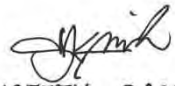




## ICP Test Report Certification Packet

Company name: Littelfuse, Inc.  
Product Series: 01000020Z  
Product #: 01000020Z series  
Issue Date: July 18, 2011

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:   
KRISTEEN BACILA  

---

  
<Global EHS Engineer>

(1) Parts, sub-materials and unit parts

This document covers the 01000020Z 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 :



**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	N/A	01000020Z – base	3-6
2	N/A	01000020Z – plating	7-10



## 測試報告 Test Report

號碼(No.): CE/2010/C4317      日期(Date): 2010/12/29      頁數(Page): 1 of 4



以下測試樣品係由客戶送樣，且由客戶聲稱並經客戶確認如下 (The following samples was/were submitted and identified by/on behalf of the client as):

樣品名稱(Sample Description) : 磷青銅 (PHOSPHOR BRONZE)  
 樣品型號(Style/Item No.) : C5191  
 收件日期(Sample Receiving Date) : 2010/12/23  
 測試期間(Testing Period) : 2010/12/23 TO 2010/12/29

=====  
 測試需求(Test Requested) : 參照 RoHS 2002/95/EC 及其修定指令要求. (In accordance with the RoHS Directive 2002/95/EC, and its amendment directives).

測試方法(Test Method) : 參考 IEC 62321: 2008 方法檢測. (With reference to IEC 62321: 2008. Procedures for the Determination of Levels of Regulated Substances in Electrotechnical Products).

- (1) 以感應耦合電漿原子發射光譜儀檢測鎘含量. / Determination of Cadmium by ICP-AES.
- (2) 以感應耦合電漿原子發射光譜儀檢測鉛含量. / Determination of Lead by ICP-AES.
- (3) 以感應耦合電漿原子發射光譜儀檢測汞含量. / Determination of Mercury by ICP-AES.
- (4) 以 Spot test / boiling water extraction 方法檢測六價鉻含量. / Determination of Hexavalent Chromium by Spot test / boiling water extraction Method.

測試結果(Test Results) : 請見下一頁 (Please refer to next pages).

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

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## 測試報告 Test Report

號碼(No.): CE/2010/C4317

日期(Date): 2010/12/29

頁數(Page): 2 of 4



測試結果(Test Results) 單位(Unit): mg/kg

測試項目 (Test Items)	測試方法 Method (Refer to)	結果 (Result)	方法偵測 極限值 (MDL)
		No.1	
鎘 / Cadmium (Cd)	(1)	n.d.	2
鉛 / Lead (Pb)	(2)	20	2
汞 / Mercury (Hg)	(3)	n.d.	2
六價鉻 / Hexavalent Chromium Cr(VI) by Spot test / boiling water extraction	(4)	Negative	See Note 4

### 測試部位描述 (TEST PART DESCRIPTION):

No.1 : 銅色金屬片 (COPPER COLORED METAL SHEET)

### 備註(Note):

1. mg/kg = ppm ; 0.1wt% = 1000ppm
2. n.d. = Not Detected (未檢出)
3. MDL = Method Detection Limit (方法偵測極限值)
4. Spot-test:

Negative = Absence of Cr(VI) coating / surface layer(鍍層中偵測不到六價鉻),

Positive = Presence of Cr(VI) coating / surface layer(鍍層中偵測到六價鉻);

The tested sample should be further verified by boiling-water-extraction method if the spot test result cannot be confirmed. (當該測項無法確認時, 測試樣品可藉由boiling-water-extraction測試方法進一步確認)

### Boiling-water-extraction:

Negative = Absence of Cr(VI) coating / surface layer(鍍層中偵測不到六價鉻),

Positive = Presence of Cr(VI) coating / surface layer(鍍層中偵測到六價鉻);

The detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm<sup>2</sup> sample surface area. / 該溶液濃度 ≥ 0.02 mg/kg with 50 cm<sup>2</sup> (sample surface area)

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## 測試報告 Test Report

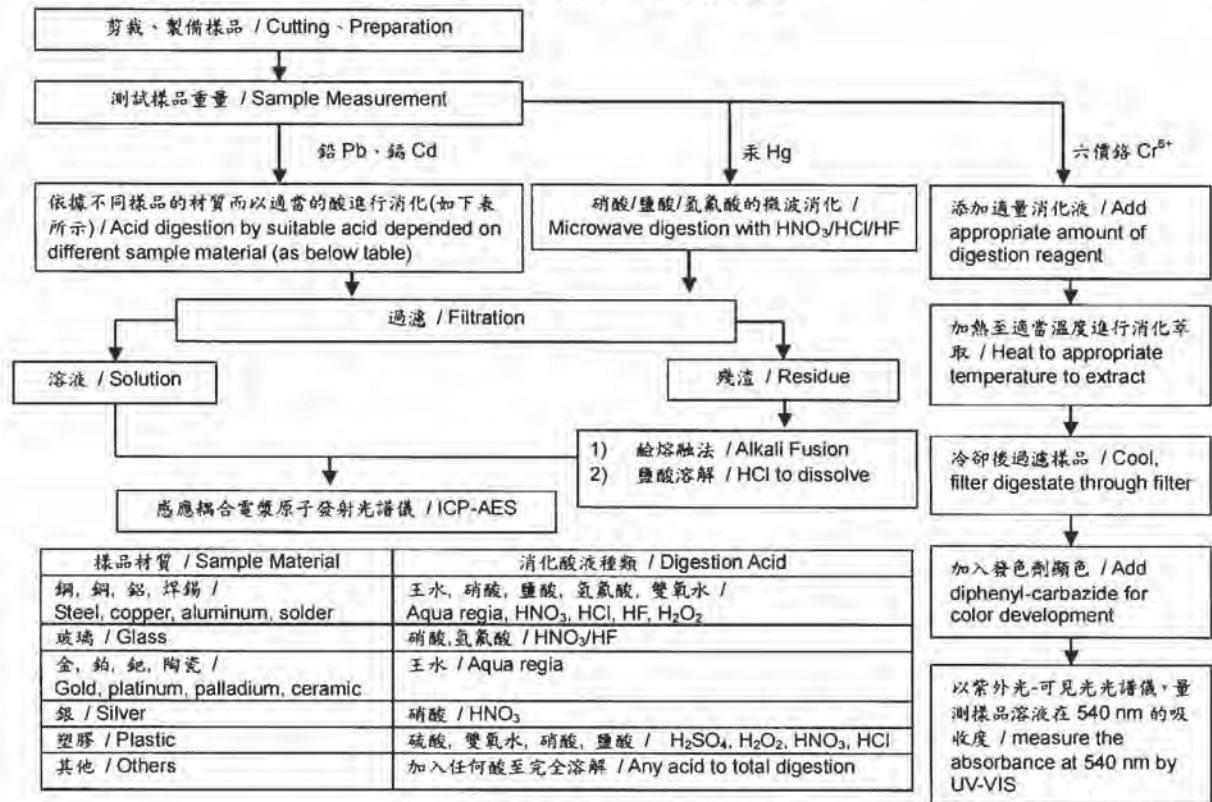
號碼(No.): CE/2010/C4317

日期(Date): 2010/12/29

頁數(Page): 3 of 4



- 1) 根據以下的流程圖之條件，樣品已完全溶解。(六價鉻測試方法除外) / These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr<sup>6+</sup> test method excluded)
- 2) 測試人員：楊登偉 / Name of the person who made measurement: Climbgreat Yang
- 3) 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang



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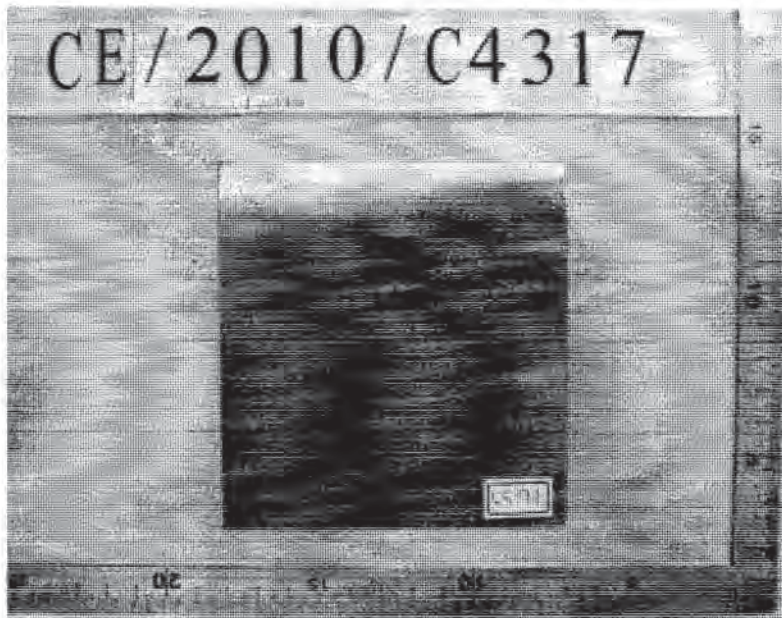


## 測試報告 Test Report

號碼(No.): CE/2010/C4317

日期(Date): 2010/12/29

頁數(Page): 4 of 4



\*\* 報告結尾(End of Report) \*\*

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# 測試報告 Test Report

號碼(No.): CE/2011/35600A 日期(Date): 2011/03/31 頁數(Page): 1 of 4



以下測試樣品係由客戶送樣，且由客戶聲稱並經客戶確認如下 (The following samples was/were submitted and identified by/on behalf of the client as):

樣品名稱(Sample Description) : 電鍍鍍底純錫製程之沖壓引伸電子零件 (TIN-NICKEL PLATED BRASS MATERIAL PRESSED DUCTILE ELECTRONIC PARTS)

收件日期(Sample Receiving Date) : 2011/03/22

測試期間(Testing Period) : 2011/03/22 TO 2011/03/29 AND 2011/03/29 TO 2011/03/31

測試需求(Test Requested) : 參照 RoHS 2002/95/EC 及其修定指令要求。 (In accordance with the RoHS Directive 2002/95/EC, and its amendment directives).

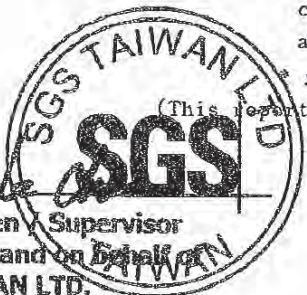
測試方法(Test Method) : 參考IEC 62321: 2008方法檢測。 (With reference to IEC 62321: 2008. Procedures for the Determination of Levels of Regulated Substances in Electrotechnical Products).

- (1) 酸洗脫鍍層，以感應耦合電漿原子發射光譜儀檢測鎘含量。 / Application of modified digestion by surface etching, determination of Cadmium by ICP-AES.
- (2) 酸洗脫鍍層，以感應耦合電漿原子發射光譜儀檢測鉛含量。 / Application of modified digestion by surface etching, determination of Lead by ICP-AES.
- (3) 酸洗脫鍍層，以感應耦合電漿原子發射光譜儀檢測汞含量。 / Application of modified digestion by surface etching, determination of Mercury by ICP-AES.
- (4) 以Spot test / boiling water extraction方法檢測六價鉻含量。 / Determination of Hexavalent Chromium by Spot test / boiling water extraction Method.

測試結果(Test Results) : 請見下一頁 (Please refer to next pages).

結論(Conclusion) : 根據客戶所提供的樣品，其鎘、鉛、汞及六價鉻的測試結果符合RoHS(2002/95/EC)及其修定指令之要求 (Based upon the performed tests by submitted samples, the test results of Cadmium, Lead, Mercury and Hexavalent Chromium Cr(VI) comply with the limits of RoHS Directive 2002/95/EC and its subsequent amendments).

此份報告為加測及合併CE/2011/35600之報告 \*  
(This report is added testing and combined with CE/2011/35600)



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

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# 測試報告 Test Report

號碼(No.): CE/2011/35600A

日期(Date): 2011/03/31

頁數(Page): 2 of 4



測試結果(Test Results) 單位(Unit): mg/kg

測試項目 (Test Items)	測試方法 Method (Refer to)	結果 (Result)	方法偵測 極限值 (MDL)	RoHS 限值 (Limit)
		No.1		
鎘 / Cadmium (Cd)	(1)	n.d.	2	100
鉛 / Lead (Pb)	(2)	24	2	1000
汞 / Mercury (Hg)	(3)	n.d.	2	1000
六價鉻 / Hexavalent Chromium Cr(VI) by Spot test / boiling water extraction	(4)	Negative	See Note 4	#

**測試部位描述 (TEST PART DESCRIPTION):**

No.1 : 銀色金屬鍍層 (PLATING LAYER OF SILVER COLORED METAL)

**備註(Note):**

1. mg/kg = ppm; 0.1wt% = 1000ppm
2. n.d. = Not Detected (未檢出)
3. MDL = Method Detection Limit (方法偵測極限值)
4. Spot-test:

Negative = Absence of Cr(VI) coating / surface layer(鍍層中偵測不到六價鉻),

Positive = Presence of Cr(VI) coating / surface layer(鍍層中偵測到六價鉻);

The tested sample should be further verified by boiling-water-extraction method if the spot test result cannot be confirmed. (當該測項無法確認時, 測試樣品可藉由boiling-water-extraction測試方法進一步確認)

**Boiling-water-extraction:**

Negative = Absence of Cr(VI) coating / surface layer(鍍層中偵測不到六價鉻),

Positive = Presence of Cr(VI) coating / surface layer(鍍層中偵測到六價鉻);

The detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm<sup>2</sup> sample surface area. / 該溶液濃度 $\geq$ 0.02 mg/kg with 50 cm<sup>2</sup> (sample surface area)

5. # = Positive indicates the presence of Cr(VI) on the tested areas and result be regarded as not comply with RoHS requirement. (Positive表示測試區域之六價鉻不符合RoHS要求)

Negative indicates the absence of Cr(VI) on the tested areas and result be regarded as comply with RoHS requirement. (Negative表示測試區域之六價鉻符合RoHS要求)

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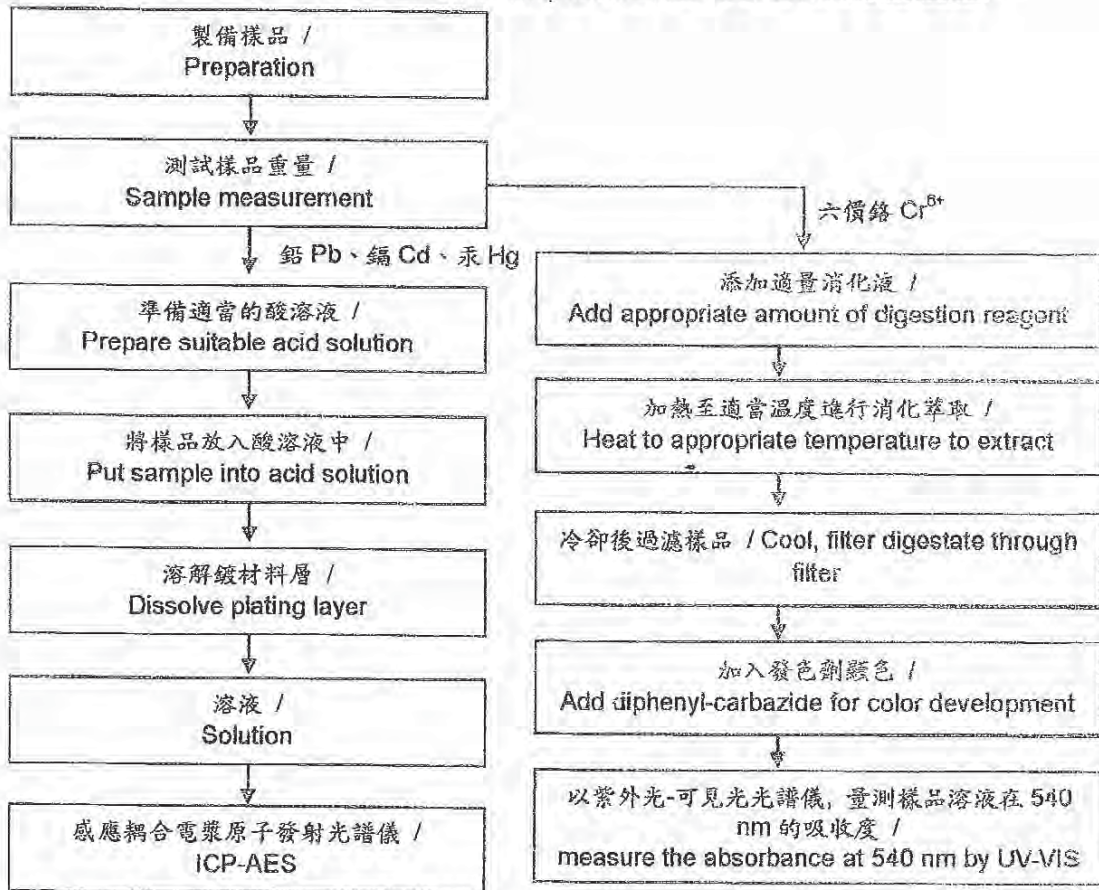
## 測試報告 Test Report

號碼(No.): CE/2011/35600A 日期(Date): 2011/03/31 頁數(Page): 3 of 4



- 1) 根據以下的流程圖之條件，樣品已完全溶解。(六價鉻測試方法除外) / These samples were dissolved totally by pre-conditioning method according to below flow chart. ( $Cr^{6+}$  test method excluded)
- 2) 測試人員：楊登偉 / Name of the person who made measurement: Climbgreat Yang
- 3) 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang

### 鍍層重金屬測試流程圖 / Flow Chart of Stripping method for metal analysis



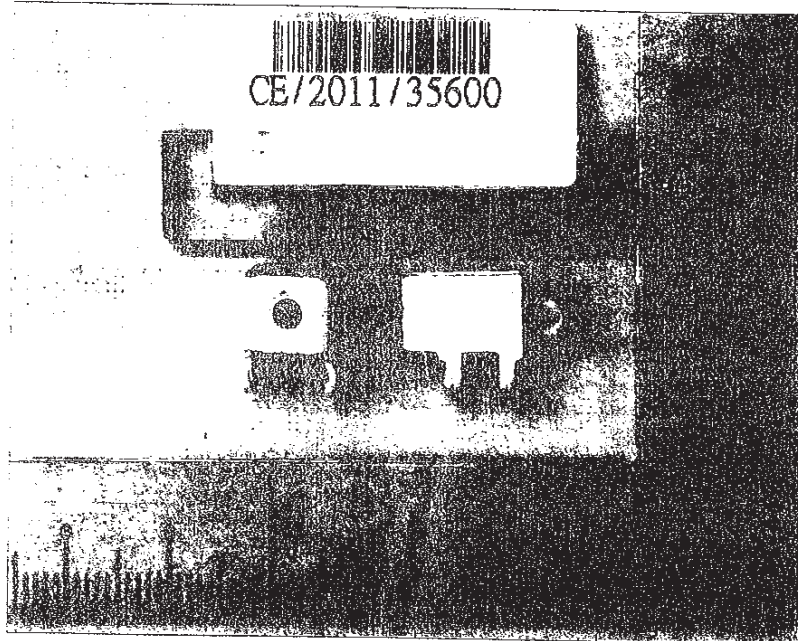
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## 測試報告 Test Report

號碼(No.): CE/2011/35600A

日期(Date): 2011/03/31

頁數(Page): 4 of 4



\*\* 報告結尾(End of Report) \*\*

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