

## Certificate of non-use of The Controlled Substances

Company name           Littelfuse, Inc

Product Covered        Thyristor SOT-223 Package

Issue Date              June 26, 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.

It is also certified by Littelfuse, Inc., that the products listed in this report do not contain Halogens and their compounds judged per widely accepted industrial guidelines.

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 \_\_\_\_\_

< Koichiro Yoshimoto, Senior Product Engineer, Littelfuse, Inc.>

(1) Parts, sub-materials and unit parts

This document covers Thyristor SOT-223 Package, supplied by Littelfuse, LP. Please see page 2 for the list of products covered.

< Materials used >

Please see table 1 on page 3 and table 2 on page 4 of this document.

(2) The analysis result on all measurable substances

Please see annex 1 through 8 attached to this document.

Remarks :

**1. Pb (lead) contained in die attach (item 3) and passivation glass in wafer (item 6) are categorized as exempt in RoHS Annex 5 & 7.**

**Please refer to Annex 7 of this report for the extract of the applicable exemptions of RoHS (EU Directive 2002/95/EC)**

**Table 1: Littelfuse Part Number covered by this report**

Standard (Catalog) Part Number			SPECIAL DEVICE P/N
L0103DTRP	L0109DTRP	S4X8TSRP	Any Special P/N which has base standard P/N listed in this table.
L0103DTRP4	L0109DTRP4	S4X8TS1RP	
L0103MTRP	L0109MTRP	S4X8TS2RP	
L0103MTRP4	L0109MTRP4	S402TSRP	S940S6X8TSRP
L0103NTRP	L0109NTRP	S6X8TSRP	
L0103NTRP4	L0109NTRP4	S6X8TS1RP	
L0107DTRP		S6X8TS2RP	
L0107DTRP4	LX803DTRP	S602TSRP	
L0107MTRP	LX803MTRP	S8X8TSRP	
L0107MTRP4	LX807DTRP	S8X8TS1RP	
L0107NTRP	LX807MTRP	S8X8TS2RP	
L0107NTRP4			

**Table 2: Homogeneous Material Used**

#	Description	Name of Material	Type	Analysis data
1	Lead finish	Matte-Tin	metal	annex 1
2	Molding compound	Epoxy resin	plastic	annex 2
3	Die attach	solder	metal	annex 3 Pb for this solder application is exempted by RoHS Annex 7. Please refer to Annex 7 of this report for the RoHS exemption.
4	Die bonding wire	Gold	metal	annex 4
5	Lead frame	copper alloy	metal	annex 5
6	Silicon die	silicon	metal	annex 6 Pb in the report is from passivation glass and is exempted by RoHS Annex 5. Please refer to Annex 7 of this report for the RoHS exemption.
		aluminum	metal	
		glass	glass	

**Table 3: RoHS-regulated substance in raw materials**

Components	Analysis Result						
	Cd Cadmium	Cr Chromium	Hg Mercury	Pb Lead	PBB	PBDE	TOTAL HALOGEN
<b>As Component Total</b> (Typical Values)	< 2ppm	< 2ppm	< 2ppm	<2 ppm* <sup>1</sup> (0.3% <sup>2</sup> )	< 5 ppm	< 5 ppm	< 112 ppm
<b>Outside lead finish</b> (Matte-Tin plating)  See Annex 1 for the detail.	< 2ppm	< 2ppm	< 2ppm	49ppm	< 5ppm	< 5ppm	---
<b>Epoxy Resin compound</b> (mixture of resin, filler and fire retardant)  See Annex 2 for the detail.	< 2ppm	< 2ppm	< 2ppm	< 2ppm	< 5ppm	< 5ppm	112ppm
<b>Die Attach Solder</b> (Solder)  See Annex 3 for the detail.	< 2ppm	< 2ppm	< 2ppm	92.5% <sup>3</sup>	< 5ppm	< 5ppm	---
<b>Die-bonding Wire</b> (Gold wire)  See Annex 4 for the detail.	< 2ppm	< 2ppm	< 2ppm	< 2ppm	< 5ppm	< 5ppm	< 50ppm
<b>Lead frame</b> (Copper Alloy C194)  See Annex 5 for the detail.	< 2ppm	< 2ppm	< 2ppm	16ppm	< 5ppm	< 5ppm	---
<b>Silicon Die</b> (Silicon + Metal electrode + passivation)  See Annex 6 for the detail.	< 2ppm	< 2ppm	< 2ppm	1.9 % <sup>3</sup>	< 5ppm	< 5ppm	< 50ppm

\*1 Less than 2 ppm Pb content overall, excluding Pb from the wafer passivation glass on silicon die.

\*2 Up to 0.4% of Pb (lead) content overall, including the RoHS-exempted use of Pb

\*3 Pb (lead) contained in die-attach solder and passivation glass are exempted from restriction by RoHS Annex 5 & 7.

**Please refer to Annex 7 of this report for the applicable exemptions of RoHS (EU Directive 2002/95/EC)**

# Annex 1: Analysis Result of Outside Lead Plating Material (Page 1 of 5)



## Test Report

No. LPCI/00919/11  
CTS Ref. CTS/11/0153/Success-Crown

Date: 18/01/2011

Page: 1 of 5

CROWN EMPEROR LTD  
ROOM 2101, HONG KONG TRADE CENTRE  
161-7 DES VOEUX ROAD CENTRAL, HONG KONG

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

Sample Description : SNTITE-24, 99.95% PURE TIN ANODE  
Sample Receiving Date : 12/01/2011  
Testing Period : 12/01/2011 to 16/01/2011

Test Requested : In accordance with the RoHS Directive 2002/95/EC, and its amendment directives.  
Test Method : Please refer to next page(s).  
Test Results : Please refer to next page(s).  
Analysts : Ng Mei Kheng & Loi Woan Yee

SGS LABORATORY SERVICES (M) SDN. BHD.



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

This document is issued by the Company in strict accordance with the General Conditions of Sale (www.sgslab.com) and Terms and Conditions for Electronic Device (www.sgslab.com). Attention is drawn to the limitations of liability, indemnification and intellectual property as stated therein. Once it printed the electronic documents to be treated as an original with the meaning of UCP 600 Article 20D. The entire company's documents may be held on www.sgslab.com. Any loss of the documents is subject to the distribution control system before the Company's change of the file or the system only and within the limits of its hardware, policy. The Company does not accept any liability for the data of the documents stored on the system, from exercising all their rights and obligations under the applicable documents. This is applicable to the results shown in this report refer only to the sample(s) tested and such sample(s) are retained for three months only.

SGS Laboratory Services (M) Sdn. Bhd. No 28 Jalan Anggerik Vanilla 31.99 Kota Kemuning 40460 Selangor Darul Ehsan, Malaysia  
(Company No. 63972-M) t +6 (03) 5121 2320 f +6 (03) 5121 9082 www.sgslab.com

Member of the SGS Group (SGS SA)

### Annex 1: Analysis Result of Outside Lead Plating Material (Page 2 of 5)



### Test Report

No. LPCI00919/11  
CTS Ref. CTS/11/0152/Success-Crown

Date: 18/01/2011

Page: 2 of 5

Test results:

**Test Part Description :**

Sample Description : SNTITE-24, 99.99% PURE TIN ANODE

**RoHS Directive 2002/95/EC**

Test Item(s):	Unit	Test Method	Results	MDL
Cadmium(Cd)	mg/kg	With reference to EPA Method 3051A, and performed by ICP-OES	N.D.	2
Lead (Pb)	mg/kg	With reference to EPA Method 3051A, and performed by ICP-OES	49	2
Mercury (Hg)	mg/kg	With reference to EPA Method 3051A, and performed by ICP-OES	N.D.	2
Hexavalent Chromium (CrVI)	mg/kg	With reference to EPA Method 3060A & 7196A, and performed by UV-VIS Spectrophotometry	N.D.	2
<b>Sum of PBBs</b>	mg/kg	With reference to EPA Method 3540C/3550C, and performed by GC-MS	N.D.	-
Monobromobiphenyl	mg/kg	With reference to EPA Method 3540C/3550C, and performed by GC-MS	N.D.	5
Dibromobiphenyl	mg/kg	With reference to EPA Method 3540C/3550C, and performed by GC-MS	N.D.	5
Tribromobiphenyl	mg/kg	With reference to EPA Method 3540C/3550C, and performed by GC-MS	N.D.	5
Tetrabromobiphenyl	mg/kg	With reference to EPA Method 3540C/3550C, and performed by GC-MS	N.D.	5
Hexabromobiphenyl	mg/kg	With reference to EPA Method 3540C/3550C, and performed by GC-MS	N.D.	5
Pentabromobiphenyl	mg/kg	With reference to EPA Method 3540C/3550C, and performed by GC-MS	N.D.	5
Heptabromobiphenyl	mg/kg	With reference to EPA Method 3540C/3550C, and performed by GC-MS	N.D.	5
Octabromobiphenyl	mg/kg	With reference to EPA Method 3540C/3550C, and performed by GC-MS	N.D.	5
Nonabromobiphenyl	mg/kg	With reference to EPA Method 3540C/3550C, and performed by GC-MS	N.D.	5
Decabromobiphenyl	mg/kg	With reference to EPA Method 3540C/3550C, and performed by GC-MS	N.D.	5

SGS LABORATORY SERVICES (M) SDN. BHD.



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

This document is issued by the Company in strict accordance with the General Conditions of Sale (www.sgs.com) and Terms and Conditions for Electronic Document (www.sgs.com). It is the property of the Company and its use is restricted to the client who has ordered the analysis. It must be treated as an original with the meaning of LCP 800 Article 20. The signature of the analyst may be used for legal purposes. Any use of the document for other purposes without the express written consent of the Company is strictly prohibited. The Company shall not be held responsible for any loss or damage to the client's property or data. The Company shall not be held responsible for any loss or damage to the client's property or data. The Company shall not be held responsible for any loss or damage to the client's property or data. This document is intended for the use of the client and is not to be used for any other purpose. The results shown in this report are only for the sample(s) tested and each sample(s) are retained for three months only.

SGS Laboratory Services (M) Sdn. Bhd. No 26 Jalan Anggerik Vanilla 31.99 Kota Kemuning 40460 Selangor Darul Ehsan, Malaysia  
 (Company No. 63972-M) t +6 (03) 5121 2320 f +6 (03) 5121 9082 www.sgs.com

Member of the SGS Group (SGS SA)

# Annex 1: Analysis Result of Outside Lead Plating Material (Page 3 of 5)



## Test Report

No. LPCI/00919/11

Date: 18/01/2011

Page: 3 of 5

CTS Ref. CTS/11/0153/Success-Crown

Test Item(s):	Unit	Test Method	Results	MDL
<b>Sum of PBDEs</b>	mg/kg	With reference to EPA Method 3540C/3550C, and performed by GC-MS.	N.D.	-
Monobromodiphenyl ether	mg/kg	With reference to EPA Method 3540C/3550C, and performed by GC-MS.	N.D.	5
Dibromodiphenyl ether	mg/kg	With reference to EPA Method 3540C/3550C, and performed by GC-MS.	N.D.	5
Tri bromodiphenyl ether	mg/kg	With reference to EPA Method 3540C/3550C, and performed by GC-MS.	N.D.	5
Tetrabromodiphenyl ether	mg/kg	With reference to EPA Method 3540C/3550C, and performed by GC-MS.	N.D.	5
Pentabromodiphenyl ether	mg/kg	With reference to EPA Method 3540C/3550C, and performed by GC-MS.	N.D.	5
Hexabromodiphenyl ether	mg/kg	With reference to EPA Method 3540C/3550C, and performed by GC-MS.	N.D.	5
Heptabromodiphenyl ether	mg/kg	With reference to EPA Method 3540C/3550C, and performed by GC-MS.	N.D.	5
Octabromodiphenyl ether	mg/kg	With reference to EPA Method 3540C/3550C, and performed by GC-MS.	N.D.	5
Nonabromodiphenyl ether	mg/kg	With reference to EPA Method 3540C/3550C, and performed by GC-MS.	N.D.	5
Decabromodiphenyl ether ##	mg/kg	With reference to EPA Method 3540C/3550C, and performed by GC-MS.	N.D.	5

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

SGS LABORATORY SERVICES (M) SDN. BHD.



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


This document is issued by the Company in accordance to its General Conditions of Service (www.sgs.com) and Terms and Conditions for Electronic Document (www.sgs.com). Attention is drawn to the limitation of liability, indemnification and intellectual property as set forth in the file. This is printed the electronic document to be treated as an original with the meaning of UCP 600 article 20D. The actual document document may be held or issued by the Company. Any loss or damage to the document is excluded from the scope of the Company's liability. The file is to be used only and with the limit of its intended use. The Company does not accept any liability for the data and the document's accuracy or for any damage, non-exercising of the right and obligations under the applicable document. This is obtainable also the results shown in this report refer only to the sample(s) tested and such sample(s) are retained for three months only.

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

No 28 Jalan Anggerik Vanilla 31/99 Kota Kemuning 40460 Selangor Darul Ehsan, Malaysia  
 t +6 (03) 5121 2320 f +6 (03) 5121 9082 www.sgs.com

Member of the SGS Group (SGS SA)

**Annex 1: Analysis Result of Outside Lead Plating Material (Page 4 of 5)**



**Test Report**

No. LPCI/00919/11  
CTS Ref. CTS/11/0153/Success-Crown

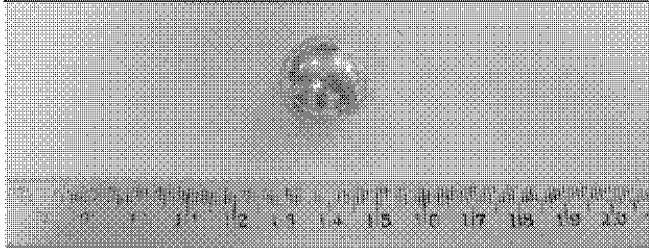
Date: 18/01/2011

Page: 4 of 5


Test Part Description :

Sample Description : SNTITE-24, 99.95% PURE TIN ANODE

CROWN EMPEROR LTD  
LPCI/00919/11



SGS LABORATORY SERVICES (M) SDN. BHD.



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

This document is issued by the Company in accordance to its General Conditions of Service (www.sgslab.com) and Terms and Conditions for Electronic Document (www.sgslab.com). Attention is drawn to the limitation of liability, indemnification and intellectual property as stated therein. This is printed on electronic documents to be treated as an original with the meaning of UCP 500 article 20D. The actual copy of the document may be held or issued by the Company. Any loss or damage to the document is subject to the distribution control system before the Company's change of the title or the transfer of the document. This is subject to the limitation of liability, indemnification and intellectual property as stated therein. This is printed on electronic documents to be treated as an original with the meaning of UCP 500 article 20D. The actual copy of the document may be held or issued by the Company. Any loss or damage to the document is subject to the distribution control system before the Company's change of the title or the transfer of the document. This is subject to the limitation of liability, indemnification and intellectual property as stated therein.

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

No 26 Jalan Anggerik Vanilla 31.93 Kota Kemuning 40460 Selangor Darul Ehsan, Malaysia  
t +6 (03) 5121 2320 f +6 (03) 5121 9082 www.sgslab.com

Member of the SGS Group (SGS SA)

# Annex 1: Analysis Result of Outside Lead Plating Material (Page 5 of 5)



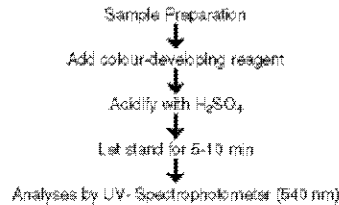
## Test Report

No. LPCI/00919/11  
CTS Ref. CTS/11/0153/Success-Crown

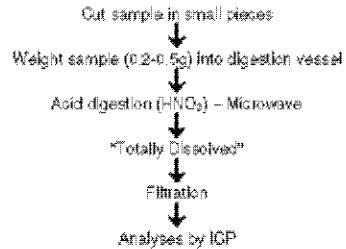
Date: 18/01/2011

Page: 5 of 5

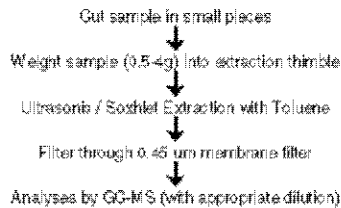
### 1. DETERMINATION OF HEXAVALENT CHROMIUM BY METHOD US EPA 3060A/7196A



### 2. MICROWAVE ASSISTED ACID DIGESTION OF ORGANICALLY BASED METRICES (US EPA 3051A)



### 3. DETERMINATION OF PBB/PBDE WITH GC-MS



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

SGS LABORATORY SERVICES (M) SDN. BHD.



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

This document is issued by the Company in accordance to its General Conditions of Service (www.sgs.com) and Terms and Conditions for Electronic Document (www.sgs.com). Attention is drawn to the fact that the original document and its additional copies are available for free. This is printed on electronic documents to be treated as an original with the meaning of UCP 600 article 20D. The original document is available for free on the website www.sgs.com. Any loss or damage to the document is subject to the conditions contained herein before the Company's liability is limited only and within the limits of its insurance policy. The Company does not accept any liability for the document's accuracy or reliability in a transaction, from exercising all or part of its obligations under the electronic document. This is available to the results shown in this report only for the sample(s) tested and such sample(s) are retained for three months only.

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

No 28 Jalan Anggerik Vanilla 31.99 Kota Kemuning 40460 Selangor Darul Ehsan, Malaysia  
t +6 (03) 5121 2320 f +6 (03) 5121 9082 www.sgs.com

Member of the SGS Group (SGS SA)



## Annex 2: Analysis Result of Molding Compound (Page 1 of 7)



### Test Report

No. CANEC1100147901

Date: 17 Jan 2011

Page 1 of 7

HENKEL HUawei ELECTRONICS CO.,LTD.  
SONGTIAO INDUSTRIAL PARK,LIANYUNGANG.JIANGSU,CHINA

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

Epoxy Moulding Compounds

SGS Job No.	:	12938105 - SZ
Tested Sample Information	:	GR640A-S
Date of Sample Received	:	13 Jan 2011
Testing Period	:	13 Jan 2011 - 17 Jan 2011
Test Requested	:	Selected test(s) as requested by client.
Test Method	:	Please refer to next page(s).
Test Results	:	Please refer to next page(s).
Conclusion	:	A:Based on the performed tests on submitted sample(s), the results <b>comply with</b> the RoHS Directive 2002/95/EC and its subsequent amendments.

Signed for and on behalf of  
SGS-CSTC Ltd.

Annie Liang  
Approved Signatory

This document is issued by the Company subject to its General Conditions of Sale which are available on request at [www.sgs.com](http://www.sgs.com), by fax at 313691000, by e-mail at [service@sgs.com](mailto:service@sgs.com), or by telephone at 313691000. The company's liability is limited to the amount of the payment made for the services rendered. The company is not responsible for the accuracy of the information provided by third parties. The company is not responsible for the accuracy of the information provided by third parties. The company is not responsible for the accuracy of the information provided by third parties.



SGS (Singapore) Pte Ltd, 200 Victoria Road, Singapore 078992 | 313691000 | [www.sgs.com](http://www.sgs.com)  
 新加坡 (星洲) 有限公司, 200 禧街, 新加坡 078992 | 313691000 | [www.sgs.com](http://www.sgs.com)

Member of the SGS Group (SGS SA)

## Annex 2: Analysis Result of Molding Compound (Page 2 of 7)



### Test Report

No. CANEC1100147901

Date: 17 Jan 2011

Page 2 of 7

#### Test Results:

ID for specimen 1 : CAN11-001479.001

Description for specimen 1 : Dk-grey material

#### A:RoHS Directive 2002/95/EC

Test Item(s)	Unit	Test Method (Reference)	Result	MDL	Limit
Cadmium (Cd)	mg/kg	IEC 62321:2008, ICP-OES	N.D.	2	100
Lead (Pb)	mg/kg	IEC 62321:2008, ICP-OES	N.D.	2	1000
Mercury (Hg)	mg/kg	IEC 62321:2008, ICP-OES	N.D.	2	1000
Hexavalent Chromium (CrVI) by alkaline extraction	mg/kg	IEC 62321:2008, UV-Vis	N.D.	2	1000
Sum of PBBs	mg/kg	-	N.D.	-	1000
Monobromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Dibromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Tribromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Tetrabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Pentabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Hexabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Heptabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Octabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Nonabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Decabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Sum of PBDEs	mg/kg	-	N.D.	-	1000
Monobromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Dibromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Tribromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Tetrabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Pentabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Hexabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Heptabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Octabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Nonabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Decabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	

#### Note:

1. mg/kg = ppm
2. N.D. = Not Detected (< MDL)
3. MDL = Method Detection Limit
4. "-" = Not regulated

This measurement is based on the principle of Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES) which is a highly sensitive and accurate analytical technique for the determination of trace elements in samples. The results are expressed in mg/kg. The detection limit (MDL) for this method is 2 mg/kg for Cd, Pb, Hg, Cr(VI) and 5 mg/kg for the other elements. The results are subject to the accuracy of the method and the quality of the sample. The results are not intended for legal purposes. The results are subject to the accuracy of the method and the quality of the sample. The results are not intended for legal purposes.



SGS Testing Services (China) Co., Ltd. | 100021, Beijing, China | Tel: +86 10 6041 1111 | Fax: +86 10 6041 1112  
 中测(天津)检测技术有限公司 | 100021, 北京, 中国 | 电话: +86 10 6041 1111 | 传真: +86 10 6041 1112

Member of the SGS Group (S&P SA)

## Annex 2: Analysis Result of Molding Compound (Page 3 of 7)



### Test Report

No. CANEC1100147901

Date: 17 Jan 2011

Page 3 of 7

#### B:Elementary Analysis

Test Item(s)	Unit	Test Method (Reference)	Result	MDL
Antimony (Sb)	mg/kg	EPA 3052:1996, ICP-OES	N.D.	10

**Note:**

1. mg/kg = ppm
2. N.D. = Not Detected (< MDL)
3. MDL = Method Detection Limit

#### C:Halogen

Test Item(s)	Unit	Test Method (Reference)	Result	MDL
Fluorine (F)	mg/kg	BS EN 14582:2007, IC	N.D.	50
Chlorine (Cl)	mg/kg	BS EN 14582:2007, IC	112	50
Bromine (Br)	mg/kg	BS EN 14582:2007, IC	N.D.	50
Iodine (I)	mg/kg	BS EN 14582:2007, IC	N.D.	50

**Note:**

1. mg/kg = ppm
2. N.D. = Not Detected (< MDL)
3. MDL = Method Detection Limit

This document is issued by the Singapore branch of the Swiss Group of Companies, SGS, and is subject to the terms and conditions of the contract for testing services. The results of this analysis are for information only and do not constitute a warranty or a guarantee of any kind. The results of this analysis are for information only and do not constitute a warranty or a guarantee of any kind. The results of this analysis are for information only and do not constitute a warranty or a guarantee of any kind.



SGS (Singapore) Pte. Ltd. 1100147901 | Tel: (65) 6336 8888 | Fax: (65) 6336 8889 | Email: sgsgroup@sgs.com  
 中興·廣東·經濟技術開發區興華路1100147901 | 電話: (86) 20 6607 3111 | 傳真: (86) 20 6607 3112 | Email: sgsgroup@sgs.com

Member of the SGS Group (SGL SA)

## Annex 2: Analysis Result of Molding Compound (Page 4 of 7)



### Test Report

No. CANEC1100147901

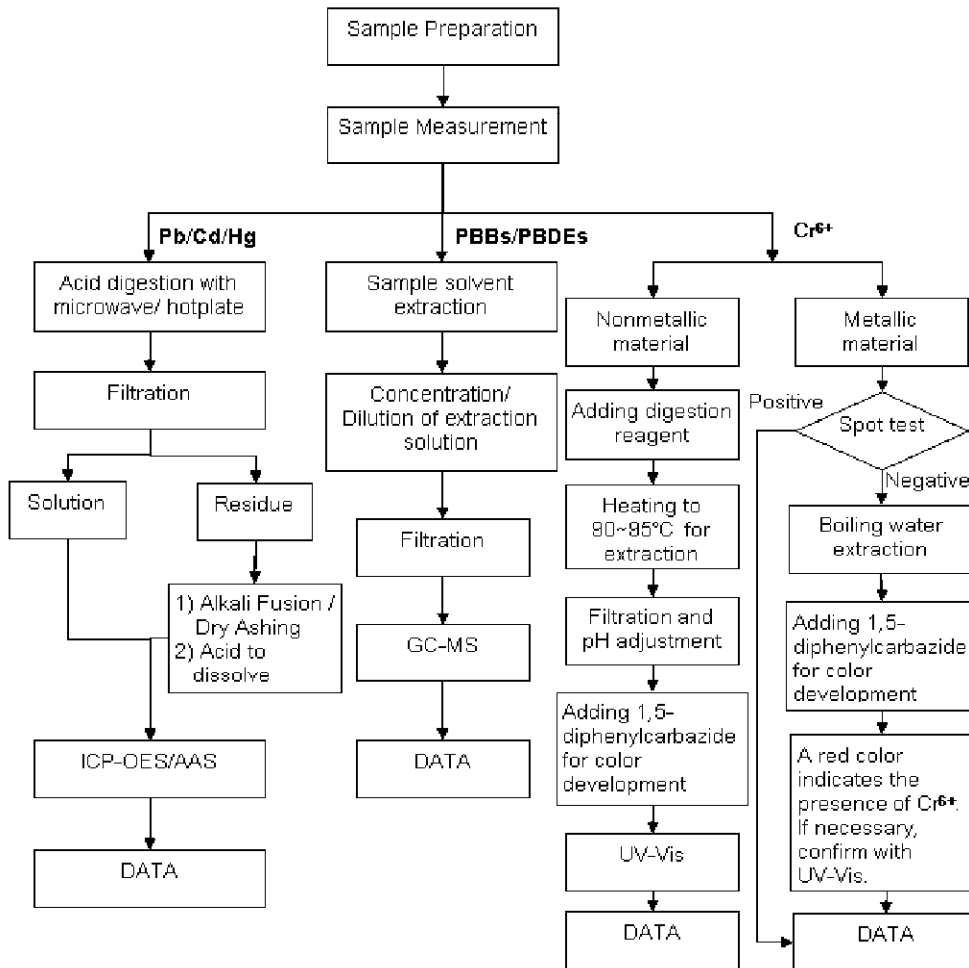
Date: 17 Jan 2011

Page 4 of 7

#### ATTACHMENTS

##### RoHS Testing Flow Chart

- 1) Name of the person who made testing: Bella Wang / Cutey Yu / Ross Zhan
- 2) Name of the person in charge of testing: Adams Yu / Ryan Yang
- 3) These samples were dissolved totally by pre-conditioning method according to below flow chart (Cr<sup>6+</sup> and PBBs/PBDEs test method excluded).



This document is issued by SGS (Shanghai) Co., Ltd. based on the test results of the samples. The test results are only valid for the samples tested and are not intended to be used for other purposes. The test results are only valid for the samples tested and are not intended to be used for other purposes. The test results are only valid for the samples tested and are not intended to be used for other purposes.



SGS (Shanghai) Co., Ltd. | 100020 Shanghai, China | Tel: +86-21-60895555 | Fax: +86-21-60895556  
 中興、上海、經濟技術開發區東川路500號 | 郵政編碼 200131 | 電話: +86-21-60895555 | 傳真: +86-21-60895556

Member of the SGS Group (S&P SA)

## Annex 2: Analysis Result of Molding Compound (Page 5 of 7)



### Test Report

No. CANEC1100147901

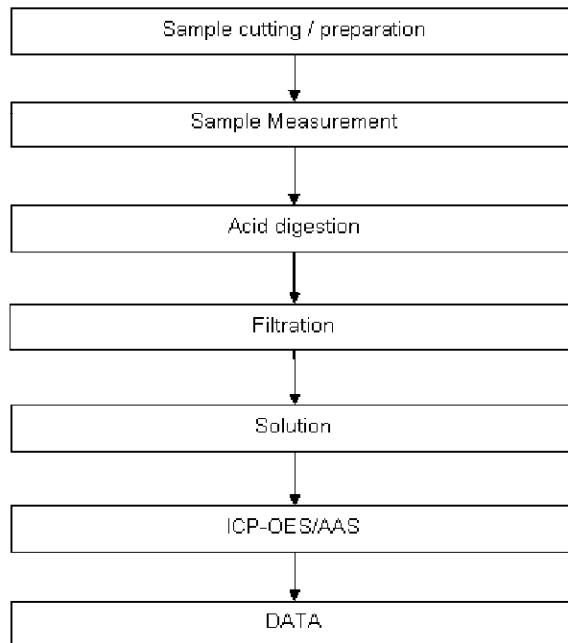
Date: 17 Jan 2011

Page 5 of 7

### ATTACHMENTS

#### Elementary Testing Flow Chart

- 1) Name of the person who made testing: Bella Wang
- 2) Name of the person in charge of testing: Adams Yu



This document is issued by the Competent Authority, the Council of Economic Affairs, and is a public document. It should be used for reference only. It is not intended to be used as a legal document. The Council of Economic Affairs is not responsible for the content of this document. The Council of Economic Affairs is not responsible for the content of this document. The Council of Economic Affairs is not responsible for the content of this document. The Council of Economic Affairs is not responsible for the content of this document.



## Annex 2: Analysis Result of Molding Compound (Page 6 of 7)



**Test Report**

No. CANEC1100147901

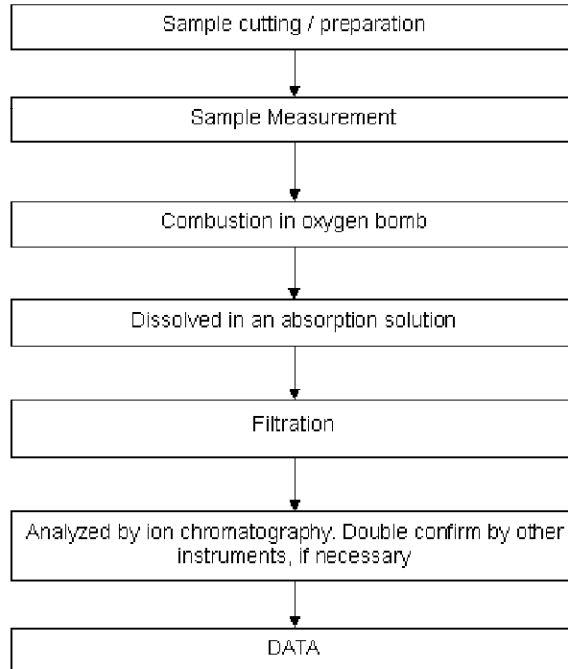
Date: 17 Jan 2011

Page 6 of 7

**ATTACHMENTS**

**Halogen Testing Flow Chart**

- 1) Name of the person who made testing: Liang Wang
- 2) Name of the person in charge of testing: Michelle Song



This document is issued by SGS Group of Companies, the Global Certification Body and is subject to the terms and conditions of the SGS Group of Companies. The SGS Group of Companies is not responsible for any consequences arising from the use of this document. The SGS Group of Companies is not liable for any damages or losses arising from the use of this document. The SGS Group of Companies is not liable for any damages or losses arising from the use of this document. The SGS Group of Companies is not liable for any damages or losses arising from the use of this document.



1800228.6283.61877 Park Drive, Suite 200, Fremont, CA 94538 | Tel: (510) 252-2555 | Fax: (510) 252-2555 | www.sgs.com  
 中國·廣東·經濟技術開發區黃埔路1807號 郵政編碼510555 | 電話: (020) 82075115 | 傳真: (020) 82075116

Member of the SGS Group (SGS SA)

## Annex 2: Analysis Result of Molding Compound (Page 7 of 7)



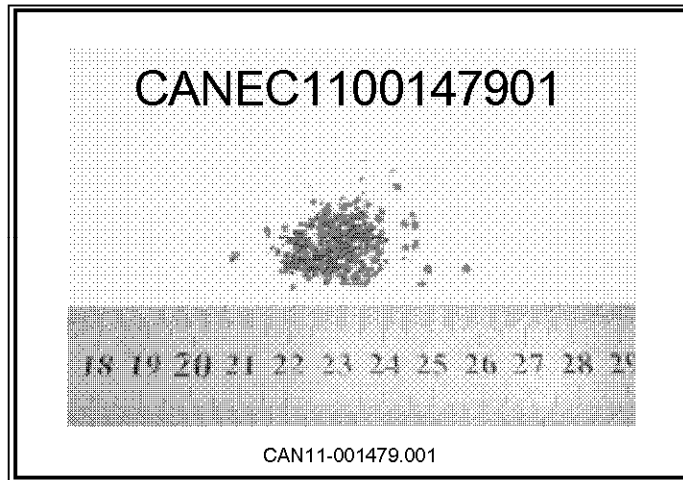
### Test Report

No. CANEC1100147901

Date: 17 Jan 2011

Page 7 of 7

Sample photo:



SGS authenticate the photo on original report only

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

This document is issued by the Singapore branch of the Swiss entity SGS S.A. and is subject to the laws of Switzerland. The results of the analysis are based on the information provided by the client and are not to be used for any other purpose. The client is responsible for the accuracy of the information provided. The results of the analysis are not to be used for any other purpose. The client is responsible for the accuracy of the information provided. The results of the analysis are not to be used for any other purpose. The client is responsible for the accuracy of the information provided.



SGS S.A. | 1100147901 | 17 Jan 2011 | Page 7 of 7  
SGS S.A. | 1100147901 | 17 Jan 2011 | Page 7 of 7

Member of the SGS Group (S&P SA)

## Annex 3: Analysis Result of Die-Attach Solder (Page 1 of 6)

**Test Report**

No: 10211878(8)

Date: 14-Oct-10

Page 1 of 6

Heraeus Materials Singapore Pte Ltd  
No. 2 Corporation Road, #06-15/16/17 Corporation Place, Singapore 618494

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

Sample Description : PbSn2Ag2.5 Solder Wire

Sample Receiving Date : 05-Oct-10  
Testing Period : 07-Oct-10 to 13-Oct-10

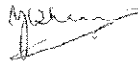
Test Requested : In accordance with the RoHS Directive 2002/95/EC, and its amendment directives.

---

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

Conclusion : Based on the performed tests on submitted sample(s), the results **comply with** the RoHS Directive 2002/95/EC and its subsequent amendments.

Signed for and on behalf of  
SGS Testing & Control Services Singapore Pte Ltd



---

Y.C. Tham  
Laboratory Manager

Test Location: 26 Ayer Rajah Crescent, #07-08, Singapore 139944

This document is issued by the Company under its General Conditions of Service accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-document.htm](http://www.sgs.com/terms_e-document.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only. This document cannot be reproduced except in full, without prior approval of the Company.

SGS Testing & Control Services Singapore Pte Ltd

26 Ayer Rajah Crescent #07-07 Singapore 139944 t +65 6379 0111 f+65 6777 2914 [www.sgs.com](http://www.sgs.com)

Member of SGS Group



## Annex 3: Analysis Result of Die-Attach Solder (Page 2 of 6)



### Test Report

No: 10211878(8)

Date: 14-Oct-10

Page 2 of 6

#### Test Result(s):

Sample Description : PbSn2Ag2.5 Solder Wire

Test Item(s):	Unit	Method	Results	MDL	RoHS Limit
Cadmium(Cd)	mg/kg	With reference to IEC62321, Ed1:2008. Analysis was performed by ICP/AES	n.d.	2	100
Lead (Pb)	mg/kg	With reference to IEC62321, Ed1:2008. Analysis was performed by ICP/AES	661360.7	2	1000
Mercury (Hg)	mg/kg	With reference to IEC62321, Ed1:2008. Analysis was performed by ICP/AES	n.d.	2	1000
Hexavalent Chromium (CrVI) (By spot test / boiling water extraction)	---	With reference to IEC62321, Ed1:2008 and performed by Spot test / boiling water extraction method. (see Note 9)	Negative	0.02 mg/kg with 50 cm <sup>2</sup> surface area	#
<b>Sum of PBBs</b>	mg/kg		<b>n.d.</b>	-	<b>1000</b>
Monobromobiphenyl	mg/kg		n.d.	5	-
Dibromobiphenyl	mg/kg		n.d.	5	-
Tribromobiphenyl	mg/kg		n.d.	5	-
Tetrabromobiphenyl	mg/kg		n.d.	5	-
Hexabromobiphenyl	mg/kg		n.d.	5	-
Pentabromobiphenyl	mg/kg		n.d.	5	-
Heptabromobiphenyl	mg/kg		n.d.	5	-
Octabromobiphenyl	mg/kg		n.d.	5	-
Nonabromobiphenyl	mg/kg		n.d.	5	-
Decabromobiphenyl	mg/kg		n.d.	5	-
<b>Sum of PBDEs</b>	mg/kg		<b>n.d.</b>	-	<b>1000</b>
Monobromodiphenyl ether	mg/kg	With reference to IEC62321, Ed1:2008. Analysis was performed by GC/MS	n.d.	5	-
Dibromodiphenyl ether	mg/kg		n.d.	5	-
Tribromodiphenyl ether	mg/kg		n.d.	5	-
Tetrabromodiphenyl ether	mg/kg		n.d.	5	-
Pentabromodiphenyl ether	mg/kg		n.d.	5	-
Hexabromodiphenyl ether	mg/kg		n.d.	5	-
Heptabromodiphenyl ether	mg/kg		n.d.	5	-
Octabromodiphenyl ether	mg/kg		n.d.	5	-
Nonabromodiphenyl ether	mg/kg		n.d.	5	-
Decabromodiphenyl ether ##	mg/kg		n.d.	5	-

Test Location: 26 Ayer Rajah Crescent, #07-08, Singapore 139944

This document is issued by the Company under its General Conditions of Service accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-document.htm](http://www.sgs.com/terms_e-document.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only. This document cannot be reproduced except in full, without prior approval of the Company.

SGS Testing & Control Services Singapore Pte Ltd

26 Ayer Rajah Crescent #03-07 Singapore 139944 t +65 6379 0111 f+65 6777 2914 www.sgs.com

Member of SGS Group

## Annex 3: Analysis Result of Die-Attach Solder (Page 3 of 6)



### Test Report

No: 10211878(8)

Date: 14-Oct-10

Page 3 of 6

Note:

- (1) mg/kg = ppm ; 0.1wt% = 1000ppm
- (2) n.d.= Not Detected
- (3) MDL = Method Detection Limit
- (4) ## = 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 will be included in the sum of PBDE after 01.07.2008.
- (5) “-“ = Not regulated
- (6) “---“: No unit (Qualitative Test)
- (7) \* : Exceeds limit
- (8) # : Positive means the presence of Cr(VI) on the tested areas.  
Negative means the absence of Cr(VI) on the tested areas.
- (9) 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.

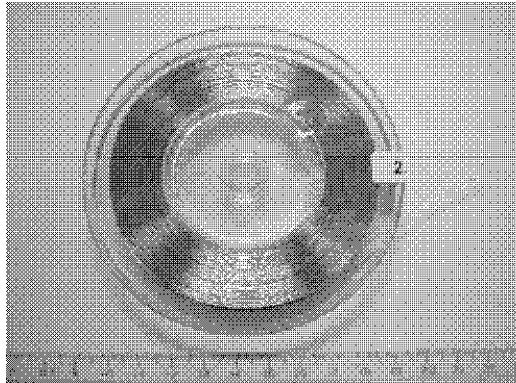
Lab Analyst(s): Jojo and Eileen

Remarks: Sample received was totally dissolved by preconditioning method.

#### Sample photo:

Sample Description : PbSn2Ag2.5 Solder Wire

SGS authenticate the photo on original report only



Test Location: 26 Ayer Rajah Crescent, #07-08, Singapore 139944

This document is issued by the Company under its General Conditions of Service accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-document.htm](http://www.sgs.com/terms_e-document.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only. This document cannot be reproduced except in full, without prior approval of the Company.

SGS Testing & Control Services Singapore Pte Ltd

26 Ayer Rajah Crescent #03-07 Singapore 139944 t +65 6379 0111 f+65 6777 2914 [www.sgs.com](http://www.sgs.com)

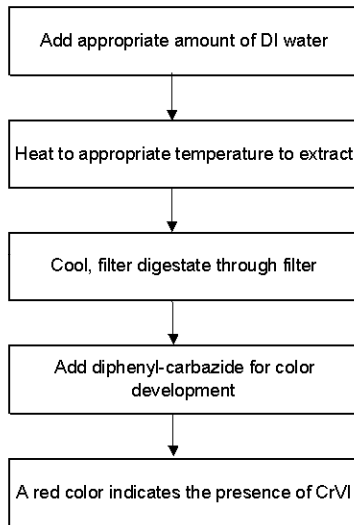
Member of SGS Group

**Annex 3: Analysis Result Die-Attach Solder (Page 4 of 6)****SGS****Test Report**

No: 10211878(8)

Date: 14-Oct-10

Page 5 of 6

**Process Flow of Cr(VI) by Boiling Water Extraction (IEC62321)**

Test Location: 26 Ayer Rajah Crescent, #07-08, Singapore 139944

This document is issued by the Company under its General Conditions of Service accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-document.htm](http://www.sgs.com/terms_e-document.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only. This document cannot be reproduced except in full, without prior approval of the Company.

SGS Testing &amp; Control Services Singapore Pte Ltd

26 Ayer Rajah Crescent #03-07 Singapore 139944 t +65 6379 0111 f+65 6777 2914 www.sgs.com

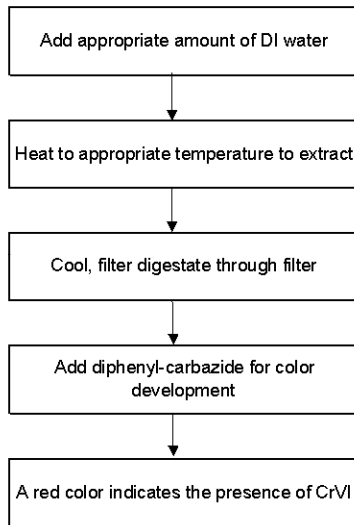
Member of SGS Group

**Annex 3: Analysis Result Die-Attach Solder (Page 5 of 6)****Test Report**

No: 10211878(8)

Date: 14-Oct-10

Page 5 of 6

**Process Flow of Cr(VI) by Boiling Water Extraction (IEC62321)**

Test Location: 26 Ayer Rajah Crescent, #07-08, Singapore 139944

This document is issued by the Company under its General Conditions of Service accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-document.htm](http://www.sgs.com/terms_e-document.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only. This document cannot be reproduced except in full, without prior approval of the Company.

SGS Testing &amp; Control Services Singapore Pte Ltd

26 Ayer Rajah Crescent #03-07 Singapore 139944 t +65 6379 0111 f+65 6777 2914 www.sgs.com

Member of SGS Group

**Annex 3: Analysis Result Die-Attach Solder (Page 6 of 6)****SGS****Test Report**

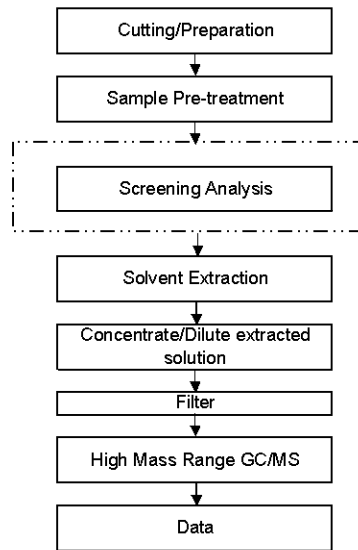
No: 10211878(8)

Date: 14-Oct-10

Page 6 of 6

**Process Flow of PBBs and PBDEs by GC/MS (IEC 62321)**

First Testing Process → Optional screen process ..... Confirmation process ...→



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

Test Location: 26 Ayer Rajah Crescent, #07-08, Singapore 139944

This document is issued by the Company under its General Conditions of Service accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-document.htm](http://www.sgs.com/terms_e-document.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only. This document cannot be reproduced except in full, without prior approval of the Company.

SGS Testing &amp; Control Services Singapore Pte Ltd

26 Ayer Rajah Crescent #03-07 Singapore 139944 t +65 6379 0111 f+65 6777 2914 [www.sgs.com](http://www.sgs.com)

Member of SGS Group

## Annex 4: Analysis Result of Die-bonding Wire (Page 1 of 16)



**Test Report No. F690501/LF-CTSAYAA11-15562** Issued Date: May 30, 2011 Page 1 of 16

To: **HERAEUS ORIENTAL HITEC CO.,LTD.**  
587-122  
Hakik-dong  
Nam-gu  
Incheon  
Korea

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

**Product Name** : Au wire  
**SGS File No.** : AYAA11-15562  
**Item No./Part No.** : 4N  
**Client Reference Date** : HD2 (Be), HD3, HD5 (Ce), HD6 (Ca), HA5, HA6, HA9, HA11, AW7, AW13, AW14, AW25, AW29, AW66X  
**Received Date** : May 12, 2011  
**Test Performing Date** : May 13, 2011 to May 30, 2011  
**Test Performed** : SGS Korea tested the sample(s) selected by applicant with following results  
This test report contains result performed by subcontracted laboratory in agreement with the applicant. The result is marked with crosshatch(#) in this report.  
**Test Result(s)** : For further details, please refer to following page (s)  
**Buyer(s)** : AMKOR, HYNIX, ASAHI KASEI, ASE KR, SCK, FUJITSU, NIGATA SEIMITSU  
**Comments** : The client has confirmed that the described client reference data are the same with the sample submitted.

Timothy Jeon  
Jinhee Kim  
Cindy Park  
Jerry Jung / Testing Person

SGS Korea Co., Ltd.

Jeff Jang / Technical Mgr

This document is issued by the Company subject to its General Conditions of Service printed elsewhere, available on request, or accessible at [www.sgs.com/conditions\\_and\\_terms\\_of\\_service](http://www.sgs.com/conditions_and_terms_of_service) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/conditions\\_and\\_terms\\_of\\_service](http://www.sgs.com/conditions_and_terms_of_service). The Company does not assume any liability for the accuracy of the information contained in this report and does not warrant the accuracy of the information. The Company does not assume any liability for the accuracy of the information contained in this report and does not warrant the accuracy of the information. The Company does not assume any liability for the accuracy of the information contained in this report and does not warrant the accuracy of the information. The Company does not assume any liability for the accuracy of the information contained in this report and does not warrant the accuracy of the information.

F052 Version4

SGS Korea Co., Ltd. 322, The O valley, 555-9, Hogeje-dong, Dongan-gu, Anyang-si, Gyeonggi-do, Korea 431-080  
t +82 (0)31 4808 000 f +82 (0)31 4808 059 <http://www.sgslab.co.kr> [www.kr.sgs.com/surveillance](http://www.kr.sgs.com/surveillance)

Member of the SGS Group (Société Générale de Surveillance)

## Annex 4: Analysis Result of Die-bonding Wire (Page 2 of 16)



**Test Report No.** F690501/LF-CTSAYAA11-15562 **Issued Date:** May 30, 2011 **Page 2 of 16**

**Sample No.** : AYAA11-15562  
**Sample Description** : Au wire  
**Item / Part No.** : 4N

Heavy Metals				
Test Items	Unit	Test Method	MDL	Results
Cadmium(Cd)	mg/kg	With reference to IEC 62321:2008,ICP	0.5	N.D
Lead (Pb)	mg/kg	With reference to IEC 62321:2008,ICP	5	N.D
Mercury (Hg)	mg/kg	With reference to IEC 62321:2008,ICP	2	N.D
Hexavalent Chromium(CrVI) By boiling water extraction*	**	With reference to IEC 62321:2008	-	Negative
Beryllium (Be)	mg/kg	US EPA 3050B (1996),US EPA 6010B(1996),ICP	0.5	N.D
Phosphorous (P)	mg/kg	US EPA 3050B (1996),US EPA 6010B(1996),ICP	10	N.D
Antimony (Sb)	mg/kg	US EPA 3050B (1996),US EPA 6010B(1996),ICP	10	N.D
Flame Retardants-PBBs/PBDEs				
Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	With reference to IEC 62321:2008,GC-MS	5	N.D
Dibromobiphenyl	mg/kg	With reference to IEC 62321:2008,GC-MS	5	N.D
Tribromobiphenyl	mg/kg	With reference to IEC 62321:2008,GC-MS	5	N.D
Tetrabromobiphenyl	mg/kg	With reference to IEC 62321:2008,GC-MS	5	N.D
Hexabromobiphenyl	mg/kg	With reference to IEC 62321:2008,GC-MS	5	N.D
Pentabromobiphenyl	mg/kg	With reference to IEC 62321:2008,GC-MS	5	N.D
Heptabromobiphenyl	mg/kg	With reference to IEC 62321:2008,GC-MS	5	N.D
Octabromobiphenyl	mg/kg	With reference to IEC 62321:2008,GC-MS	5	N.D
Nonabromobiphenyl	mg/kg	With reference to IEC 62321:2008,GC-MS	5	N.D
Decabromobiphenyl	mg/kg	With reference to IEC 62321:2008,GC-MS	5	N.D
Monobromodiphenyl ether	mg/kg	With reference to IEC 62321:2008,GC-MS	5	N.D
Dibromodiphenyl ether	mg/kg	With reference to IEC 62321:2008,GC-MS	5	N.D
Tribromodiphenyl ether	mg/kg	With reference to IEC 62321:2008,GC-MS	5	N.D
Tetrabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008,GC-MS	5	N.D
Pentabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008,GC-MS	5	N.D
Hexabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008,GC-MS	5	N.D
Heptabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008,GC-MS	5	N.D
Octabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008,GC-MS	5	N.D
Nonabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008,GC-MS	5	N.D
Decabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008,GC-MS	5	N.D

This document is issued by the Company subject to its General Conditions of Service printed hereon, available on request, or accessible at [www.sgslab.co.kr](http://www.sgslab.co.kr) and [www.sgslab.com](http://www.sgslab.com) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgslab.co.kr](http://www.sgslab.co.kr). The Company disclaims any liability for any loss or damage caused by the use of this document, published by the Company, in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without the prior written permission of the Company. Any use of this document, in any form or by any means, without the prior written permission of the Company, is prohibited. This document cannot be copied, sold, or otherwise distributed without the prior written permission of the Company. The document is for the use of the client only and is not to be used for any other purpose. All rights are reserved. © 2011 SGS.

## Annex 4: Analysis Result of Die-bonding Wire (Page 3 of 16)



**Test Report No.** F690501/LF-CTSAYAA11-15562 **Issued Date:** May 30, 2011 **Page 3 of 16**

**Sample No.** : AYAA11-15562  
**Sample Description** : Au wire  
**Item / Part No.** : 4N

Formaldehyde Contents				
Test Items	Unit	Test Method	MDL	Results
Formaldehyde	mg/kg	ISO 14184-1, UV-vis	20	N.D

Phthalates				
Test Items	Unit	Test Method	MDL	Results
Di-n-octyl phthalate (DNOP)	mg/kg	US EPA 8061A,GC/MS	50	N.D
Di-isononyl phthalate (DINP)	mg/kg	US EPA 8061A,GC/MS	50	N.D
Di-isodecyl phthalate (DIDP)	mg/kg	US EPA 8061A,GC/MS	50	N.D
Di-methyl phthalate (DMP)	mg/kg	US EPA 8061A,GC/MS	50	N.D
Di-ethyl phthalate(DEP)	mg/kg	US EPA 8061A,GC/MS	50	N.D
Di-cyclohexyl phthalate (DCHP)	mg/kg	US EPA 8061A,GC/MS	50	N.D
Di-n-hexyl phthalate (DNHP)	mg/kg	US EPA 8061A,GC/MS	50	N.D
Di-pentyl phthalate(DPP)	mg/kg	US EPA 8061A,GC/MS	50	N.D
Di-propyl phthalate(DPrP)	mg/kg	US EPA 8061A,GC/MS	50	N.D
Di-isoctyl phthalate (DIOP)	mg/kg	US EPA 8061A,GC/MS	50	N.D
Di-n-nonyl phthalate (DNP)	mg/kg	US EPA 8061A,GC/MS	50	N.D
Di-(2-ethylhexyl) adipate (DEHA)	mg/kg	US EPA 8061A,GC/MS	50	N.D

Halogen Contents				
Test Items	Unit	Test Method	MDL	Results
Bromine(Br)	mg/kg	BS EN 14582:2007,IC	30	N.D
Chlorine(Cl)	mg/kg	BS EN 14582:2007,IC	30	N.D
Fluorine(F)	mg/kg	BS EN 14582:2007,IC	30	N.D
Iodine(I)	mg/kg	BS EN 14582:2007,IC	50	N.D

This document is issued by the Company subject to its General Conditions of Service printed over our analysis reports or accessible at [www.sgslab.co.kr](http://www.sgslab.co.kr) and, for electronic formal documents, subject to Terms and Conditions for Electronic Documents at [www.sgslab.co.kr](http://www.sgslab.co.kr). It is the property of the Company and its use is limited to the analysis for which it was issued. It is not to be used for any other purpose. The Company does not warrant the accuracy of the data or the results of the analysis. The Company is not responsible for any damage or loss of data or information caused by the use of this document. The document cannot be reproduced, stored, transmitted, or disseminated in any form or by any means without the prior written permission of the Company. Any unauthorized use, copying, or distribution of this document is strictly prohibited and may be prosecuted in the courts of the law. The document is valid for the duration of the analysis and the results are not to be used for any other purpose.

F052 Version4

SGS Korea Co., Ltd. 322, The Ovalley, 555 9, Hogeje-dong, Dongan-gu, Anyang-si, Gyeonggi-do, Korea 431-080  
 t +82 (0)31 4608 000 f +82 (0)31 4608 059 <http://www.sgslab.co.kr> [www.kr.sgs.com](http://www.kr.sgs.com) [www.sgslab.com](http://www.sgslab.com)

Member of the SGS Group (Société Générale de Surveillance)



## Annex 4: Analysis Result of Die-bonding Wire (Page 4 of 16)



**Test Report No.** F690501/LF-CTSAYAA11-15562 **Issued Date:** May 30, 2011 **Page 4 of 16**

**Sample No.** : AYAA11-15562  
**Sample Description** : Au wire  
**Item / Part No.** : 4N

<b>Asbestos</b>				
Test Items	Unit	Test Method	MDL	Results
Anthrophyllite	**	With reference to EPA/600/R-93/116 and USP, PLM and FT-IR	-	Negative
Crocidolite	**	With reference to EPA/600/R-93/116 and USP, PLM and FT-IR	-	Negative
Amosite	**	With reference to EPA/600/R-93/116 and USP, PLM and FT-IR	-	Negative
Tremolite	**	With reference to EPA/600/R-93/116 and USP, PLM and FT-IR	-	Negative
Chrysotile	**	With reference to EPA/600/R-93/116 and USP, PLM and FT-IR	-	Negative
Actinolite	**	With reference to EPA/600/R-93/116 and USP, PLM and FT-IR	-	Negative

<b>Chlorinated Organic Substances</b>				
Test Items	Unit	Test Method	MDL	Results
Polychlorinated Biphenyls (PCBs)	mg/kg	USEPA 8082 , GC/MS	3	N.D
Polychlorinated terphenyls (PCTs)	mg/kg	USEPA 8082 , GC/MS	3	N.D
Polychlorinated Naphthalene (PCN)	mg/kg	EPA 8081 A , GC/MS	5	N.D

<b>Polymer Identification</b>				
Test Items	Unit	Test Method	MDL	Results
PVC free	**	FT-IR	-	Negative

<b>Organotin Compounds</b>				
Test Items	Unit	Test Method	MDL	Results
Tributyltin (TBT)	mg/kg	DIN 38407-13 , GC/MS	0.1	N.D
Bis (tributyltin)oxide (TBTO)	mg/kg	DIN 38407-13 , GC/MS	0.1	N.D
Triphenyltin (TPhT)	mg/kg	DIN 38407-13 , GC/MS	0.1	N.D

<b>Ozone Depleting Substances</b>				
Test Items	Unit	Test Method	MDL	Results
Trichlorofluoromethane (CFC-11)	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
Dichlorodifluoromethane (CFC-12)	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
1,1,2-Trichloro-1,2,2-trifluoroethane (CFC-113)	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
Dichlorotetrafluoroethane (CFC-114)	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
Chloropentafluoroethane (CFC-115)	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
Chlorotrifluoromethane (CFC-13)	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
Pentachlorofluoroethane (CFC-111)	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
Tetrachlorodifluoroethane (CFC-112)	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
Heptachlorofluoropropane (CFC-211)	mg/kg	US EPA 8260B , GC/MS	0.1	N.D

This document is issued by the Company subject to its General Conditions of Service printed hereon, available on request, or accessible at [www.sgslab.co.kr](http://www.sgslab.co.kr) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgslab.co.kr](http://www.sgslab.co.kr). The Company's sole responsibility is to ensure that the document does not contain any illegal or prohibited information. The document is subject to the Company's right of modification and deletion without notice. The document cannot be copied, sold, reprinted, or otherwise used without the prior written permission of the Company. Any use of the document in violation of the terms of appearance of this document is prohibited. The document is issued in its original form and may be reproduced in its original form or in any other form without the prior written permission of the Company.

F052 Version4

SGS Korea Co., Ltd. 322, The O valley, 555-9, Hogeje-dong, Dongan-gu, Anyang-si, Gyeonggi-do, Korea 431-080  
 t +82 (0)31 4808 000 f +82 (0)31 4808 059 <http://www.sgslab.co.kr> [www.kr.sgs.com](http://www.kr.sgs.com) [sales@sgslab.co.kr](mailto:sales@sgslab.co.kr)

Member of the SGS Group (Société Générale de Surveillance)



## Annex 4: Analysis Result of Die-bonding Wire (Page 6 of 16)



**Test Report No.** F690501/LF-CTSAYAA11-15562 **Issued Date:** May 30, 2011 **Page 6 of 16**

**Sample No.** : AYAA11-15562  
**Sample Description** : Au wire  
**Item / Part No.** : 4N

Ozone Depleting Substances				
Test Items	Unit	Test Method	MDL	Results
Dibromodifluoromethane (Halon-1202)	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
HBFC-21b2	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
HBFC-22b1	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
HBFC-31b1	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
HBFC-121b4	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
HBFC-122b3	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
HBFC-123b2	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
HBFC-124b1	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
HBFC-131b3	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
HBFC-132b2	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
HBFC-123b1	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
HBFC-141b2	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
HBFC-142b1	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
HBFC-151b1	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
HBFC-221b6	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
HBFC-222b5	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
HBFC-223b4	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
HBFC-224b3	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
HBFC-225b2	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
HBFC-226b1	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
HBFC-231b5	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
HBFC-232b4	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
HBFC-233b3	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
HBFC-234b2	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
HBFC-235b5	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
HBFC-241b4	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
HBFC-241b3	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
HBFC-243b2	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
HBFC-244b1	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
HBFC-251b2	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
HBFC-252b2	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
HBFC-253b1	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
HBFC-261b2	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
HBFC-262b1	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
HBFC-271b1	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
Hydrochlorofluorocarbon-21	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
Hydrochlorofluorocarbon-22	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
Hydrochlorofluorocarbon-31	mg/kg	US EPA 8260B , GC/MS	0.1	N.D

This document is issued by the Company subject to its General Conditions of Service printed hereon, available on request, or accessible at [www.sgslab.co.kr](http://www.sgslab.co.kr) and [www.sgs.com](http://www.sgs.com) and, in electronic format, documents subject to Terms and Conditions for Electronic Documents at [www.sgslab.co.kr](http://www.sgslab.co.kr). The Company assumes no responsibility for the accuracy and reliability of the data and information contained herein. Any modification of this document is subject to the terms and conditions of the Company. All rights are reserved and no part of this document may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the Company. Any use of the data and information contained herein for purposes other than those intended by the Company is prohibited. This document cannot be copied and reprinted without the prior written permission of the Company. Any use of the data and information contained herein for purposes other than those intended by the Company is prohibited. This document cannot be copied and reprinted without the prior written permission of the Company.

F052 Version4

SGS Korea Co., Ltd. 322, The O valley, 555-9, Hogeje-dong, Dongan-gu, Anyang-si, Gyeonggi-do, Korea 431-080  
 t +82 (0)31 4808 000 f +82 (0)31 4808 059 <http://www.sgslab.co.kr> [www.kr.sgs.com](http://www.kr.sgs.com) [sales@sgslab.co.kr](mailto:sales@sgslab.co.kr)

Member of the SGS Group (Société Générale de Surveillance)



## Annex 4: Analysis Result of Die-bonding Wire (Page 8 of 16)



**Test Report No. F690501/LF-CTSAYAA11-15562** Issued Date: May 30, 2011 Page 8 of 16

Sample No. : AYAA11-15562  
 Sample Description : Au wire  
 Item / Part No. : 4N

Ozone Depleting Substances				
Test Items	Unit	Test Method	MDL	Results
Hydrofluorocarbon-152a	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
Hydrofluorocarbon-227ea	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
Hydrofluorocarbon-236fa	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
Hydrofluorocarbon-236ea	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
Hydrofluorocarbon-245ca	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
Hydrofluorocarbon-245fa	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
Hydrofluorocarbon-365mfc	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
Freon 14	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
Fluorocarbon 116	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
Freon 218	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
Decafluorobutane	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
Freon 318	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
Perfluoro-1-butane	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
Perfluoroisobutene	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
1,4-Dihydrooctafluorobutane	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
Nonafluoro-2-(trifluoromethyl)butane	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
Perfluoro-n-pentane	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
2-Perfluoromethylpentane	mg/kg	US EPA 8260B , GC/MS	0.1	N.D
Perfluorohexane	mg/kg	US EPA 8260B , GC/MS	0.1	N.D

Azo Dyes				
Test Items	Unit	Test Method	MDL	Results
4-Aminodiphenyl	mg/kg	LFGB 64 BVL B 82.02.2 , GC/MS & HPLC	5	N.D
Benzidine	mg/kg	LFGB 64 BVL B 82.02.2 , GC/MS & HPLC	5	N.D
4-Chloro-o-Toluidine	mg/kg	LFGB 64 BVL B 82.02.2 , GC/MS & HPLC	5	N.D
2-Naphthylamine	mg/kg	LFGB 64 BVL B 82.02.2 , GC/MS & HPLC	5	N.D
o-Aminoazotoluene	mg/kg	LFGB 64 BVL B 82.02.2 , GC/MS & HPLC	5	N.D
2-Amino-4-Nitrotoluene	mg/kg	LFGB 64 BVL B 82.02.2 , GC/MS & HPLC	5	N.D
p-Chloroaniline	mg/kg	LFGB 64 BVL B 82.02.2 , GC/MS & HPLC	5	N.D
2,4-Diaminoanisole	mg/kg	LFGB 64 BVL B 82.02.2 , GC/MS & HPLC	5	N.D
4,4'-Diaminodiphenylmethane	mg/kg	LFGB 64 BVL B 82.02.2 , GC/MS & HPLC	5	N.D
3,3'-Dichlorobenzidine	mg/kg	LFGB 64 BVL B 82.02.2 , GC/MS & HPLC	5	N.D
3,3-Dimethoxybenzidine	mg/kg	LFGB 64 BVL B 82.02.2 , GC/MS & HPLC	5	N.D
3,3-Dimethylbenzidine	mg/kg	LFGB 64 BVL B 82.02.2 , GC/MS & HPLC	5	N.D
3,3-Dimethyl-4,4'-diaminodiphenyl Methane	mg/kg	LFGB 64 BVL B 82.02.2 , GC/MS & HPLC	5	N.D
p-Cresidine	mg/kg	LFGB 64 BVL B 82.02.2 , GC/MS & HPLC	5	N.D
4,4'-Methylen-bis-(2-chloroaniline)	mg/kg	LFGB 64 BVL B 82.02.2 , GC/MS & HPLC	5	N.D

This document is issued by the Company subject to its General Conditions of Service printed hereon, available on request, or accessible at [www.sgslab.com/eng/and\\_eng/and\\_eng.html](http://www.sgslab.com/eng/and_eng/and_eng.html) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgslab.com/eng/electronic\\_documents.html](http://www.sgslab.com/eng/electronic_documents.html). The Company assumes no responsibility for the accuracy and reliability of the data and information contained herein. Any modification to this document is subject to the terms and conditions of the Company's standard terms and conditions of service. The document cannot be copied, sold, reprinted, or otherwise used without the prior written approval of the Company. Any unauthorized use or modification of this document is strictly prohibited and may be prosecuted to the full extent of the law. The document is provided for your information only and does not constitute an offer of any service. The document is provided for your information only.

F052 Version4

SGS Korea Co., Ltd. 322 The O valley, 555-9 Hogeje-dong, Dongan-gu, Anyang-si, Gyeonggi-do, Korea 431-080  
 t +82 (0)31 4808 000 f +82 (0)31 4808 059 <http://www.sgslab.co.kr> [www.kr.sgs.com](http://www.kr.sgs.com) [sales@sgslab.com](mailto:sales@sgslab.com)

Member of the SGS Group (Société Générale de Surveillance)





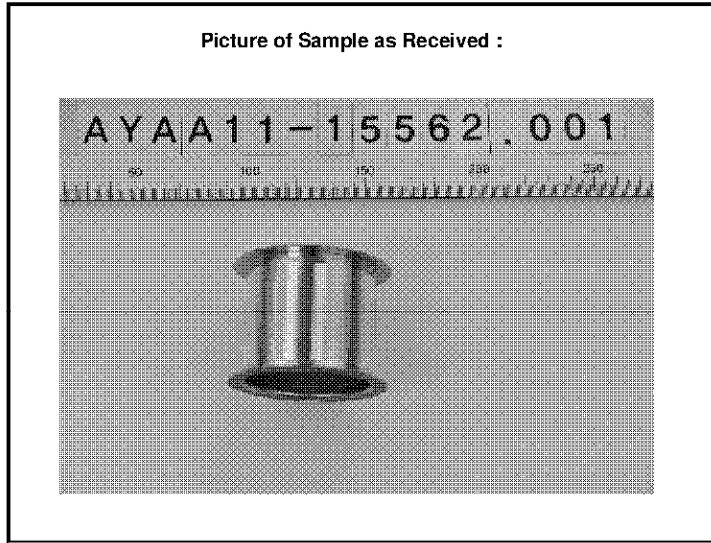


# Annex 4: Analysis Result of Die-bonding Wire (Page 11 of 16)

**SGS**

**Test Report** No. F690501/LF-CTSAYAA11-15562 Issued Date: May 30, 2011 Page 11 of 16

Picture of Sample as Received :



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request, or accessible at [www.sgslab.com/eng/and\\_english.htm](http://www.sgslab.com/eng/and_english.htm) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgslab.com/eng/electronic\\_documents.htm](http://www.sgslab.com/eng/electronic_documents.htm). It is intended for use and a valid one issued and used only under the conditions stated in this document. It is not intended for use as a reference or for any other purpose. The Company does not accept any responsibility for the accuracy or completeness of the information contained in this document. The document cannot be copied, sold, leased, or otherwise reproduced without the prior approval of the Company. Any use of the information contained in this document is at the user's own risk. The document cannot be copied, sold, leased, or otherwise reproduced without the prior approval of the Company.

F052 Version4

SGS Korea Co., Ltd. 322, The O valley, 555-9, Hoge-dong, Dongan-gu, Anyang-si, Gyeonggi-do, Korea 431-080  
t +82 (0)31 4808 000 f +82 (0)31 4808 059 <http://www.sgslab.co.kr> [www.kr.sgslab.com/sgslab](http://www.kr.sgslab.com/sgslab)

Member of the SGS Group (Société Générale de Surveillance)

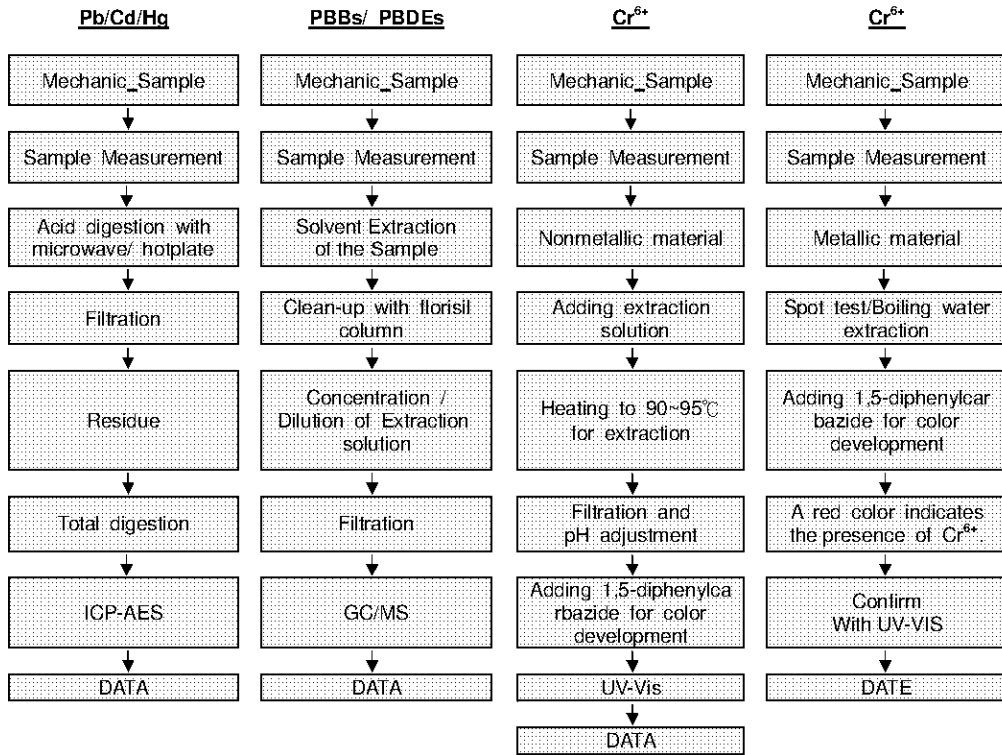


## Annex 4: Analysis Result of Die-bonding Wire (Page 12 of 16)



**Test Report No. F690501/LF-CTSAYAA11-15562** Issued Date: May 30, 2011 Page 12 of 16

### Testing Flow Chart for RoHS: Pb/Cd/Hg/Cr<sup>6+</sup>/PBBs & PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg.

Section Chief

Gilsae Yi

This document is issued by the Company subject to its General Conditions of Service printed hereon, available on request, or accessible at [www.sgslab.com](http://www.sgslab.com) and [www.sgslab.com](http://www.sgslab.com) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgslab.com](http://www.sgslab.com). The Company does not assume any liability for any loss or damage caused by the use of this document, published by the Company, in any form or by any means, and the Company shall not be held responsible for any loss or damage caused by the use of this document, published by the Company, in any form or by any means, and the Company shall not be held responsible for any loss or damage caused by the use of this document, published by the Company, in any form or by any means. This document cannot be copied, sold, reprinted, or otherwise reproduced without the prior written approval of the Company. Any use of this document, in any form or by any means, without the prior written approval of the Company, is prohibited. The document is issued in its original form and any reproduction of this document is prohibited.

F052 Version4

SGS Korea Co., Ltd. 322, The O valley, 555-9, Hogeje-dong, Dongan-gu, Anyang-si, Gyeonggi-do, Korea 431-080.  
t +82 (0)31 4808 000 f +82 (0)31 4808 059 <http://www.sgslab.co.kr> [www.kr.sgs.com](http://www.kr.sgs.com) [www.sgslab.com](http://www.sgslab.com)

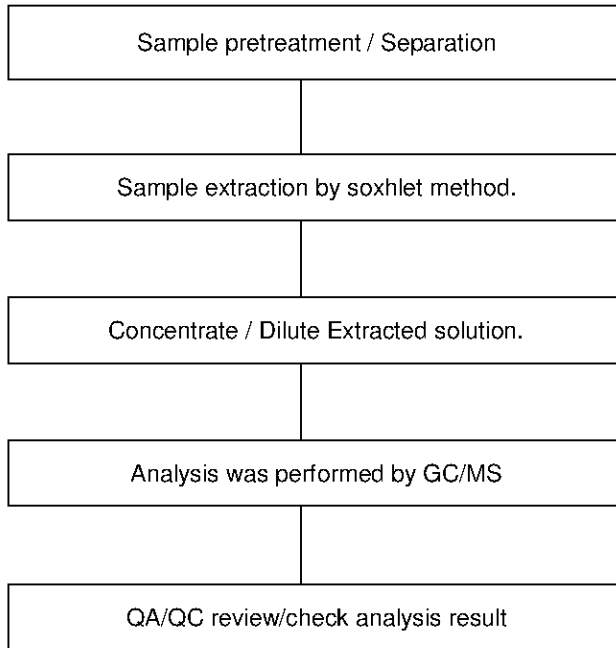
Member of the SGS Group (Société Générale de Surveillance)

## Annex 4: Analysis Result of Die-bonding Wire (Page 13 of 16)



**Test Report** No. F690501/LF-CTSAYAA11-15562 Issued Date: May 30, 2011 Page 13 of 16

### Flow Chart for Phthalate Test



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request, or accessible at [www.sgs.com/sgs/sgs/sgs.html](http://www.sgs.com/sgs/sgs/sgs.html) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/sgs/sgs/sgs.html](http://www.sgs.com/sgs/sgs/sgs.html). It is the sole responsibility of the Client to ensure that the document does not contain any confidential or otherwise restricted information. The Company does not accept any liability for the accuracy or completeness of the information provided in this document. This document cannot be copied, sold, loaned, or otherwise disseminated without the prior approval of the Company. Any use of the information, in any form or by any means, without the prior approval of the Company is prohibited. The Company and its subsidiaries and/or affiliates may be involved in the provision of services to the Client and its subsidiaries and/or affiliates.

F052 Version4

SGS Korea Co., Ltd. 322, The O valley, 555-9, Hogeje-dong, Dongan-gu, Anyang-si, Gyeonggi-do, Korea 431-080  
t +82 (0)31 4808 000 f +82 (0)31 4808 059 <http://www.sgslab.co.kr> [www.kr.sgs.com](http://www.kr.sgs.com) [www.kr.sgs.com/sgs/sgs.html](http://www.kr.sgs.com/sgs/sgs.html)

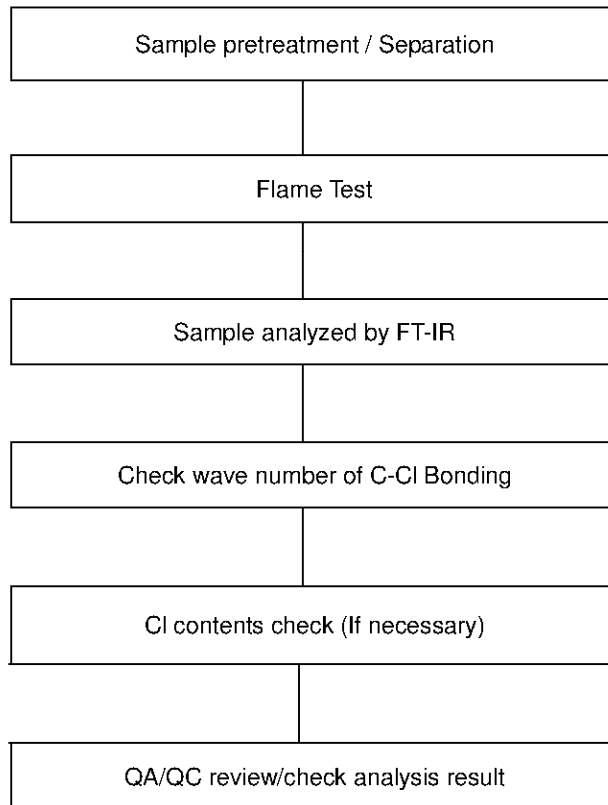
Member of the SGS Group (Société Générale de Surveillance)

# Annex 4: Analysis Result of Die-bonding Wire (Page 14 of 16)

**SGS**  
**Test Report**

**No. F690501/LF-CTSAYAA11-15562** Issued Date: May 30, 2011 Page 14 of 16

### Flow Chart for PVC Test



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request, or accessible at [www.sgslab.com/eng/and/and/and/and/and/](http://www.sgslab.com/eng/and/and/and/and/and/) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgslab.com/eng/electronic/electronic/electronic/electronic/electronic/](http://www.sgslab.com/eng/electronic/electronic/electronic/electronic/electronic/). It is intended as an advisory report and is not a contract. The Company's liability is limited to the amount of the fee paid for the analysis. The Company is not responsible for any damage or loss of data, including but not limited to, caused by the use of the information provided in this document. The Company is not responsible for any damage or loss of data, including but not limited to, caused by the use of the information provided in this document. This document cannot be copied and distributed without the prior approval of the Company. Any use of the information, in whole or in part, without the express written consent of the Company is prohibited. The document is the property of the Company and its contents or appearance of this document is intended to be used for the sole purpose of providing information. This document cannot be copied and distributed without the prior approval of the Company.

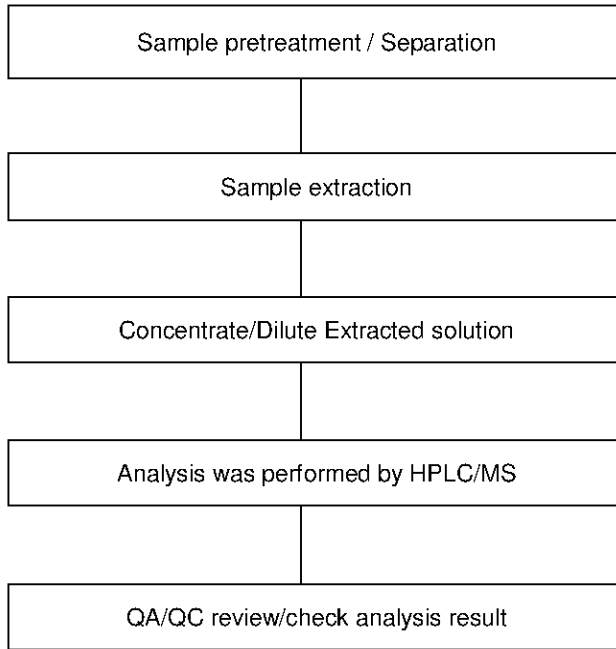
F052 Version4

**Annex 4: Analysis Result of Die-bonding Wire (Page 15 of 16)**



**Test Report No. F690501/LF-CTSAYAA11-15562** Issued Date: May 30, 2011 Page 15 of 16

**Flow Chart for PFOS/PFOA Test**



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request, or accessible at [www.sgslab.com/eng/and\\_english.htm](http://www.sgslab.com/eng/and_english.htm) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgslab.com/eng/electronic\\_documents.htm](http://www.sgslab.com/eng/electronic_documents.htm). It is intended to be used as a reference only and is not a substitute for any other document. Any modification to this document is subject to the terms and conditions of the document. All rights reserved. No part of this document may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written approval of the Company. Any use of this document in violation of its terms and conditions of appearance of this document is prohibited and the user may be prosecuted in the future on this basis. This document cannot be copied and stored in a retrieval system without the prior written approval of the Company. Any use of this document in violation of its terms and conditions of appearance of this document is prohibited and the user may be prosecuted in the future on this basis. This document cannot be copied and stored in a retrieval system without the prior written approval of the Company.

F052 Version4

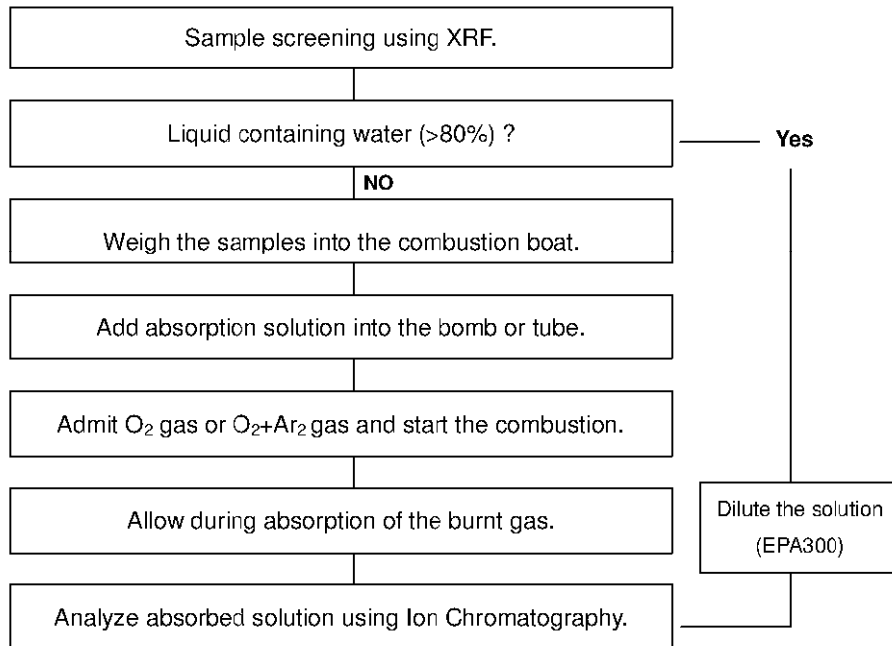
SGS Korea Co., Ltd. 322, The O valley, 555-9, Hogeje-dong, Dongan-gu, Anyang-si, Gyeonggi-do, Korea 431-080  
 t +82 (0)31 4808 000 f +82 (0)31 4808 059 <http://www.sgslab.co.kr> [www.kr.sgs.com/sgrenlab](http://www.kr.sgs.com/sgrenlab)  
 Member of the SGS Group (Société Générale de Surveillance)

## Annex 4: Analysis Result of Die-bonding Wire (Page 16 of 16)



**Test Report No. F690501/LF-CTSAYAA11-15562** Issued Date: May 30, 2011 Page 16 of 16

### Flow Chart for Halogen Test




\*\*\* End \*\*\*

This document is issued by the Company subject to its General Conditions of Service printed over our data sheets or available at [www.sgslab.com](http://www.sgslab.com) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgslab.com](http://www.sgslab.com). The Company does not accept any liability for any loss or damage arising from the use of this document. The Company does not accept any liability for any loss or damage arising from the use of this document. The document cannot be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or by any information storage and retrieval system, without the prior written permission of the Company. Any unauthorized use, copying, or distribution of this document is strictly prohibited. The document is the property of the Company. The document is for internal use only and is not to be distributed outside the company.

F052 Version4

SGS Korea Co., Ltd. 322, The Ovalley, 555 9, Hogeje-dong, Dongan-gu, Anyang-si, Gyeonggi-do, Korea 431-080  
 t +82 (0)31 4608 000 f +82 (0)31 4608 059 <http://www.sgslab.co.kr> [www.kr.sgs.com](http://www.kr.sgs.com) [www.kr.sgs.com](http://www.kr.sgs.com)

Member of the SGS Group (Société Générale de Surveillance)

**Annex 5: Analysis Result of Lead Frame (page 1 of 11)****Test Report**

No. 2107721/EC

Date : Jan 25 2011

Page 1 of 11

LEADFRAME TECHNOLOGY LIMITED  
UNIT 04, G/F., LAI SUN YUEN LONG CENTRE  
21 - 35 WANG YIP STREET EAST  
YUEN LONG  
N.T., HONG KONG

The following sample was submitted and identified on behalf of the applicant as:  
LEADFRAME MADE OF COPPER ALLOY A194

SGS Job No. : 1436618  
Lot No. : 110113  
Manufacturer : LEADFRAME TECHNOLOGY LIMITED  
Country of Origin : HONG KONG  
Sample Receiving Date : JAN 14 2011  
Testing Period : JAN 14 – 25 2011

Test Requested : Selected test (s) as requested by client.

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

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

Conclusion : 1) Based on the performed tests on submitted sample, the results comply with the RoHS Directive 2002/95/EC and its subsequent amendments.  
  
4) When tested as specified, the submitted sample complies with the phthalate requirements under entries 51 and 52 of the Regulation (EC) No. 552/2009 amending Annex XVII of REACH Regulation (EC) No. 1907/2006 (previously restricted under Directive 2005/84/EC).

Signed for and on behalf of  
SGS Hong Kong Ltd



\_\_\_\_\_  
Thu Hung Yat, Rodney  
Section Manager

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm), and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-docs.html](http://www.sgs.com/terms_e-docs.html). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

SGS Hong Kong Ltd | 5/F - 8/F & 28/F -29/F, Metropole Square, 2 On Yiu Street, Siu Lek Yuen, Shatin, N.T., Hong Kong. t (852) 2334 4481-9 f (852) 2764 3126 [www.hk.sgs.com](http://www.hk.sgs.com)

Member of the SGS Group (SGS SA)

## Annex 5: Analysis Result of Lead Frame (page 2 of 11)



### Test Report

No. 2107721/EC

Date : Jan 25 2011

Page 2 of 11

Test result:

1)

ID for sample 1 : 4120954002

Description for sample 1 : Metal w/ Silvery Plating (Base: Coppery Metal)

#### RoHS Directive 2002/95/EC

Test Item(s) :	Unit	Test Method	Results	MDL	Limit
Cadmium(Cd)	mg/kg	With reference to IEC 62321:2008 and performed by ICP-OES	n.d.	2	100
Lead (Pb)	mg/kg	With reference to IEC 62321:2008 and performed by ICP-OES	16	5	1000
Mercury (Hg)	mg/kg	With reference to IEC 62321:2008 and performed by ICP-OES	n.d.	2	1000
Hexavalent Chromium (CrVI) by spot-test/ boiling-water-extraction	-	With reference to IEC 62321:2008	Negative	-	#
<b>Sum of PBBs</b>	mg/kg	With reference to IEC 62321:2008 and performed by GC-MS	<b>n.d.</b>	<b>-</b>	<b>1000</b>
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	
Pentabromobiphenyl	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	
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	

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-docs.html](http://www.sgs.com/terms_e-docs.html). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

SGS Hong Kong Ltd | 5/F - 8/F & 28/F -29/F, Metropole Square, 2 On Yiu Street, Siu Lek Yuen, Shatin, N.T., Hong Kong. t (852) 2334 4481-9 f (852) 2764 3126 [www.hk.sgs.com](http://www.hk.sgs.com)

Member of the SGS Group (SGS SA)

## Annex 5: Analysis Result of Lead Frame (page 3 of 11)



### Test Report

No. 2107721/EC

Date : Jan 25 2011

Page 3 of 11

Sum of PBDEs	mg/kg	With reference to IEC 62321:2008 and performed by GC-MS	n.d.	-	1000
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 :

- (1) mg/kg = ppm; 0.1wt% = 1000 ppm
- (2) n.d. = not detected
- (3) MDL = Method Detection Limit
- (4) ## = 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 will be included in the sum of PBDE after 01.07.2008
- (5) # = Negative means the absence of CrVI on the tested areas;  
Positive means the presence of CrVI on the tested areas. The detected concentration in boiling water extraction solution is equal to or greater than 0.02 mg/kg with 50 cm<sup>2</sup> sample surface area
- (6) " - " = Not regulated

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-docs.html](http://www.sgs.com/terms_e-docs.html). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document can not be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

SGS Hong Kong Ltd | 5/F - 8/F & 28/F -29/F, Metropole Square, 2 On Yiu Street, Siu Lek Yuen, Shatin, N.T., Hong Kong. t (852) 2334 4481-9 f (852) 2764 3126 www.hk.sgs.com

Member of the SGS Group (SGS SA)



## Annex 5: Analysis Result of Lead Frame (page 4 of 11)



### Test Report

No. 2107721/EC

Date : Jan 25 2011

Page 4 of 11

Test result:

2)

ID for sample 1 : 4120954002

Description for sample 1 : Metal w/ Silvery Plating (Base: Coppery Metal)

#### PFOS (Perfluorooctane sulfonates)

<u>Test Item(s)</u>	<u>Unit</u>	<u>Test Method (Reference)</u>	<u>1</u>	<u>MDL</u>
Perfluorooctane sulphonates (PFOS)				
PFOS – Acid		With reference to SGS in-house method and performed by HPLC-MS	n.d.	10
PFOS – Metal Salt	mg/kg			
PFOS – Amide				

#### PFOA (Perfluorooctyl Acid)

<u>Test Item(s)</u>	<u>Unit</u>	<u>Test Method (Reference)</u>	<u>1</u>	<u>MDL</u>
Perfluorooctyl Acid (PFOA)	mg/kg	With reference to SGS in-house method and performed by HPLC-MS	n.d.	10

Note :

- (1) mg/kg = ppm
- (2) n.d. = Not Detected (< MDL)
- (3) MDL = Method Detection Limit

Reference information: Entry 53 of the Regulation (EC) No. 552/2009 amending Annex XVII of REACH Regulation (EC) No. 1907/2006 (Formerly Directive 2006/122/EC).

- (1) Shall not be placed on the market, or used, as a substance or in mixtures in concentrations equal to or higher than 0,005% by mass.
- (2) Shall not be placed on the market in semi-finished products or articles, or parts thereof, if the concentration of PFOS is equal to or higher than 0,1% by mass calculated with reference to the mass of structurally or microstructurally distinct parts that contain PFOS or, for textiles or other coated materials, if the amount of PFOS is equal to or higher than 1µg/m<sup>2</sup> of the coated material.

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm), and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-docs.html](http://www.sgs.com/terms_e-docs.html). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

SGS Hong Kong Ltd | 5/F - 8/F & 28/F -29/F, Metropole Square, 2 On Yiu Street, Siu Lek Yuen, Shatin, N.T., Hong Kong. t (852) 2334 4481-9 f (852) 2764 3126 [www.hk.sgs.com](http://www.hk.sgs.com)

Member of the SGS Group (SGS SA)

**Annex 5: Analysis Result of Lead Frame (page 5 of 11)****Test Report**

No. 2107721/EC

Date : Jan 25 2011

Page 5 of 11

Test result:

3)

ID for sample 1 : 4120954002

Description for sample 1 : Metal w/ Silvery Plating (Base: Coppery Metal)

HBCDD

Test Item(s)	Unit	Test Method	Results	MDL
HBCDD	mg/kg	With reference to US EPA3550C:2007, and performed by GC-MS	n.d.	5

Note :

- (1) mg/kg = ppm; 0.1 wt% = 1000 ppm
- (2) n.d. = not detected
- (3) MDL = Method Detection Limit

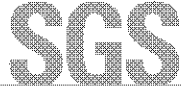
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm), and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-docs.html](http://www.sgs.com/terms_e-docs.html). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

SGS Hong Kong Ltd | 5/F - 8/F & 28/F - 29/F, Metropole Square, 2 On Yiu Street, Siu Lek Yuen, Shatin, N.T., Hong Kong. t (852) 2334 4481-9 f (852) 2764 3126 [www.hk.sgs.com](http://www.hk.sgs.com)

Member of the SGS Group (SGS SA)

## Annex 5: Analysis Result of Lead Frame (page 6 of 11)



### Test Report

No. 2107721/EC

Date : Jan 25 2011

Page 6 of 11

Test results:

4)

ID for sample 1 : 4120954002

Description for sample 1 : Metal w/ Silvery Plating (Base: Coppery Metal)

#### Phthalate

<u>Test item</u>		<u>Test Method</u>	<u>1</u>	<u>DL</u>	<u>Limit</u>
Dibutyl Phthalate	(DBP)	ASTM Method Designation D3421-75, GC-MS	n.d.	0.003%	-
Benzylbutyl Phthalate	(BBP)	ASTM Method Designation D3421-75, GC-MS	n.d.	0.003%	-
Bis-(2-ethylhexyl) Phthalate	(DEHP)	ASTM Method Designation D3421-75, GC-MS	n.d.	0.003%	-
Total (DBP + BBP + DEHP)			<0.01%	--	0.1%

Note :

- (1) mg/kg = ppm; 0.1% = 1000 ppm
- (2) DL = Detection Limit
- (3) n.d. = Not Detected (Less than DL)
- (4) < = less than
- (5) % = percentage by weight
- (6) - = Not Regulated

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm), and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-docs.html](http://www.sgs.com/terms_e-docs.html). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

SGS Hong Kong Ltd | 5/F - 8/F & 28/F -29/F, Metropole Square, 2 On Yiu Street, Siu Lek Yuen, Shatin, N.T., Hong Kong. t (852) 2334 4481-9 f (852) 2764 3126 www.hk.sgs.com

Member of the SGS Group (SGS SA)

# Annex 5: Analysis Result of Lead Frame (page 7 of 11)

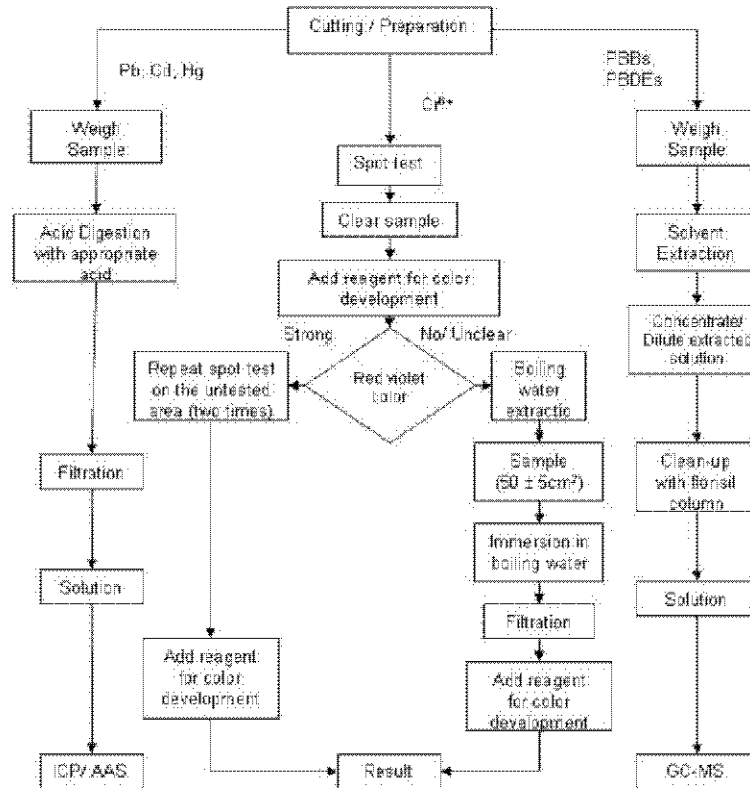
# SGS

**Test Report**

No. 2107721/EC

Date : Jan 25 2011

Page 7 of 11



Operator :

Chiu Kan Yuen / Tang Koon Fung (Acid digestion)  
Chiu Kan Yuen (Dry Ashing)  
Cheng Chi Yuen, Vincent (Hexavalent Chromium)  
Lau Chung Yin, Eric (PBBs and PBDEs)

Section Chief :

Thu Hung Yai, Rodney

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-documents.htm](http://www.sgs.com/terms_e-documents.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

SGS Hong Kong Ltd | 5/F - 8/F & 28/F - 29/F, Metropole Square, 2 On Yiu Street, Siu Lek Yuen, Shatin, N.T., Hong Kong. t (852) 2334 4481-9 f (852) 2764 3126 www.hk.sgs.com

Member of the SGS Group (SGS SA)

**Annex 5: Analysis Result of Lead Frame (page 8 of 11)****SGS****Test Report**

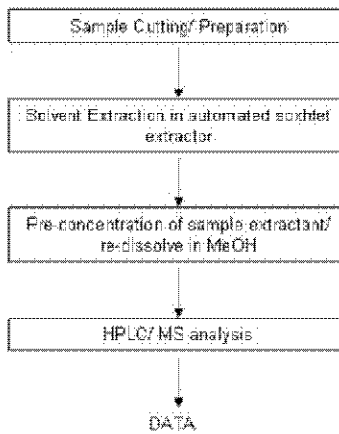
No. 2107721/EC

Date : Jan 25 2011

Page 8 of 11

**Flowchart for PFOS/ PFOA measurement**

Method: In-House method

Operator: Candy LukChief Supervisor: Yu Ka Lai

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-docs.html](http://www.sgs.com/terms_e-docs.html). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

SGS Hong Kong Ltd | 5/F - 8/F & 28/F -29/F, Metropole Square, 2 On Yiu Street, Siu Lek Yuen, Shatin, N.T., Hong Kong. t (852) 2334 4481-9 f (852) 2764 3126 [www.hk.sgs.com](http://www.hk.sgs.com)

Member of the SGS Group (SGS SA)

**Annex 5: Analysis Result of Lead Frame (page 9 of 11)****SGS****Test Report**

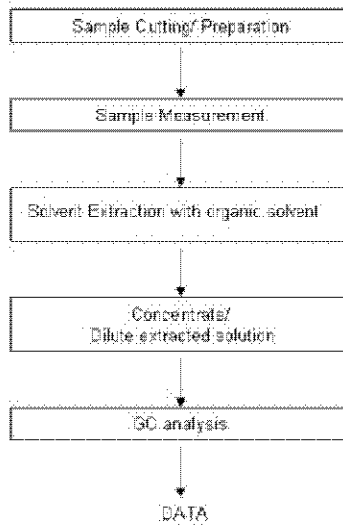
No. 2107721/EC

Date : Jan 25 2011

Page 9 of 11

**Flowchart for HBCDD measurement**

Method: US EPA3950C/2007

Operator: Zinna Chaw  
Chief Supervisor: Dicky Chan

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm), and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-documents.htm](http://www.sgs.com/terms_e-documents.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

SGS Hong Kong Ltd | 5/F - 8/F & 28/F -29/F, Metropole Square, 2 On Yiu Street, Siu Lek Yuen, Shatin, N.T., Hong Kong. t (852) 2334 4481-9 f (852) 2764 3126 [www.hk.sgs.com](http://www.hk.sgs.com)

Member of the SGS Group (SGS SA)

**Annex 5: Analysis Result of Lead Frame (page 10 of 11)****SGS****Test Report**

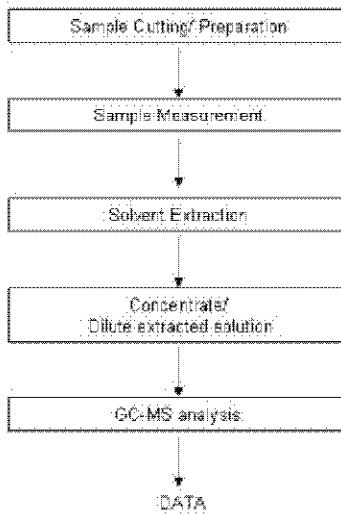
No. 2107721/EC

Date : Jan 25 2011

Page 10 of 11

**Flowchart for Phthalates measurement**

Method: EN 14372



Tested by : Tang Sze Hon, Gary  
Checked by : Chiu Chun Pong, Kevin

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm), and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-documents.htm](http://www.sgs.com/terms_e-documents.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

SGS Hong Kong Ltd | 5/F - 8/F & 28/F -29/F, Metropole Square, 2 On Yiu Street, Siu Lek Yuen, Shatin, N.T., Hong Kong. t (852) 2334 4481-9 f (852) 2764 3126 [www.hk.sgs.com](http://www.hk.sgs.com)

Member of the SGS Group (SGS SA)

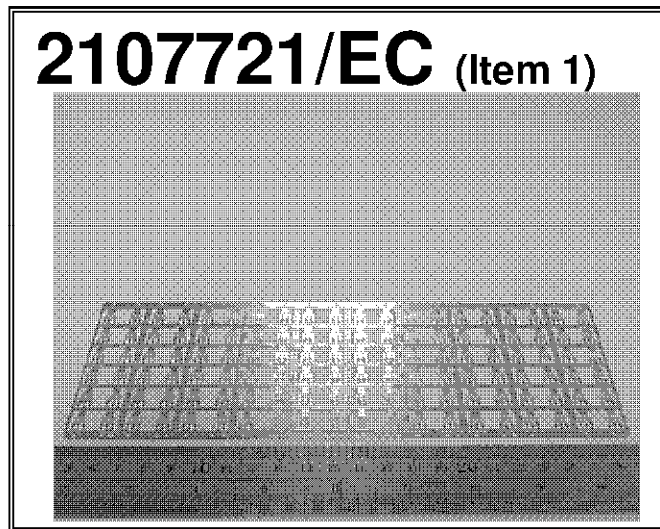
**Annex 5: Analysis Result of Lead Frame (page 11 of 11)****SGS****Test Report**

No. 2107721/EC

Date : Jan 25 2011

Page 11 of 11

Sample photo :



SGS authenticate the photo on original report only

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

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm), and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-docs.html](http://www.sgs.com/terms_e-docs.html). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

SGS Hong Kong Ltd | 5/F - 8/F & 28/F - 29/F, Metropole Square, 2 On Yiu Street, Siu Lek Yuen, Shatin, N.T., Hong Kong. t (852) 2334 4481-9 f (852) 2764 3126 [www.hk.sgs.com](http://www.hk.sgs.com)

Member of the SGS Group (SGS SA)



**Annex 6: Analysis Result of Silicon Wafer (Page 1 of 7)****SGS**

Validity unknown

For Question  
Please Contact with SGS  
www.tw.sgs.com**Test Report**



No. : CE/2010/B2372 Date : 2010/11/18 Page : 1 of 7

LITE-ON SEMICONDUCTOR CORP.  
28-1, WU SHIN STREET, TA WU LUNG, KEELUNG, TAIWAN

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

Sample Description : WAFER  
Style/Item No. : THYRISTOR  
Sample Receiving Date : 2010/11/11  
Testing Period : 2010/11/11 TO 2010/11/18

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

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明，此報告結果僅對測試樣品負責。本報告未經本公司書面許可，不可部份複製。  
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-document.htm](http://www.sgs.com/terms_e-document.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS Taiwan Ltd.  
台灣檢驗科技股份有限公司 | Chemical-Taipei 33 WuChyuan Road, Wuku Industrial Zone, Taipei County, Taiwan / 台北縣五股工業區五福路33號 | +886 (0)22299 3279 f + 886 (0)22299 3237 www.sgs.com

Member of the SGS Group (SGS SA)

## Annex 6: Analysis Result of Silicon Wafer (Page 2 of 7)



### Test Report

No. : CE/2010/B2372 Date : 2010/11/18 Page : 2 of 7

 LITE-ON SEMICONDUCTOR CORP.  
 28-1, WU SHIN STREET, TA WU LUNG, KEELUNG, TAIWAN


#### Test Result(s)

PART NAME No.1 : WAFER

Test Item (s):	Unit	Method	MDL	Result No.1
Cadmium (Cd)	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.
Lead (Pb)	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	19200
Mercury (Hg)	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.
Hexavalent Chromium Cr(VI) by alkaline extraction	mg/kg	With reference to IEC 62321: 2008 and performed by UV-VIS.	2	n.d.
<b>Sum of PBBs</b>			-	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.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有註明，此報告結果僅對測試樣品負責。本報告未經本公司書面許可，不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-document.htm](http://www.sgs.com/terms_e-document.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS Taiwan Ltd. 台灣檢驗科技股份有限公司 | Chemical-Taipei 33 WuChyuan Road, Wuku Industrial Zone, Taipei County, Taiwan / 台北縣五股工業區五福路33號 | +886 (0)212299 3279 | +886 (0)212299 3237 | [www.sgs.com](http://www.sgs.com)

Member of the SGS Group (SGS SA)

## Annex 6: Analysis Result of Silicon Wafer (Page 3 of 7)



### Test Report

No. : CE/2010/B2372 Date : 2010/11/18 Page : 3 of 7

LITE-ON SEMICONDUCTOR CORP.  
28-1, WU SHIN STREET, TA WU LUNG, KEELUNG, TAIWAN



Test Item (s):	Unit	Method	MDL	Result
				No.1
<b>Halogen</b>				
Halogen-Fluorine (F) (CAS No.: 014762-94-8)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC.	50	n.d.
Halogen-Chlorine (Cl) (CAS No.: 022537-15-1)			50	n.d.
Halogen-Bromine (Br) (CAS No.: 010097-32-2)			50	n.d.
Halogen-Iodine (I) (CAS No.: 014362-44-8)			50	n.d.

**Note :**

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

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明，此報告結果僅對標註區域負責。本報告未經本公司書面許可，不可部份複製。  
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-document.htm](http://www.sgs.com/terms_e-document.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS Taiwan Ltd. Chemical-Taipei 33 WuChyuan Road, Wuku Industrial Zone, Taipei County, Taiwan / 台北縣五股工業區五權路33號 t + 886 (0)22299 3279 f + 886 (0)22299 3237 www.sgs.com  
台灣檢驗科技股份有限公司

Member of the SGS Group (SGS SA)

## Annex 6: Analysis Result of Silicon Wafer (Page 4 of 7)

# SGS

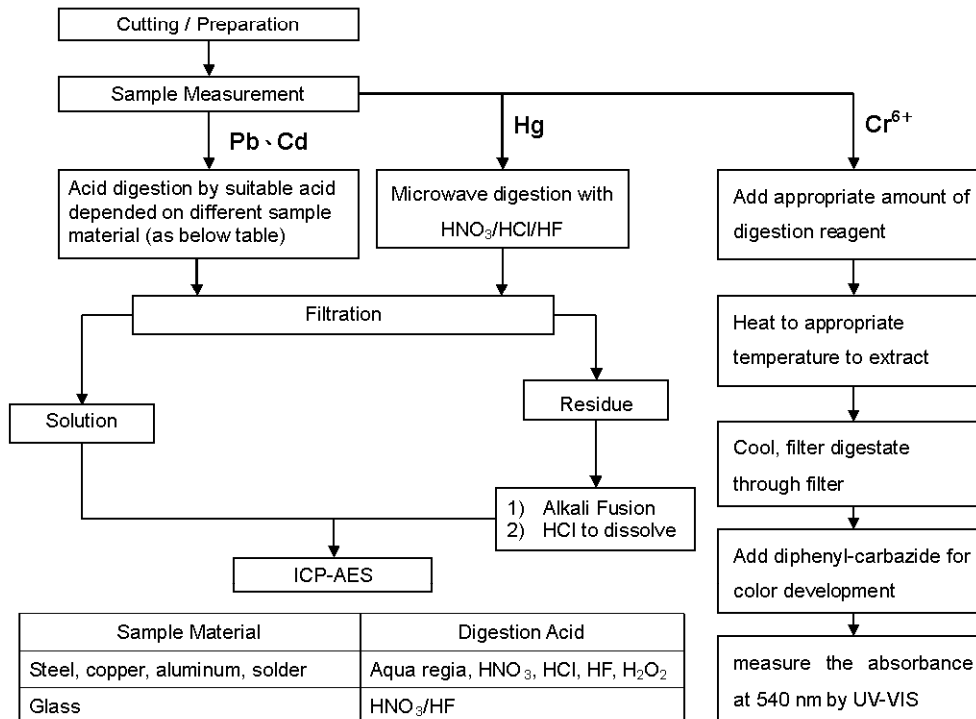
### Test Report

No. : CE/2010/B2372 Date : 2010/11/18 Page : 4 of 7

LITE-ON SEMICONDUCTOR CORP.  
28-1, WU SHIN STREET, TA WU LUNG, KEELUNG, TAIWAN



- 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



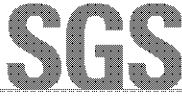
Sample Material	Digestion Acid
Steel, copper, aluminum, solder	Aqua regia, HNO <sub>3</sub> , HCl, HF, H <sub>2</sub> O <sub>2</sub>
Glass	HNO <sub>3</sub> /HF
Gold, platinum, palladium, ceramic	Aqua regia
Silver	HNO <sub>3</sub>
Plastic	H <sub>2</sub> SO <sub>4</sub> , H <sub>2</sub> O <sub>2</sub>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

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明，此報告結果僅對標註樣品負責。本報告未經本公司書面許可，不可部份複製。  
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-document.htm](http://www.sgs.com/terms_e-document.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS Taiwan Ltd. 台灣檢驗科技股份有限公司 | Chemical-Taipei 33 WuChyuan Road, Wuku Industrial Zone, Taipei County, Taiwan / 台北縣五股工業區五福路33號 | +886 (0)22299 3279 f + 886 (0)22299 3237 www.sgs.com

Member of the SGS Group (SGS SA)

## Annex 6: Analysis Result of Silicon Wafer (Page 5 of 7)



### Test Report

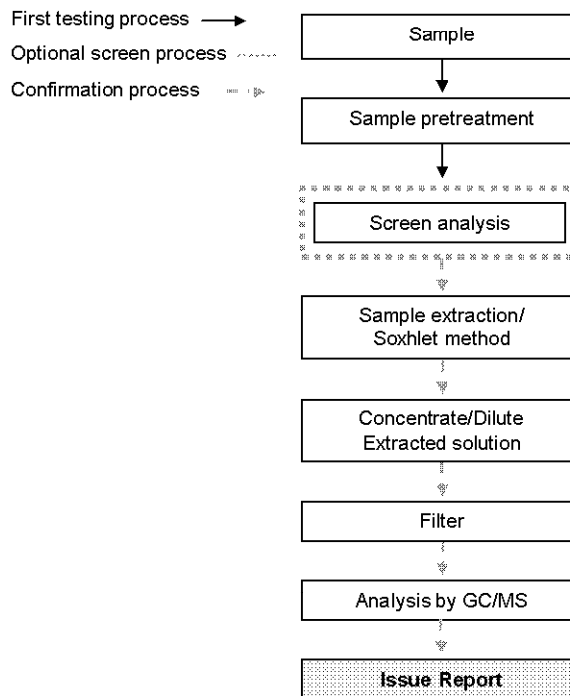
No. : CE/2010/B2372 Date : 2010/11/18 Page : 5 of 7

LITE-ON SEMICONDUCTOR CORP.  
28-1, WU SHIN STREET, TA WU LUNG, KEELUNG, TAIWAN



#### PBB/PBDE analytical FLOW CHART

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



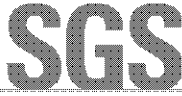
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明，此報告結果僅對測試樣品負責。本報告未經本公司書面許可，不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-document.htm](http://www.sgs.com/terms_e-document.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS Taiwan Ltd. Chemical-Taipei 33 WuChyuan Road, Wuku Industrial Zone, Taipei County, Taiwan / 台北縣五股工業區五福路33號 t + 886 (0)212299 3279 f + 886 (0)212299 3237 [www.sgs.com](http://www.sgs.com)  
台灣檢驗科技股份有限公司

Member of the SGS Group (SGS SA)

## Annex 6: Analysis Result of Silicon Wafer (Page 6 of 7)



### Test Report

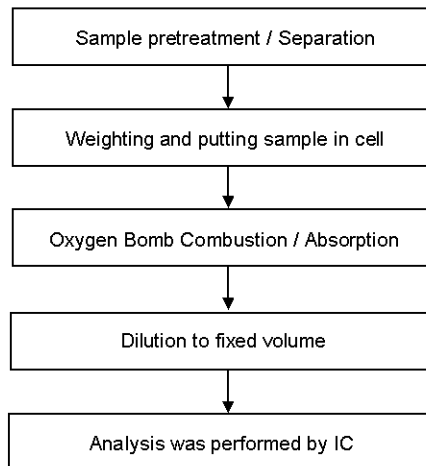
No. : CE/2010/B2372 Date : 2010/11/18 Page : 6 of 7

LITE-ON SEMICONDUCTOR CORP.  
28-1, WU SHIN STREET, TA WU LUNG, KEELUNG, TAIWAN



#### Analytical flow chart of halogen content

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



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明，此報告結果僅對測試樣品負責。本報告未經本公司書面許可，不可部份複製。  
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-document.htm](http://www.sgs.com/terms_e-document.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS Taiwan Ltd. Chemical-Taipei 33 WuChyuan Road, Wuku Industrial Zone, Taipei County, Taiwan / 台北縣五股工業區五權路33號 t + 886 (0)22299 3279 f + 886 (0)22299 3237 [www.sgs.com](http://www.sgs.com)  
台灣檢驗科技股份有限公司

Member of the SGS Group (SGS SA)

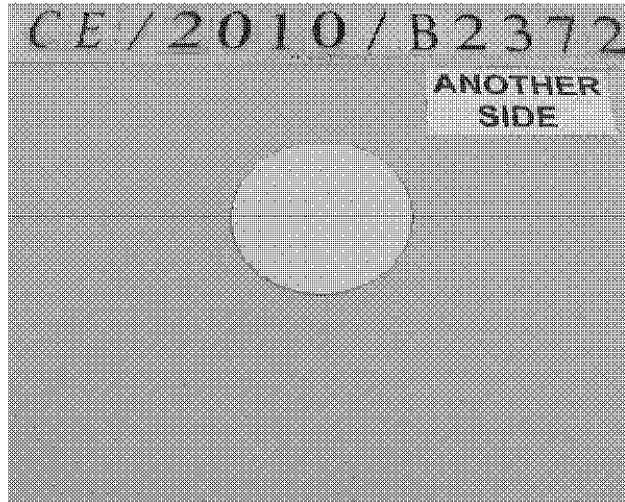
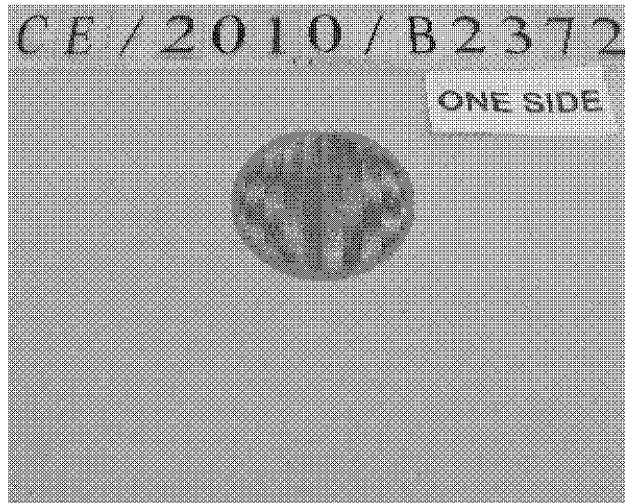
## Annex 6: Analysis Result of Silicon Wafer (Page 7 of 7)

# SGS

### Test Report

No. : CE/2010/B2372    Date : 2010/11/18    Page : 7 of 7

LITE-ON SEMICONDUCTOR CORP.  
28-1, WU SHIN STREET, TA WU LUNG, KEELUNG, TAIWAN



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

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明，此報告結果僅對測試樣品負責。本報告未經本公司書面許可，不可部份複製。  
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-document.htm](http://www.sgs.com/terms_e-document.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS Taiwan Ltd. Chemical-Taipei 33 WuChyuan Road, Wuku Industrial Zone, Taipei County, Taiwan / 台北縣五股工業區五福路33號 t + 886 (0)212299 3279 f + 886 (0)212299 3237 [www.sgs.com](http://www.sgs.com)  
台灣檢驗科技股份有限公司

Member of the SGS Group (SGS SA)

## Annex 7: Applicable RoHS exemptions

13.2.2003 EN Official Journal of the European Union L 37/19

**DIRECTIVE 2002/95/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL**  
**of 27 January 2003**  
**on the restriction of the use of certain hazardous substances in electrical and electronic equipment**

13.2.2003 EN Official Journal of

Article 4

**Prevention**

1. Member States shall ensure that, from 1 July 2006, new electrical and electronic equipment put on the market does not contain lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE). National measures restricting or prohibiting the use of these substances in electrical and electronic equipment which were adopted in line with Community legislation before the adoption of this Directive may be maintained until 1 July 2006.

2. Paragraph 1 shall not apply to the applications listed in the Annex.

to be protected and an overall strategy that in particular restricts the use of cadmium and stimulates research into substitutes should therefore be implemented. The Reso-

13.2.2 of the European Union L 37/23

ANNEX

**Applications of lead, mercury, cadmium and hexavalent chromium, which are exempted from the requirements of Article 4(1)**

1. Mercury in compact fluorescent lamps not exceeding 5 mg per lamp.
2. Mercury in straight fluorescent lamps for general purposes not exceeding:
 

— halophosphate	10 mg
— triphosphate with normal lifetime	5 mg
— triphosphate with long lifetime	8 mg
3. Mercury in straight fluorescent lamps for special purposes.
4. Mercury in other lamps not specifically mentioned in this Annex.
5. Lead in glass of cathode ray tubes, electronic components and fluorescent tubes.
6. Lead as an alloying element in steel containing up to 0,35 % lead by weight, aluminium containing up to 0,4 % lead by weight and as a copper alloy containing up to 4 % lead by weight.
7. — Lead in high melting temperature type solders (i.e. tin-lead solder alloys containing more than 85 % lead),
  - lead in solders for servers, storage and storage array systems (exemption granted until 2010),
  - lead in solders for network infrastructure equipment for switching, signalling, transmission as well as network management for telecommunication,
  - lead in electronic ceramic parts (e.g. piezoelectronic devices).
8. Cadmium plating except for applications banned under Directive 91/338/EEC (\*) amending Directive 76/769/EEC (\*) relating to restrictions on the marketing and use of certain dangerous substances and preparations.