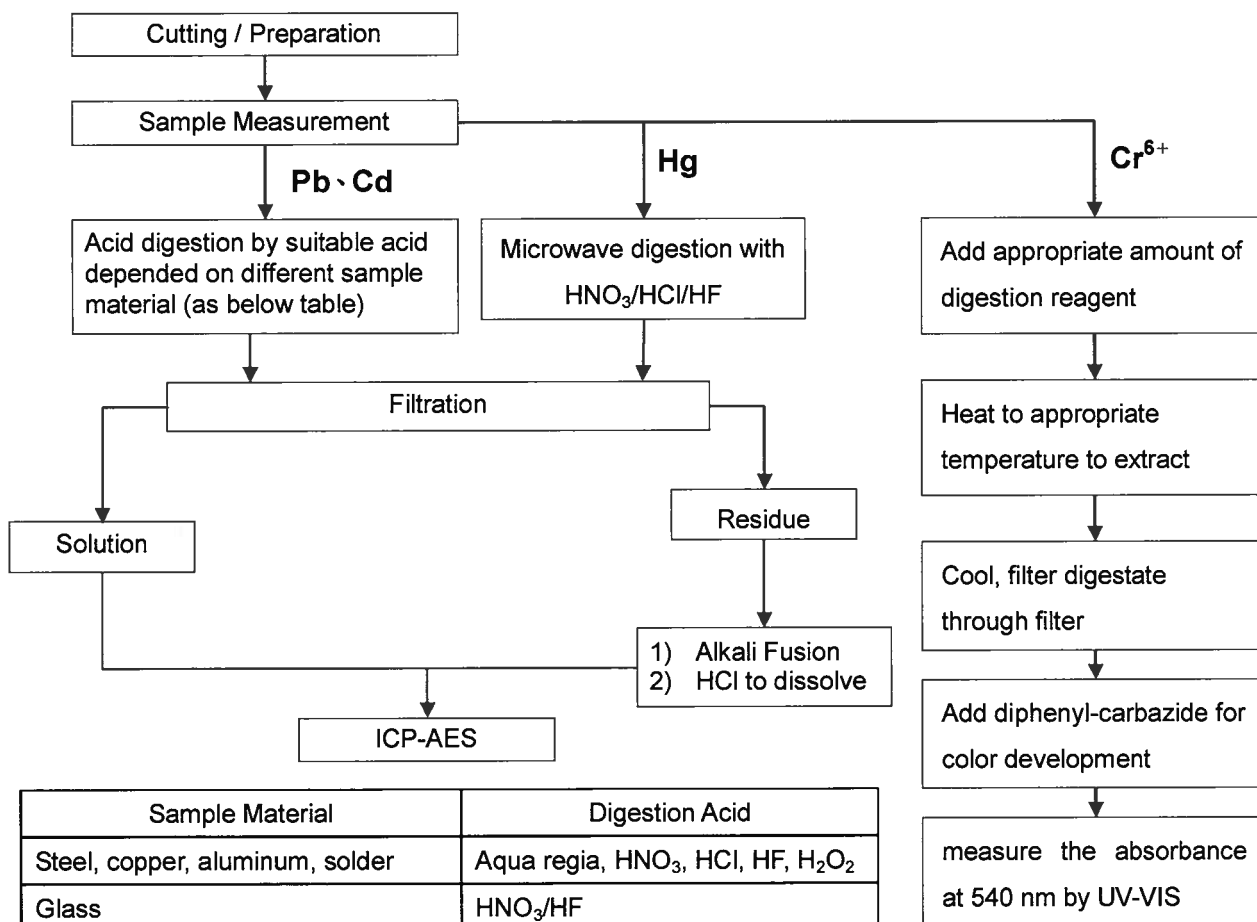
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LITTELFUSE INC.

800 E. NORTHWEST HIGHWAY, DES PLAINES, IL 60016



- 1) These samples were dissolved totally by pre-conditioning method according to below flow chart.  
(Cr<sup>6+</sup> test method excluded)
- 2) Name of the person who made measurement: Climbgreat Yang
- 3) Name of the person in charge of measurement: Troy Chang



Sample Material	Digestion Acid
Steel, copper, aluminum, solder	Aqua regia, HNO <sub>3</sub> , HCl, HF, H <sub>2</sub> O <sub>2</sub>
Glass	HNO <sub>3</sub> /HF
Gold, platinum, palladium, ceramic	Aqua regia
Silver	HNO <sub>3</sub>
Plastic	H <sub>2</sub> SO <sub>4</sub> , H <sub>2</sub> O <sub>2</sub> , HNO <sub>3</sub> , HCl
Others	Any acid to total digestion

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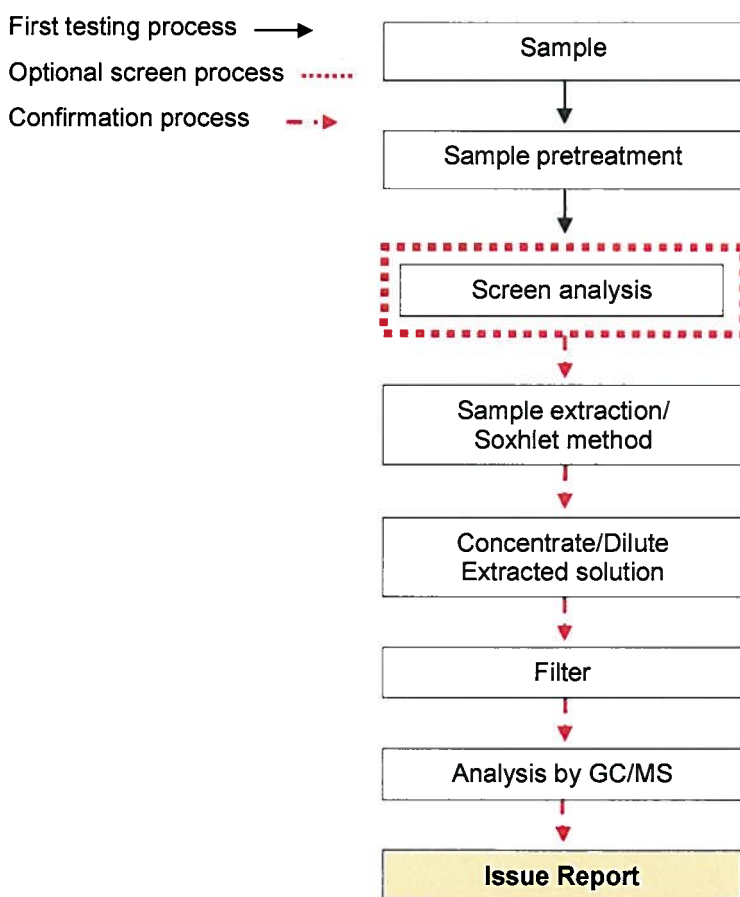
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### PBB/PBDE analytical FLOW CHART

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







# Test Report

No. : CE/2008/C5651

Date : 2008/12/25

Page : 1 of 4

LITTELFUSE INC.

800 E. NORTHWEST HIGHWAY, DES PLAINES, IL 60016



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

Sample Description : ELECTRODE  
Style/Item No. : 889-136  
Sample Receiving Date : 2008/12/22  
Testing Period : 2008/12/22 TO 2008/12/25

Test Requested : In accordance with the RoHS Directive 2002/95/EC, and its amendment directives.

Test Method : (1) With reference to IEC 62321/2nd CDV (111/95/CDV).  
Determination of Cadmium by ICP-AES.  
(2) With reference to IEC 62321/2nd CDV (111/95/CDV).  
Determination of Lead by ICP-AES.  
(3) With reference to IEC 62321/2nd CDV (111/95/CDV).  
Determination of Mercury 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 refer to next page(s).

Nicole Chien / Supervisor  
Signed for and on behalf of  
SGS TAIWAN LTD.  
Chemical Laboratory - Taipei

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# Test Report

No. : CE/2008/C5651

Date : 2008/12/25

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LITTELFUSE INC.

800 E. NORTHWEST HIGHWAY, DES PLAINES, IL 60016



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

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

## TEST PART DESCRIPTION:

NO.1 : SILVER COLORED METAL ELECTRODE

Note : 1. mg/kg = ppm ; 0.1wt% = 1000ppm

2. n.d. = Not Detected

3. MDL = Method Detection Limit

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## Test Report

No. : CE/2008/C5651

Date : 2008/12/25

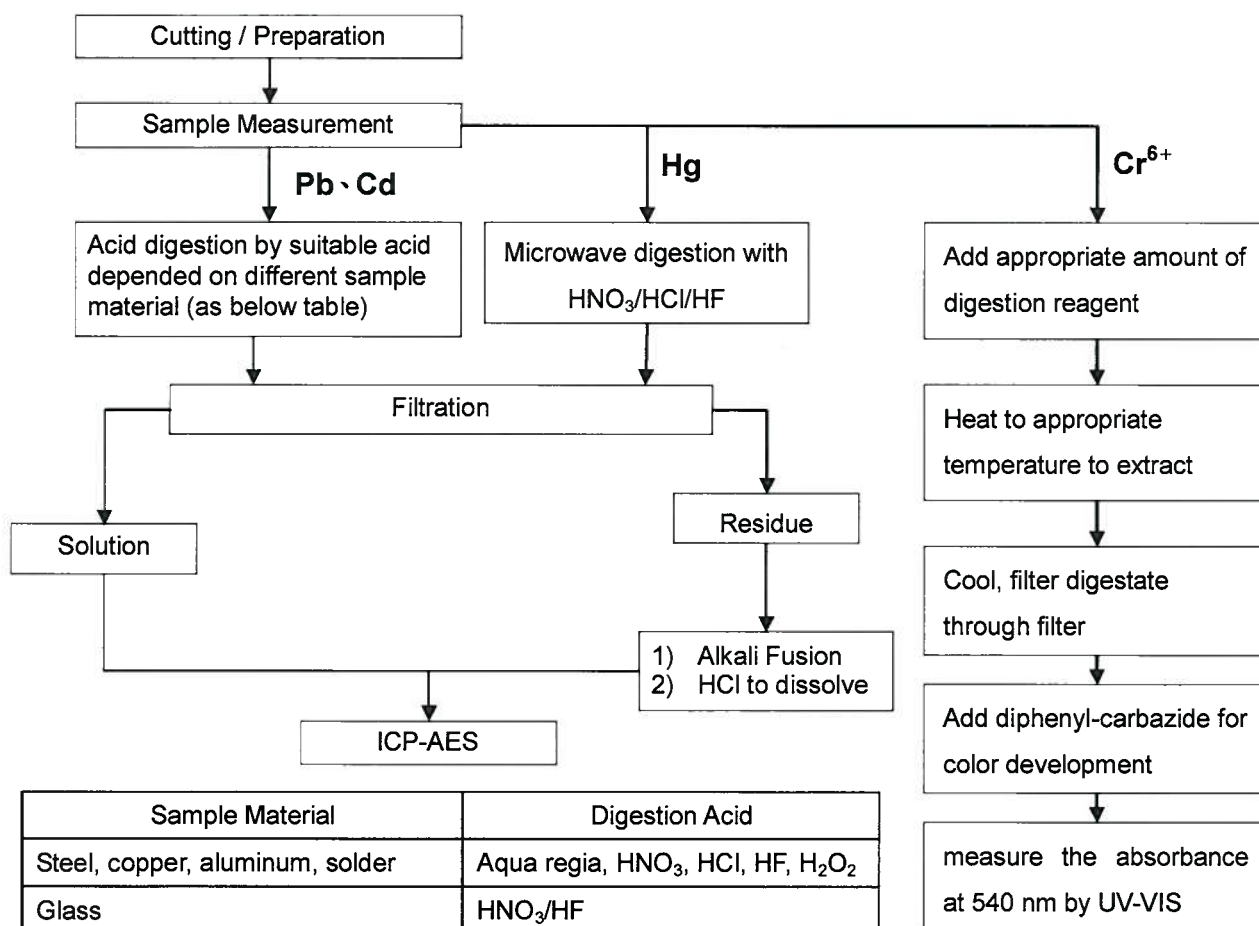
Page : 3 of 4

LITTELFUSE INC.

800 E. NORTHWEST HIGHWAY, DES PLAINES, IL 60016



- 1) These samples were dissolved totally by pre-conditioning method according to below flow chart.  
(Cr<sup>6+</sup> test method excluded)
- 2) Name of the person who made measurement: Climbgreat Yang
- 3) Name of the person in charge of measurement: Troy Chang



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## Test Report

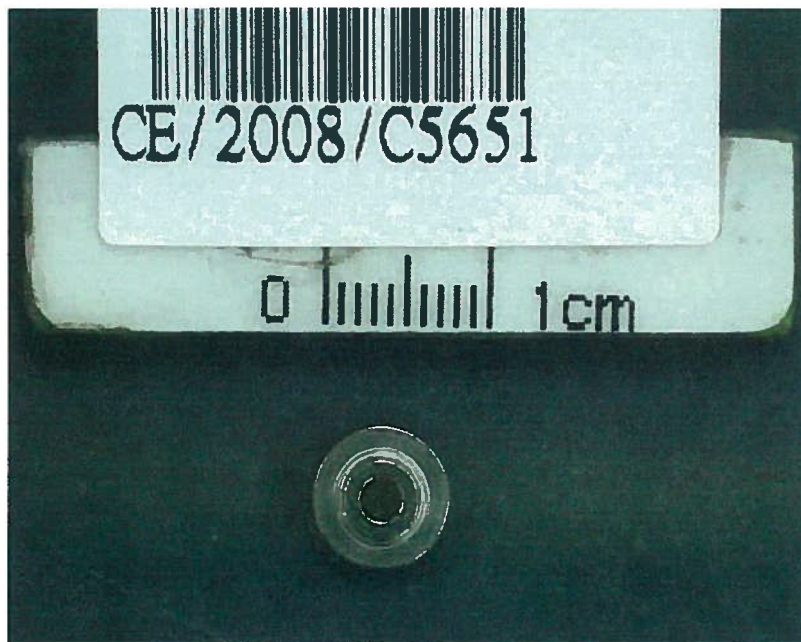
No. : CE/2008/C5651

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LITTELFUSE INC.

800 E. NORTHWEST HIGHWAY, DES PLAINES, IL 60016



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# Test Report

No. : CE/2007/90004

Date : 2007/09/05

Page : 1 of 4

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 as :

Sample Description : END ELECTRODE  
Style/Item No. : 889-135  
Facility : SUZHOU  
Sample Receiving Date : 2007/09/02  
Testing Period : 2007/09/02 TO 2007/09/05


=====

**Test Requested** : In accordance with the RoHS Directive 2002/95/EC, and its amendment directives.

**Test Method** : With reference to IEC 62321, Ed.1 111/54/CDV  
Procedures for the Determination of Levels of Regulated Substances in Electrotechnical Products.

- (1) Determination of Cadmium by ICP-AES.
- (2) Determination of Lead by ICP-AES.
- (3) Determination of Mercury by ICP-AES.
- (4) Determination of Hexavalent Chromium for metallic samples by Spot test / Colorimetric Method.

**Test Result(s)** : Please refer to next page(s).

  
**Chenyu Kung / Operation Manager**  
Signed for and on behalf of  
**SGS TAIWAN LTD.**  
Chemical Laboratory – Taipei



# Test Report

No. : CE/2007/90004

Date : 2007/09/05

Page : 2 of 4

LITTELFUSE INC.

800 E. NORTHWEST HWY. DES PLAINES, IL 60016



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

Test Item (s):	Method (Refer to)	Result	MDL
		No.1	
Cadmium (Cd)	(1)	n.d.	2
Lead (Pb)	(2)	n.d.	2
Mercury (Hg)	(3)	n.d.	2
Hexavalent Chromium Cr(VI) by Spot test / boiling water extraction	(4)	Negative	See Note 4

## TEST PART DESCRIPTION:

NO.1 : SILVER COLORED METAL

Note : 1. mg/kg = ppm

2. n.d. = Not Detected

3. MDL = Method Detection Limit

4. Spot-test:

Negative = Absence of Cr(VI) coating / surface layer,

Positive = Presence of Cr(VI) coating / surface layer;

(The tested sample should be further verified by boiling-water-extraction method if the spot test result cannot be confirmed.)

Boiling-water-extraction:

Negative = Absence of Cr(VI) coating / surface layer.

Positive = Presence of Cr(VI) coating / surface layer;

the detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm<sup>2</sup> sample surface area.

# Test Report

No. : CE/2007/90004

Date : 2007/09/05

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LITTELFUSE INC.

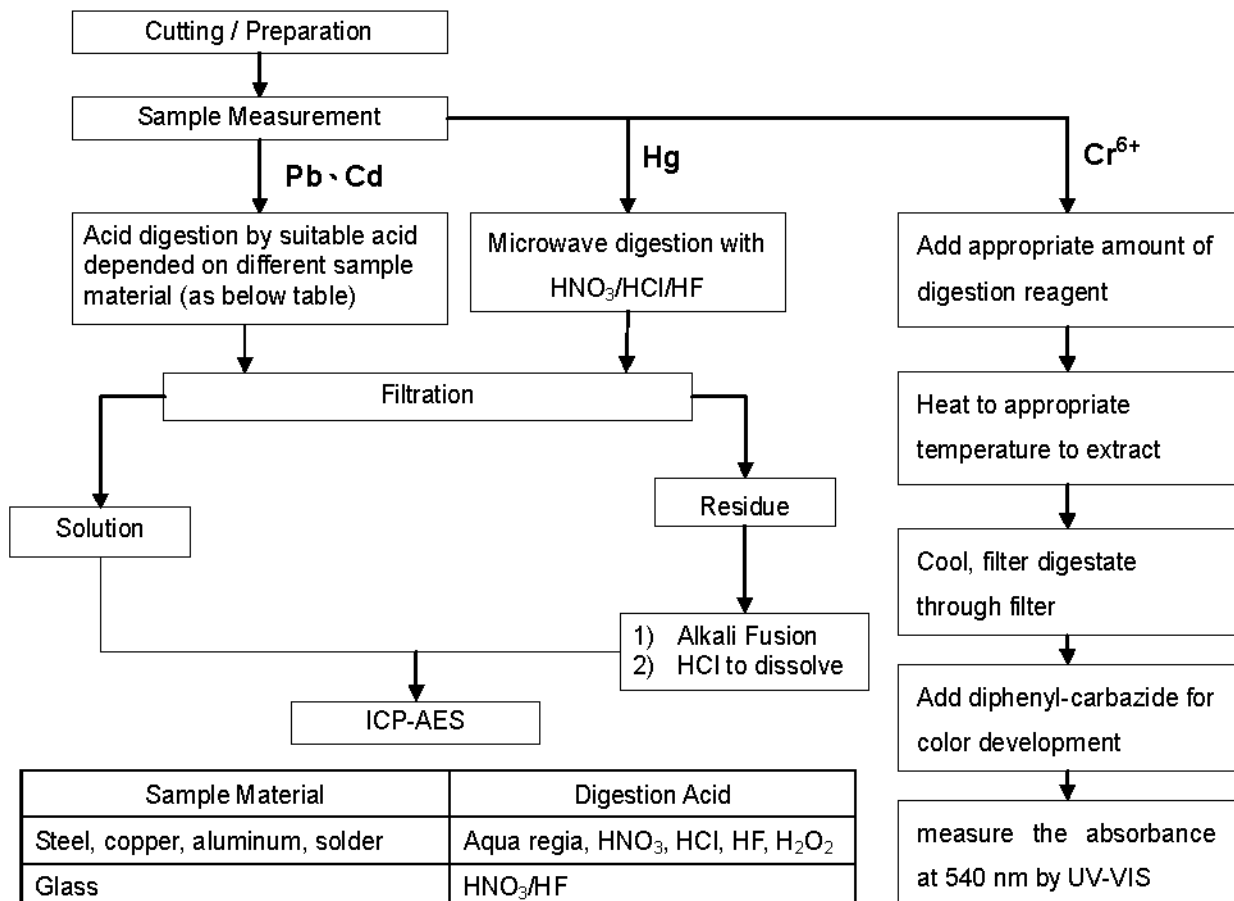
800 E. NORTHWEST HWY. DES PLAINES, IL 60016



- 1) These samples were dissolved totally by pre-conditioning method according to below flow chart.  
(Cr<sup>6+</sup> test method excluded)

2) Name of the person who made measurement: Troy Chang

3) Name of the person in charge of measurement: Chenyu Kung



Sample Material	Digestion Acid
Steel, copper, aluminum, solder	Aqua regia, HNO <sub>3</sub> , HCl, HF, H <sub>2</sub> O <sub>2</sub>
Glass	HNO <sub>3</sub> /HF
Gold, platinum, palladium, ceramic	Aqua regia
Silver	HNO <sub>3</sub>
Plastic	H <sub>2</sub> SO <sub>4</sub> , H <sub>2</sub> O <sub>2</sub> , HNO <sub>3</sub> , HCl
Others	Any acid to total digestion

# Test Report

No. : CE/2007/90004

Date : 2007/09/05

Page : 4 of 4

LITTELFUSE INC.

800 E. NORTHWEST HWY. DES PLAINES, IL 60016



\*\* End of Report \*\*



# Test Report

No. : CE/2008/C5679 Date : 2008/12/25 Page : 1 of 4

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



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

Sample Description : CLIP  
Style/Item No. : 883-063  
Sample Receiving Date : 2008/12/22  
Testing Period : 2008/12/22 TO 2008/12/25

=====

Test Requested : In accordance with the RoHS Directive 2002/95/EC, and its amendment directives.

Test Method : (1) With reference to IEC 62321/2nd CDV (111/95/CDV).  
Determination of Cadmium by ICP-AES.  
(2) With reference to IEC 62321/2nd CDV (111/95/CDV).  
Determination of Lead by ICP-AES.  
(3) With reference to IEC 62321/2nd CDV (111/95/CDV).  
Determination of Mercury 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 refer to next page(s).

  
Nicole Chien / Supervisor  
Signed for and on behalf of  
SGS TAIWAN LTD.  
Chemical Laboratory - Taipei

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# Test Report

No. : CE/2008/C5679

Date : 2008/12/25

Page : 2 of 4

LITTELFUSE INC.

800 E. NORTHWEST HIGHWAY, DES PLAINES, IL 60016



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

Test Item (s):	Method (Refer to)	Result	MDL
		No.1	
Cadmium (Cd)	(1)	n.d.	2
Lead (Pb)	(2)	19	2
Mercury (Hg)	(3)	n.d.	2
Hexavalent Chromium Cr(VI)	(4)	n.d.	2

## TEST PART DESCRIPTION:

NO.1 : SILVER COLORED METAL

Note : 1. mg/kg = ppm ; 0.1wt% = 1000ppm

2. n.d. = Not Detected

3. MDL = Method Detection Limit

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## Test Report

No. : CE/2008/C5679

Date : 2008/12/25

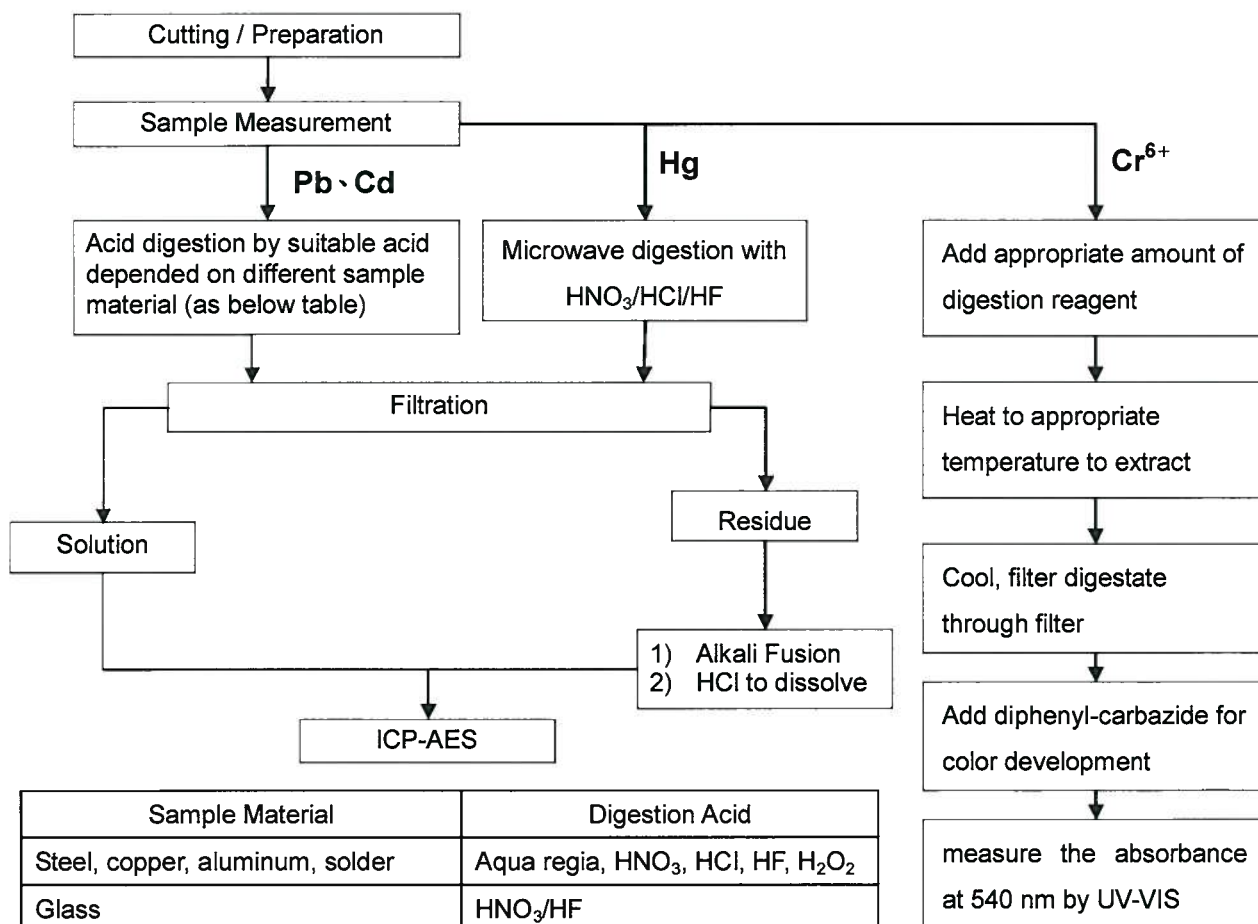
Page : 3 of 4

LITTELFUSE INC.

800 E. NORTHWEST HIGHWAY, DES PLAINES, IL 60016



- 1) These samples were dissolved totally by pre-conditioning method according to below flow chart.  
(Cr<sup>6+</sup> test method excluded)
- 2) Name of the person who made measurement: Climbgreat Yang
- 3) Name of the person in charge of measurement: Troy Chang



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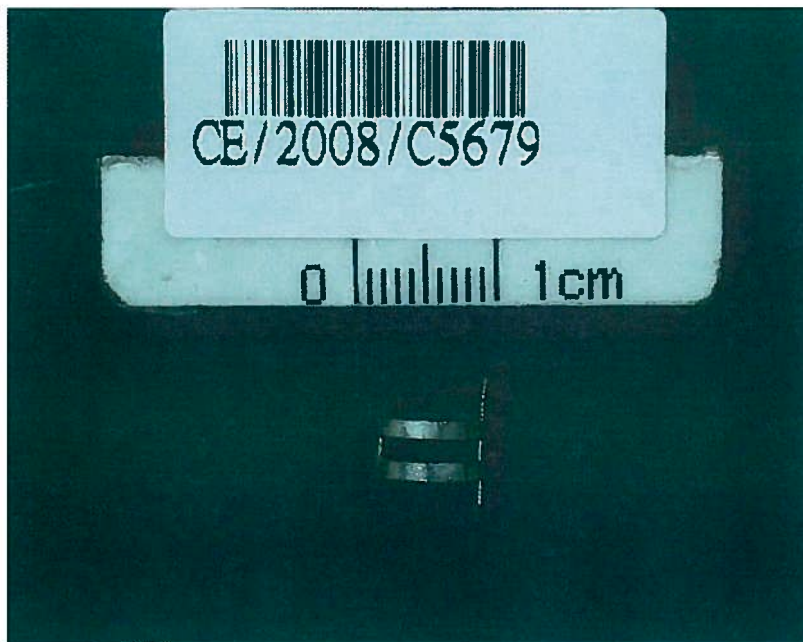
No. : CE/2008/C5679

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LITTELFUSE INC.

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# Test Report

No. : CE/2008/C5644 Date : 2008/12/25 Page : 1 of 7

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




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

Sample Description	:	STYRENE INSERT
Style/Item No.	:	868-116
Sample Receiving Date	:	2008/12/22
Testing Period	:	2008/12/22 TO 2008/12/25

=====

Test Result(s)	:	Please refer to next page(s).
----------------	---	-------------------------------

  
**Chenyu Kung / Operation Manager**  
**Signed for and on behalf of**  
**SGS TAIWAN LTD.**  
**Chemical Laboratory – Taipei**

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# Test Report

No. : CE/2008/C5644 Date : 2008/12/25 Page : 2 of 7

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



## Test Result(s)

PART NAME NO.1 : WHITE PLASTIC

Test Item (s):	Unit	Method	MDL	Result
				No.1
Cadmium (Cd)	mg/kg	With reference to IEC 62321/2nd CDV (111/95/CDV). Determination of Cadmium by ICP-AES.	2	n.d.
Lead (Pb)	mg/kg	With reference to IEC 62321/2nd CDV (111/95/CDV). Determination of Lead by ICP-AES.	2	n.d.
Mercury (Hg)	mg/kg	With reference to IEC 62321/2nd CDV (111/95/CDV). Determination of Mercury by ICP-AES.	2	n.d.
Hexavalent Chromium Cr(VI)	mg/kg	With reference to US EPA Method 3060A & 7196A for Hexavalent Chromium for non-metallic samples. Analysis was performed by UV/Vis Spectrometry.	2	n.d.
Halogen		With reference to BS EN 14582:2007. Analysis was performed by IC method for F , Cl , Br, I content.		
Halogen-Fluorine (F) (CAS No.: 014762-94-8)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC method for Fluorine content.	50	n.d.
Halogen-Chlorine (Cl) (CAS No.: 022537-15-1)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC method for Chlorine content.	50	n.d.
Halogen-Bromine (Br) (CAS No.: 010097-32-2)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC method for Bromine content.	50	n.d.
Halogen-Iodine (I) (CAS No.: 014362-44-8)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC method for Iodine content.	50	n.d.

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# Test Report

No. : CE/2008/C5644 Date : 2008/12/25 Page : 3 of 7

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



Test Item (s):	Unit	Method	MDL	Result
				No.1
<b>Sum of PBBs</b>	mg/kg	With reference to IEC 62321/2nd CDV (111/95/CDV). Determination of PBB and PBDE by GC/MS.	-	n.d.
Monobromobiphenyl			5	n.d.
Dibromobiphenyl			5	n.d.
Tribromobiphenyl			5	n.d.
Tetrabromobiphenyl			5	n.d.
Pentabromobiphenyl			5	n.d.
Hexabromobiphenyl			5	n.d.
Heptabromobiphenyl			5	n.d.
Octabromobiphenyl			5	n.d.
Nonabromobiphenyl			5	n.d.
Decabromobiphenyl			5	n.d.
<b>Sum of PBDEs</b>			-	n.d.
Monobromodiphenyl ether			5	n.d.
Dibromodiphenyl ether			5	n.d.
Tribromodiphenyl ether			5	n.d.
Tetrabromodiphenyl ether			5	n.d.
Pentabromodiphenyl ether			5	n.d.
Hexabromodiphenyl ether			5	n.d.
Heptabromodiphenyl ether			5	n.d.
Octabromodiphenyl ether			5	n.d.
Nonabromodiphenyl ether			5	n.d.
Decabromodiphenyl ether			5	n.d.

- Note : 1. mg/kg = ppm; 0.1wt% = 1000ppm  
2. n.d. = Not Detected  
3. MDL = Method Detection Limit  
4. " - " = Not Regulated

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## Test Report

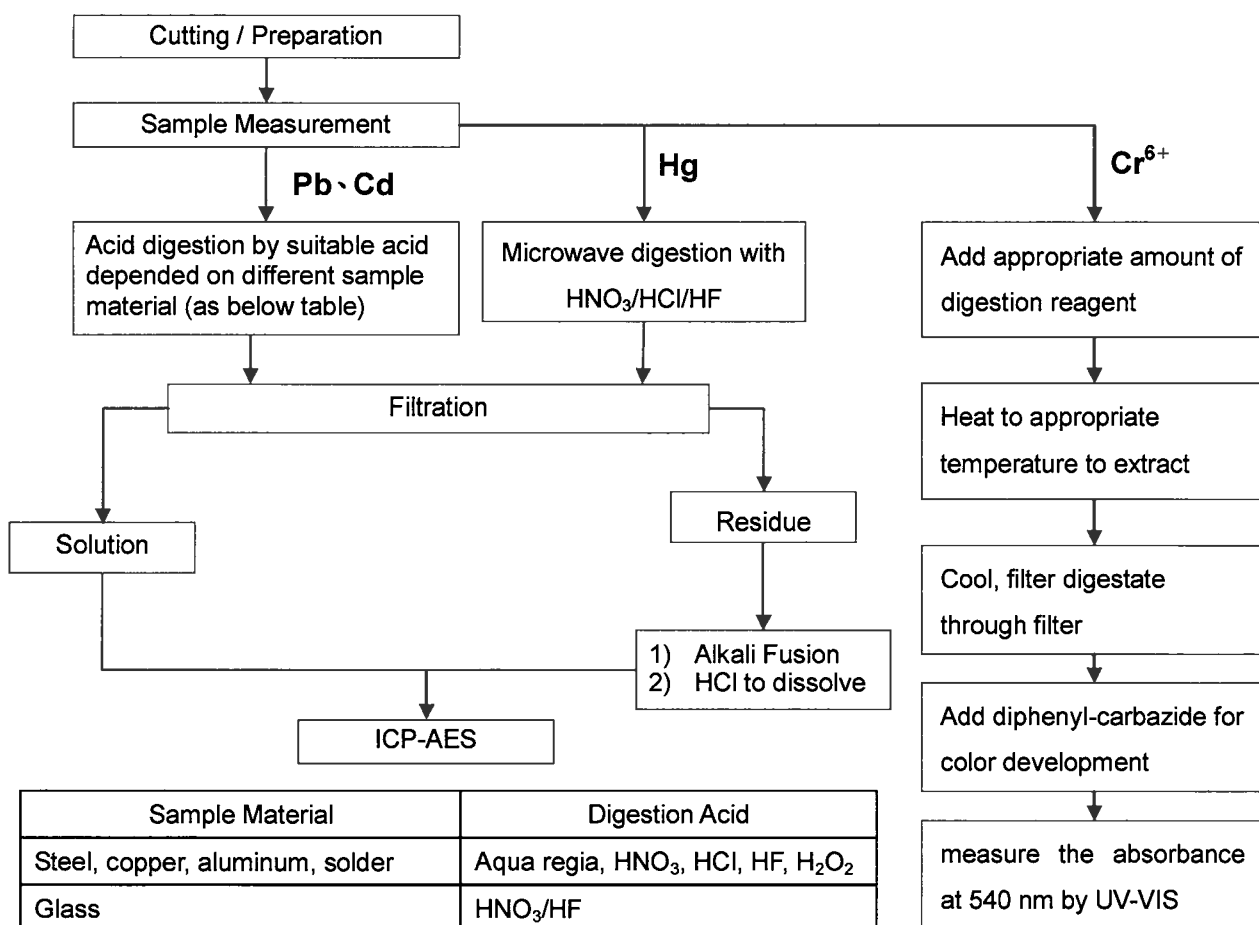
No. : CE/2008/C5644 Date : 2008/12/25 Page : 4 of 7

LITTELFUSE INC.

800 E. NORTHWEST HIGHWAY, DES PLAINES, IL 60016



- 1) These samples were dissolved totally by pre-conditioning method according to below flow chart.  
(Cr<sup>6+</sup> test method excluded)
- 2) Name of the person who made measurement: Climbgreat Yang
- 3) Name of the person in charge of measurement: Troy Chang





# Test Report

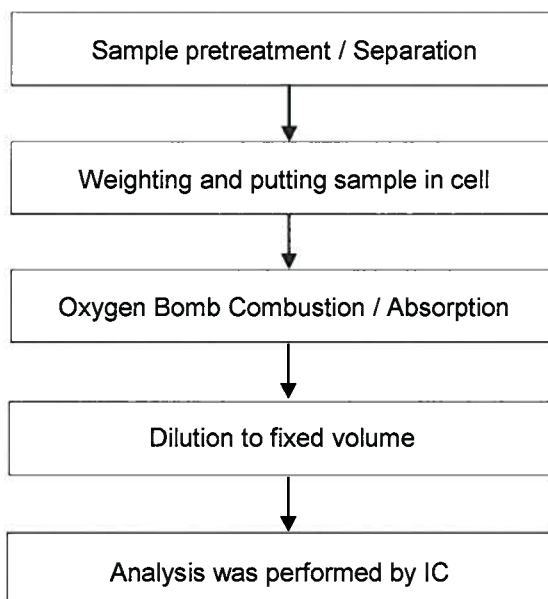
No. : CE/2008/C5644 Date : 2008/12/25 Page : 5 of 7

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



## Analytical flow chart of halogen content

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



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# Test Report

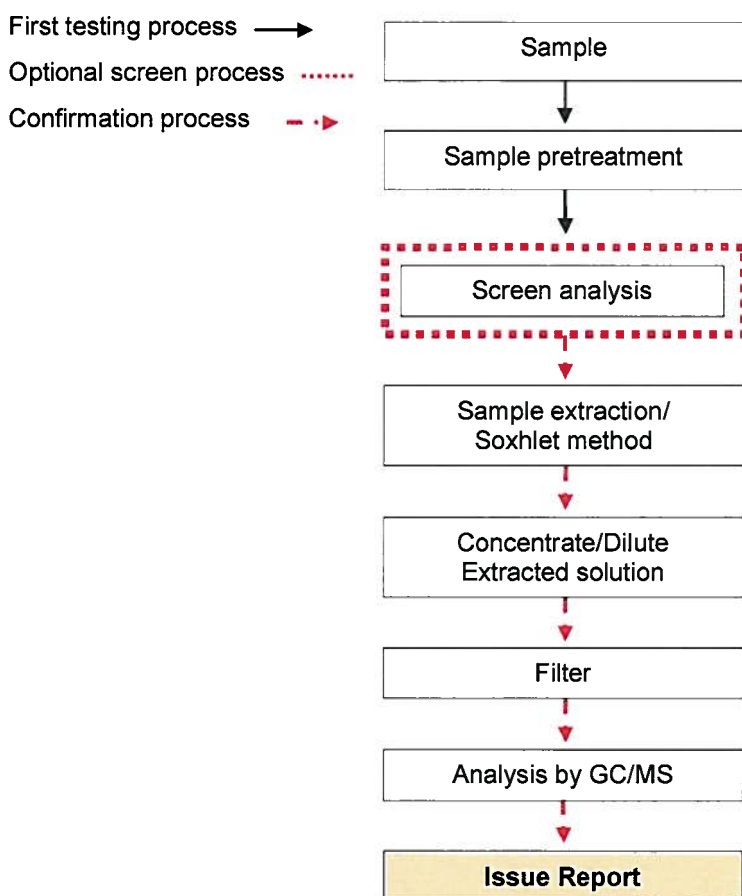
No. : CE/2008/C5644 Date : 2008/12/25 Page : 6 of 7

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



## PBB/PBDE analytical FLOW CHART

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



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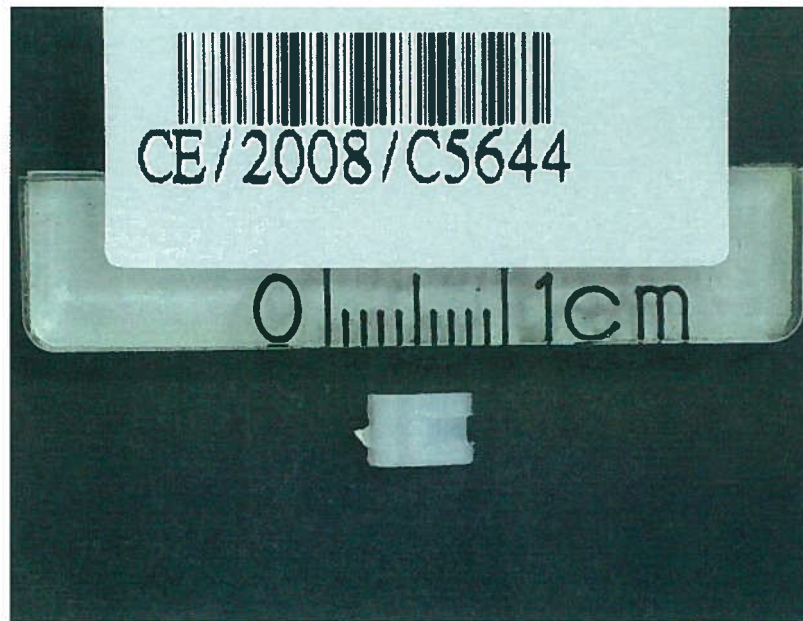
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LITTELFUSE INC.

800 E. NORTHWEST HIGHWAY, DES PLAINES, IL 60016



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# Test Report

No. : CE/2008/C5680

Date : 2008/12/25

Page : 1 of 4

LITTELFUSE INC.

800 E. NORTHWEST HIGHWAY, DES PLAINES, IL 60016




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

Sample Description : CLIP  
Style/Item No. : 883-064  
Sample Receiving Date : 2008/12/22  
Testing Period : 2008/12/22 TO 2008/12/25

=====  
Test Requested : In accordance with the RoHS Directive 2002/95/EC, and its amendment directives.

Test Method :  
(1) With reference to IEC 62321/2nd CDV (111/95/CDV).  
Determination of Cadmium by ICP-AES.  
(2) With reference to IEC 62321/2nd CDV (111/95/CDV).  
Determination of Lead by ICP-AES.  
(3) With reference to IEC 62321/2nd CDV (111/95/CDV).  
Determination of Mercury 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 refer to next page(s).

  
Nicole Chien / Supervisor  
Signed for and on behalf of  
SGS TAIWAN LTD.  
Chemical Laboratory - Taipei



# Test Report

No. : CE/2008/C5680

Date : 2008/12/25

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LITTELFUSE INC.

800 E. NORTHWEST HIGHWAY, DES PLAINES, IL 60016



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

Test Item (s):	Method (Refer to)	Result	MDL
		No.1	
Cadmium (Cd)	(1)	n.d.	2
Lead (Pb)	(2)	24	2
Mercury (Hg)	(3)	n.d.	2
Hexavalent Chromium Cr(VI)	(4)	n.d.	2

## TEST PART DESCRIPTION:

NO.1 : SILVER COLORED METAL

Note : 1. mg/kg = ppm ; 0.1wt% = 1000ppm

2. n.d. = Not Detected

3. MDL = Method Detection Limit

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## Test Report

No. : CE/2008/C5680

Date : 2008/12/25

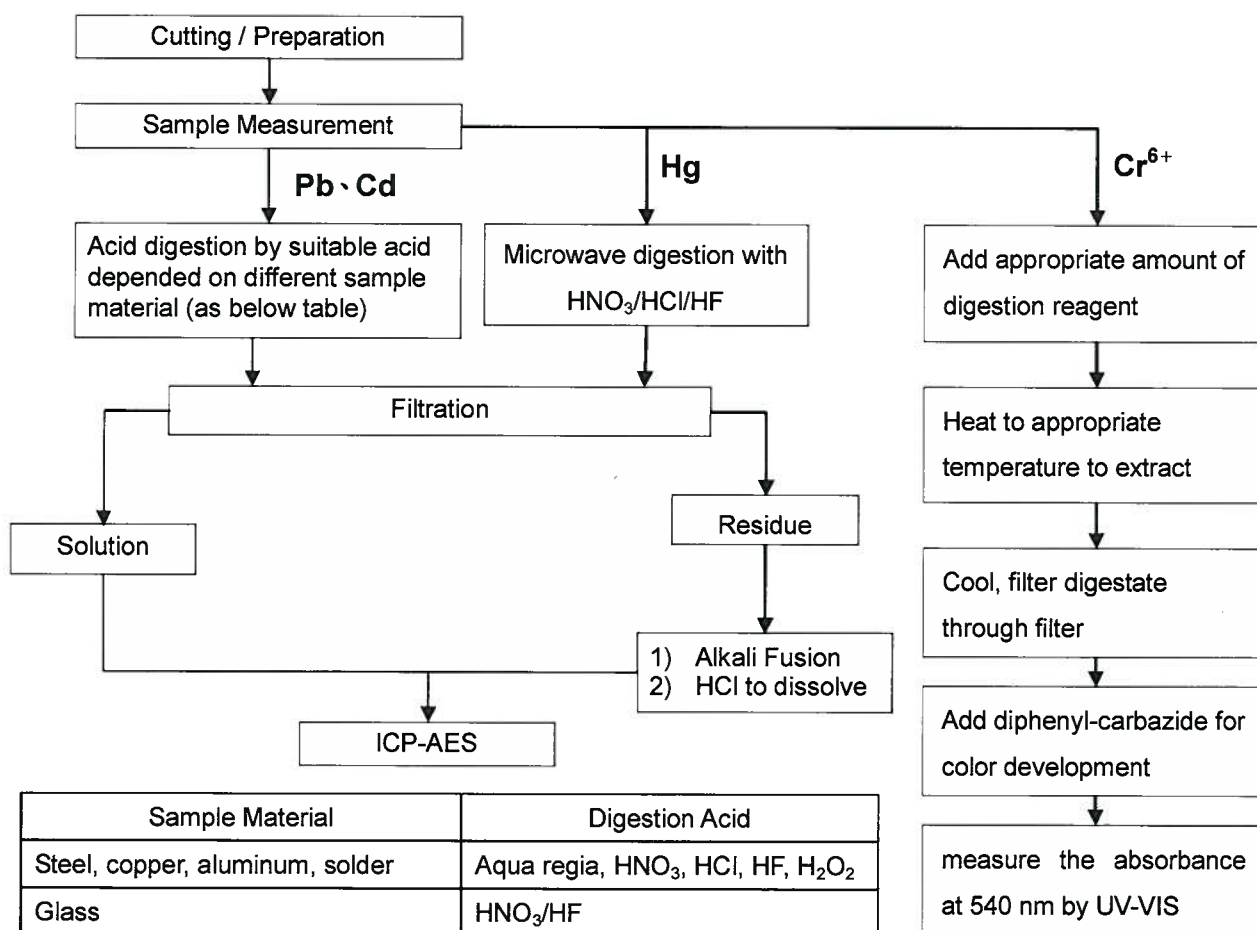
Page : 3 of 4

LITTELFUSE INC.

800 E. NORTHWEST HIGHWAY, DES PLAINES, IL 60016



- 1) These samples were dissolved totally by pre-conditioning method according to below flow chart.  
(Cr<sup>6+</sup> test method excluded)
- 2) Name of the person who made measurement: Climbgreat Yang
- 3) Name of the person in charge of measurement: Troy Chang



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## Test Report

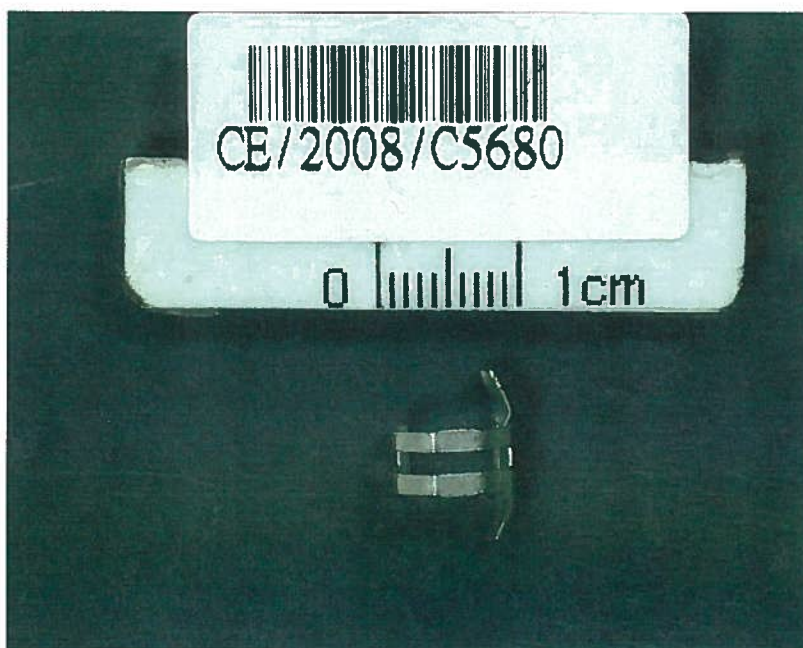
No. : CE/2008/C5680

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LITTELFUSE INC.

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# Test Report

No. : CE/2008/78577 Date : 2008/08/04

Page : 1 of 4

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




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

Sample Description : SOLDER INSERT  
Style/Item No. : 927-310  
Sample Receiving Date : 2008/07/30  
Testing Period : 2008/07/30 TO 2008/08/04

Test Requested : In accordance with the RoHS Directive 2002/95/EC, and its amendment directives.

Test Method : With reference to IEC 62321/2nd CDV (111/95/CDV)  
Procedures for the Determination of Levels of Regulated  
Substances in Electrotechnical Products.  
(1) Determination of Cadmium by ICP-AES.  
(2) Determination of Lead by ICP-AES.  
(3) Determination of Mercury by ICP-AES.  
(4) Determination of Hexavalent Chromium for metallic samples  
by Spot test / boiling water extraction Method.

Test Result(s) : Please refer to next page(s).

  
Nicole Chien / Supervisor  
Signed for and on behalf of  
SGS TAIWAN LTD.  
Chemical Laboratory - Taipei

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# Test Report

No. : CE/2008/78577 Date : 2008/08/04

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



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

Test Item (s):	Method (Refer to)	Result	MDL
		No.1	
Cadmium (Cd)	(1)	n.d.	2
Lead (Pb)	(2)	13	2
Mercury (Hg)	(3)	n.d.	2
Hexavalent Chromium Cr(VI) by Spot test / boiling water extraction	(4)	Negative	See Note 4

## TEST PART DESCRIPTION:

NO.1 : SILVER COLORED SOLDER INSERT

Note : 1. mg/kg = ppm

2. n.d. = Not Detected

3. MDL = Method Detection Limit

4. Spot-test:

Negative = Absence of Cr(VI) coating / surface layer,

Positive = Presence of Cr(VI) coating / surface layer;

(The tested sample should be further verified by boiling-water-extraction method if the spot test result cannot be confirmed.)

Boiling-water-extraction:

Negative = Absence of Cr(VI) coating / surface layer.

Positive = Presence of Cr(VI) coating / surface layer;

the detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm<sup>2</sup> sample surface area.

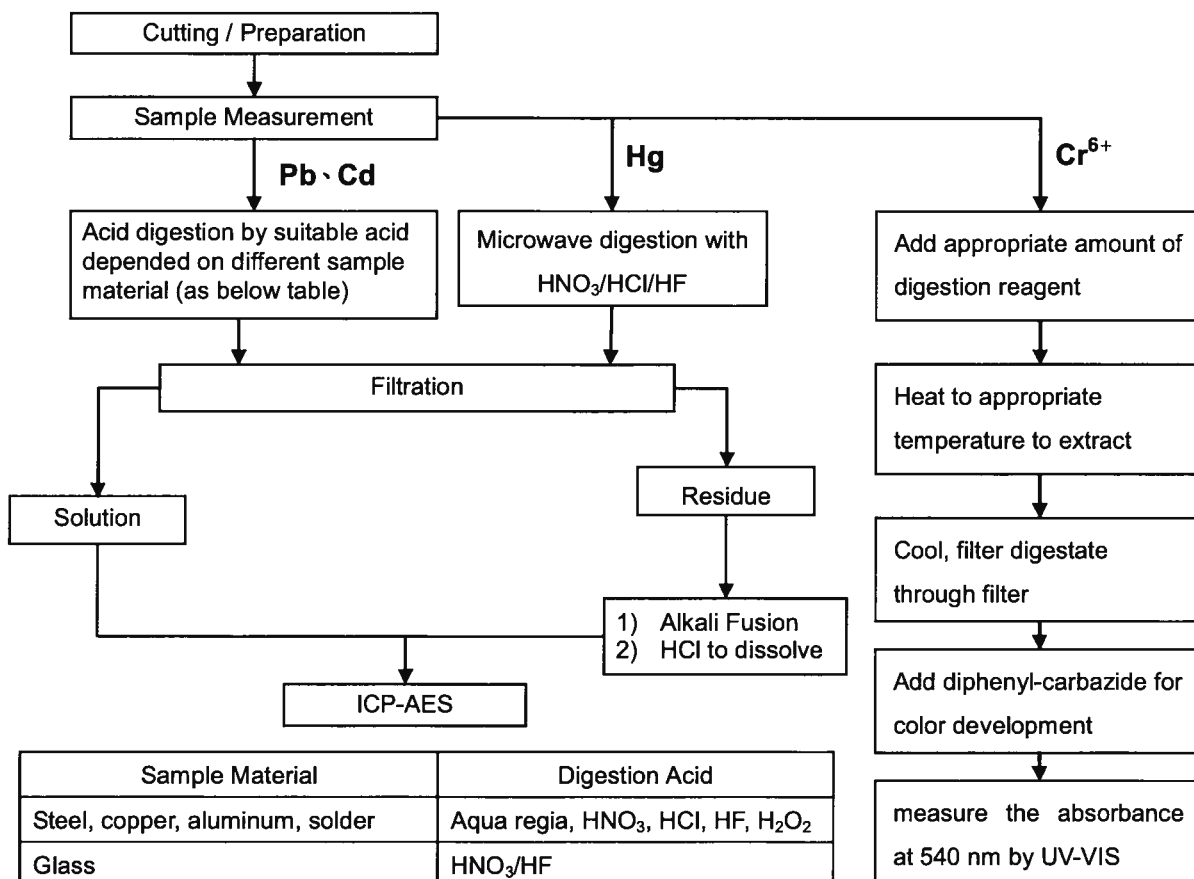
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800 E. NORTHWEST HIGHWAY, DES PLAINES, IL 60016

[illegible]

- 1) These samples were dissolved totally by pre-conditioning method according to below flow chart.  
(Cr<sup>6+</sup> test method excluded)
- 2) Name of the person who made measurement: Climbgreat Yang
- 3) Name of the person in charge of measurement: Troy Chang



Sample Material	Digestion Acid
Steel, copper, aluminum, solder	Aqua regia, HNO <sub>3</sub> , HCl, HF, H <sub>2</sub> O <sub>2</sub>
Glass	HNO <sub>3</sub> /HF
Gold, platinum, palladium, ceramic	Aqua regia
Silver	HNO <sub>3</sub>
Plastic	H <sub>2</sub> SO <sub>4</sub> , H <sub>2</sub> O <sub>2</sub> , HNO <sub>3</sub> , HCl
Others	Any acid to total digestion

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## Test Report

No. : CE/2008/78577 Date : 2008/08/04

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LITTELFUSE INC.

800 E. NORTHWEST HIGHWAY, DES PLAINES, IL 60016



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