

## Eline eutectic ICP Analysis Note

The appended ICP Analysis report demonstrates compliance with EC directives 2002/95/EC (Restriction of the use of certain hazardous substances "RoHS") and the 24<sup>th</sup> amendment to 76/769/EEC (Restrictions on the marketing and use of certain dangerous substances and preparations).

This analysis was performed to independently verify that the content of lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB), and polybrominated diphenyl ethers (PDBE) present is within the permitted levels set.

**Note:** This report is a composite of the reports for the individual, homogenous parts of the product. The table below is a summary of the data in the following pages.

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K. J. Chthero

K.Clithero Group Quality Manager

RoHS Substance	Result (ppm)
Lead	10
Mercury	Not detected
Cadmium	Not detected
Hexavalent Chromium	Not detected
Polybrominated Biphenyls (PBB)	Not detected
Polybrominated Diphenyl Ethers (PDBE)	Not detected

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No. : CE/2008/49068 Date : 2008/05/08 Page: 1 of 4

ZETEX SEMICONDUCTORS PLC ZETEX TECHNOLOGY PARK, CHADDERTON, OLDHAM. OL9 9LL. UNITED KINGDOM

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

Sample Description	:	WAFER
Buyer/Order No.	:	65637
Sample Receiving Date	:	2008/04/30
Testing Period	:	2008/04/30 TO 2008/05/08

:

\_\_\_\_\_\_

Test Result(s)

Please refer to next page(s).

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

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 SGS TAIWAN LIMITED
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No. : CE/2008/49068 Date : 2008/05/08 Page: 2 of 4

ZETEX SEMICONDUCTORS PLC ZETEX TECHNOLOGY PARK, CHADDERTON, OLDHAM. OL9 9LL. UNITED KINGDOM

#### 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 62321/2nd CDV (111/95/CDV). Determination of Cadmium by ICP-AES.	2	n.d.
Lead (Pb)	mg/kg	With reference to IEC 62321/2nd CDV (111/95/CDV). Determination of Lead by ICP- AES.	2	n.d.
Mercury (Hg)	mg/kg	With reference to IEC 62321/2nd CDV (111/95/CDV). Determination of Mercury by ICP-AES.	2	n.d.
Hexavalent Chromium Cr(VI) by alkaline extraction	mg/kg	With reference to IEC 62321/2nd CDV (111/95/CDV). Determination of Hexavalent Chromium for non-metallic samples by UV/Vis Spectrometry.	2	n.d.
Antimony (Sb)	mg/kg	With reference to US EPA Method 3050B for Antimony Content. Analysis was performed by ICP-AES.	2	n.d.
Halogen-Chlorine (Cl) (CAS No.: 007782-50-5)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC method for Chlorine content.	50	n.d.
Halogen-Bromine (Br) (CAS No.: 007726-95-6)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC method for Bromine content.	50	n.d.

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No. : CE/2008/49068 Date : 2008/05/08

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ZETEX SEMICONDUCTORS PLC

ZETEX TECHNOLOGY PARK, CHADDERTON, OLDHAM. OL9 9LL. UNITED **KINGDOM** 

Test Item (s):	Unit	Method	MDL	Result
. ,	Unit	Method	WIDE	No.1
Sum of PBBs			-	n.d.
Monobromobiphenyl			5	n.d.
Dibromobiphenyl			5	n.d.
Tribromobiphenyl			5	n.d.
Tetrabromobiphenyl	Ī		5	n.d.
Pentabromobiphenyl			5	n.d.
Hexabromobiphenyl	Ī		5	n.d.
Heptabromobiphenyl			5	n.d.
Octabromobiphenyl			5	n.d.
Nonabromobiphenyl	Ī		5	n.d.
Decabromobiphenyl		With reference to IEC	5	n.d.
Sum of PBDEs (Mono to Nona)	mg/kg	62321/2nd CDV (111/95/CDV).	-	n.d.
(Note 4)	шу/ку	Determination of PBB and		
Monobromodiphenyl ether		PBDE by GC/MS.	5	n.d.
Dibromodiphenyl ether	Ī		5	n.d.
Tribromodiphenyl ether			5	n.d.
Tetrabromodiphenyl ether	Ī		5	n.d.
Pentabromodiphenyl ether			5	n.d.
Hexabromodiphenyl ether			5	n.d.
Heptabromodiphenyl ether	Ī		5	n.d.
Octabromodiphenyl ether	l		5	n.d.
Nonabromodiphenyl ether	Ì		5	n.d.
Decabromodiphenyl ether	Ì		5	n.d.
Sum of PBDEs (Mono to Deca)			-	n.d.

Note : 1. mg/kg = ppm

2. n.d. = Not Detected

3. MDL = Method Detection Limit

4. According to 2005/717/EC DecaBDE is exempt.

5. " - " = Not Regulated

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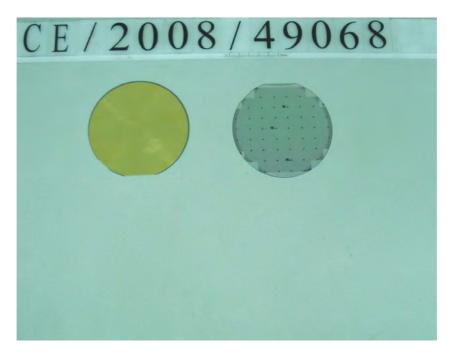
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ZETEX SEMICONDUCTORS PLC ZETEX TECHNOLOGY PARK, CHADDERTON, OLDHAM. OL9 9LL. UNITED **KINGDOM** 



\*\* End of Report \*\*

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No. LPCI/01230/08 Date : 2008/01/28 CTS Ref. CTS/08/0298/Possehl Page: 1 of 4

#### POSSEHL ELECTRONICS (MALAYSIA) SDN. BHD. LOT 9 & LOT 33, PHASE III, BATU BERENDAM FTZ, 75350 MELAKA, MALAYSIA.

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

Sample Description Lot # Sample Receiving Date Testing Period	:	Ag (A194) 1A-6919 2008/01/21 2008/01/21 to 2008/01/28
Test Requested	:	In accordance with the RoHS Directive 2002/95/EC, and its amendment directives.
Test Method	:	<ul> <li>(1) With reference to IEC 62321/2<sup>nd</sup> (111/95/CDV) for Cadmium Content.</li> <li>Analysis was performed by ICP</li> <li>(2) With reference to IEC 62321/2<sup>nd</sup> (111/95/CDV) for Lead Content.</li> <li>Analysis was performed by ICP</li> <li>(3) With reference to IEC 62321/2<sup>nd</sup> (111/95/CDV) for Mercury Content.</li> <li>Analysis was performed by ICP</li> <li>(4) With reference to IEC 62321/2<sup>nd</sup> (111/95/CDV) Section 9 for Hexavalent Chromium.</li> <li>Analysis was performed by UV/Vis Spectrophotometry.</li> <li>(5) With reference to IEC 62321/2<sup>nd</sup> (111/95/CDV). Determination of PBBs and PBDEs by GC/MS.</li> </ul>
Test Results	:	Please refer to next page.
Analysts	:	Lim Meng Hoe & Jocelyn Christmas

SGS LABORATORY SERVICES (M) SDN. BHD.

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

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No. LPCI/01230/08 Date : 2008/01/28 CTS Ref. CTS/08/0298/Possehl

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

Test Item(s):	Method (refer to)	Result	MDL
Cadmium(Cd)	(1)	N.D.	2
Lead (Pb)	(2)	N.D.	2
Mercury (Hg)	(3)	N.D.	2
Hexavalent Chromium (CrVI)	(4)	N.D.	2
Sum of Polybrominated Biphenyl (PBBs)	(5)	N.D.	-
Monobromobiphenyl		N.D.	5
Dibromobiphenyl		N.D.	5
Tribromobiphenyl		N.D.	5
Tetrabromobiphenyl		N.D.	5
Pentabromobiphenyl		N.D.	5
Hexabromobiphenyl		N.D.	5
Heptabromobiphenyl		N.D.	5
Octabromobiphenyl		N.D.	5
Nonabromobiphenyl		N.D.	5
Decabromobiphenyl		N.D.	5
Sum of Polybrominated Diphenylethers (PBDEs)		N.D.	-
Monobromodiphenyl ether		N.D.	5
Dibromodiphenyl ether		N.D.	5
Tribromodiphenyl ether		N.D.	5
Tetrabromodiphenyl ether		N.D.	5
Pentabromodiphenyl ether		N.D.	5
Hexabromodiphenyl ether		N.D.	5
Heptabromodiphenyl ether		N.D.	5
Octabromodiphenyl ether		N.D.	5
Nonabromodiphenyl ether		N.D.	5
Decabromodiphenyl ether		N.D.	5

Test Part Description :

As per page 3 SGS LABORATORY SERVICES (M) SDN. BHD.

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est Report	No. LPCI/01230/08	Date : 2008/01/28
-	CTS Ref. CTS/08/0298/Possehl	

Test Part Description :

Sample Description	:	Ag (A194)
Lot #	:	1A-6919

Note : (a) mg/kg = ppm (b) N.D. = Not Detected (c) MDL = Method Detection Limit

SGS LABORATORY SERVICES (M) SDN. BHD.

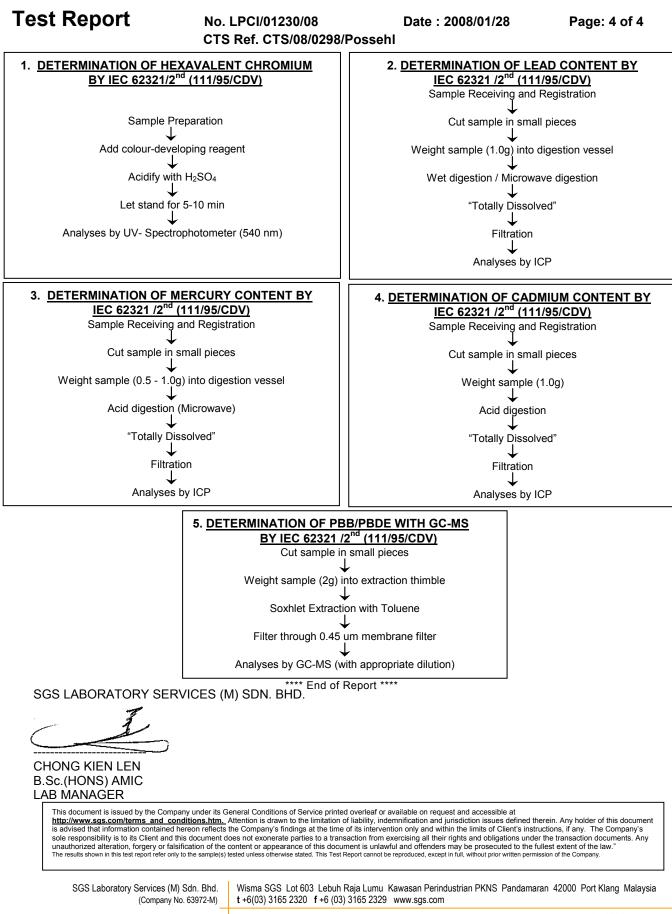
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# Test Report No. SH8050865/CHEM Date: Apr. 16, 2008 Page 1 of 5

HERAEUS ZHAOYUAN PRECIOU METAL MATERIALS CO., LTD/ HERAEUS ZHAOYUAN (CHANGSHU) ELECTRONIC MATERIAL CO., LTD NO.238 LINGLONG ROAD, ZHAOYUAN SHANGDONG/ NO.248 HUANGHE ROAD CHANGSHU, JIANGSU

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

Sample Name	: GOLD BONDING WIRE HD
SGS Ref No.	: 10960194
Main Substance	: GOLD

Sample Receiving Date : Apr.15, 2008 Testing Period : Apr.15 – 16, 2008

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

Test Method : With reference to IEC 62321/2<sup>nd</sup> CDV (111/95/CDV) Procedures for the Determination of Levels of Regulated Substances in Electrotechnical Products (1) Determination of Cadmium by ICP.

- (2) Determination of Lead by ICP
- (3) Determination of Mercury by ICP.
- (4) Determination of Hexavalent Chromium by Spot test / Colorimetric Method.
- (5) Determination of PBBs and PBDEs by GC/MS.

Test Results : Please refer to next pages

Conclusion

: Based on the performed tests on submitted samples, the results comply with the RoHS Directive 2002/95/EC and its subsequent amendments.

Signed for and on behalf of SGS-CSTC Chemical Laboratory

Ella Zhang

Section Manager

Signed for and on behalf of SGS-CSTC Chemical Laboratory

sandy

Sandy Hao Lab Manager



No. SH8050865/CHEM

Date: Apr. 16, 2008

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

Test Item(s):	Method (refer to)	<u>1</u>	MDL	<u>RoHS</u> <u>Limit</u>
Cadmium(Cd)	(1)	ND	2	100
Lead (Pb)	(2)	ND	2	1000
Mercury (Hg)	(3)	ND	2	1000
Hexavalent Chromium (CrVI) by spot test / boiling-water extraction	(4)	Negative	See Note (5)	#
Sum of PBBs		ND	-	1000
Monobromobiphenyl		ND	5	-
Dibromobiphenyl		ND	5	-
Tribromobiphenyl		ND	5	-
Tetrabromobiphenyl		ND	5	-
Pentabromobiphenyl		ND	5	-
Hexabromobiphenyl		ND	5	-
Heptabromobiphenyl		ND	5	-
Octabromobiphenyl		ND	5	-
Nonabromobiphenyl		ND	5	-
Decabromobiphenyl		ND	5	-
Sum of PBDEs (Note 4)	(5)	ND	-	1000
Monobromodiphenyl ether		ND	5	-
Dibromodiphenyl ether		ND	5	-
Tribromodiphenyl ether		ND	5	-
Tetrabromodiphenyl ether		ND	5	-
Pentabromodiphenyl ether		ND	5	-
Hexabromodiphenyl ether		ND	5	-
Heptabromodiphenyl ether		ND	5	-
Octabromodiphenyl ether	]	ND	5	-
Nonabromodiphenyl ether		ND	5	-
Decabromodiphenyl ether		ND	5	-
Sum of PBDEs (Mono to Deca)		ND	-	-

Test Part Description:

1. Golden metal thread



#### No. SH8050865/CHEM

Date: Apr. 16, 2008

Note:

- (1) mg/kg = ppm
- (2) ND = Not Detected
- (3) MDL = Method Detection Limit
- (4) Sum of Mono to NonaBDE & according to 2005/717/EC DecaBDE is exempt.
- (5) Spot-test:

Negative = Absence of CrVI coating, Positive = Presence of CrVI coating;

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

Boiling-water-extraction:

Negative = Absence of CrVI coating

Positive = Presence of CrVI coating; 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.

- (6) # = Positive indicates the presence of Hexavalent Chromium on the tested areas.
- Negative indicates the absence of CrVI on the tested areas.
- (7) "-" = Not Regulated
- (8) The maximum permissible limit is quoted from the document 2005/618/EC amending RoHS directive 2002/95/EC



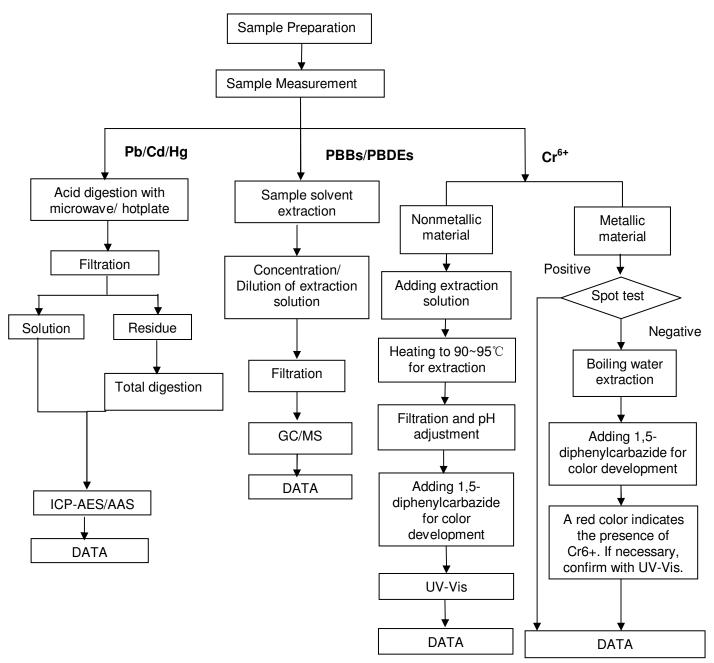
No. SH8050865/CHEM

Date: Apr. 16, 2008

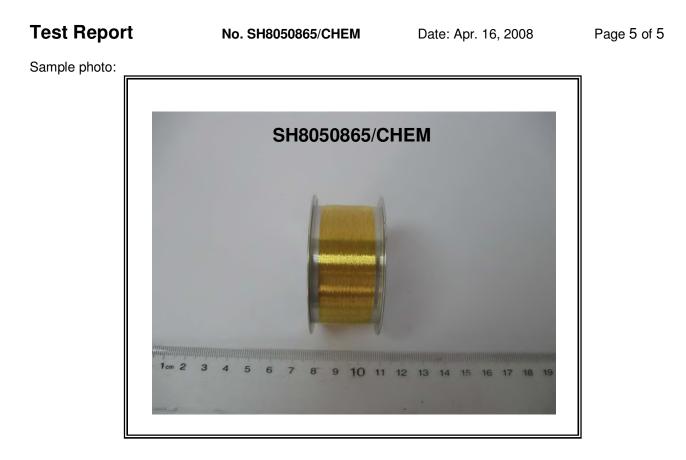
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#### ATTACHMENTS

- 1) Name of the person who made measurement: Cathy Cai/George Xu/Diane Wang
- 2) Name of the person in charge of measurement: Terry Wang/Tracy Yue
- 3) These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr6+ and PBBs/PBDEs test method excluded)







SGS authenticate the photo on original report only

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



Test Report	No. SH8002114/ CHEM	Date: Jan. 8, 2008	Page 1 of 7
	E (SUZHOU) CO., LTD UZHOU INDUSTRIAL PARK		
The following sample(s	s) was/were submitted and identified	by/on behalf of the client as:	
Sample Name SGS Ref No.	: EME-E500 TYPE HM : 10791826-4		
Sample Receiving Date Testing Period			
Test Requested		d, Mercury, Hexavalent Chromium, s) and PBBEs(PBDEs) (Polybromin d sample.	ated biphenyl
Test Method	<ul> <li>Analysis was performed by IC</li> <li>(2) With reference to IEC 62321</li> <li>Analysis was performed by IC</li> <li>(3) With reference to IEC 62321</li> <li>Analysis was performed by IC</li> <li>(4) With reference to IEC 62321</li> <li>Chromium by Colorimetric Me</li> </ul>	Ed.1 111/54/CDV. section11 for Lea P. Ed.1 111/54/CDV. section10for Mer P. Ed.1 111/54/CDV. section 9 for Hex thod. Ed.1 111/54/CDV .section 7 for PBE	ad content cury content avalent
Test Results	: Please refer to next pages		

Signed for and on behalf of SGS-CSTC Chemical Laboratory

Ella Zhang Section Manager Signed for and on behalf of SGS-CSTC Chemical Laboratory

Nao Sandy

Sandy Hao Lab Manager



No. SH8002114/ CHEM Date: Jan. 8, 2008

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

Test Item(s):	Method (refer to)	<u>1</u>	<u>MDL</u>
Cadmium(Cd)	(1)	ND	2
Lead (Pb)	(2)	ND	2
Mercury (Hg)	(3)	ND	2
Hexavalent Chromium (CrVI)	(4)	ND	2
Sum of PBBs		ND	
Monobromobiphenyl		ND	5
Dibromobiphenyl		ND	5
Tribromobiphenyl	ND ND ND ND ND ND (5) ND ND ND	ND	5
Tetrabromobiphenyl		ND	5
Pentabromobiphenyl		ND	5
Hexabromobiphenyl		ND	5
Heptabromobiphenyl		ND	5
Octabromobiphenyl		ND	5
Nonabromobiphenyl		ND	5
Decabromobiphenyl		5	
Sum of PBDEs			
Monobromodiphenyl ether		5	
Dibromodiphenyl ether		ND	5
Tribromodiphenyl ether		ND	5
Tetrabromodiphenyl ether		ND	5
Pentabromodiphenyl ether		ND	5
Hexabromodiphenyl ether		ND	5
Heptabromodiphenyl ether		ND	5
Octabromodiphenyl ether		ND	5
Nonabromodiphenyl ether		ND	5
Decabromodiphenyl ether		ND	5

Test Part Description:

1. Gray black pellet

Note:

(1) mg/kg = ppm

(2) ND = Not Detected

(3) MDL = Method Detection Limit

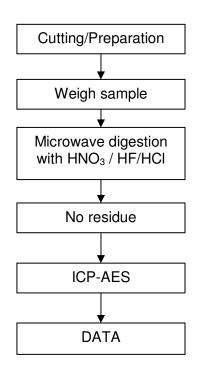


No. SH8002114/ CHEM Date: Jan. 8, 2008

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#### ATTACHMENTS

Cd and Pb Measurement Flowchart for sample



The samples were dissolved totally by pre-conditioning method according to above flow chart.

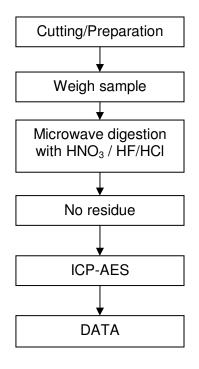
Tested by : Ken Wang Checked by : Terry Wang



No. SH8002114/ CHEM Date: Jan. 8, 2008

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Hg Measurement Flowchart for sample



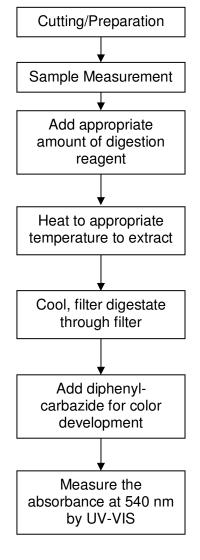
Tested by	: Ken Wang
Checked by	: Terry Wang



No. SH8002114/ CHEM Date: Jan. 8, 2008

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CrVI Measurement Flowchart for sample



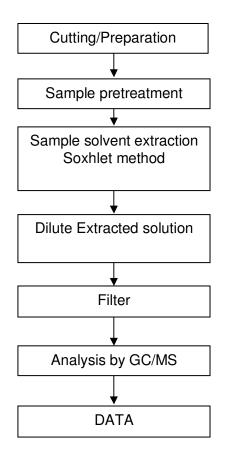
Tested by Checked by : George Xu : Terry Wang



No. SH8002114/ CHEM Date: Jan. 8, 2008

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PBBs/PBDEs Measurement Flowchart for sample



Tested by : Diane Wang Checked by : Tracy Yue



**Test Report** No. SH8002114/ CHEM Date: Jan. 8, 2008 Sample photo: SH8002114/CHEM

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No. LPCI/24763/07 Date : 20 CTS Ref. CTS/07/6092/Redring

Date : 2007/12/31

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REDRING SOLDER (M) SDN. BHD. LOT 17486, JALAN DUA, TAMAN SELAYANG BARU, 68100 BATU CAVES, SELANGOR DARUL EHSAN, MALAYSIA.

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

Sample Description Sample Receiving Date Testing Period	:	Pure Tin Anode 2007/12/24 2007/12/24 to 2007/12/31
Test Requested	:	In accordance with the RoHS Directive 2002/95/EC, and its amendment directives.
Test Method	:	<ul> <li>(1) With reference to IEC 62321 for Cadmium Content. Analysis was performed by ICP</li> <li>(2) With reference to IEC 62321 for Lead Content. Analysis was performed by ICP</li> <li>(3) With reference to IEC 62321 for Mercury Content. Analysis was performed by ICP</li> <li>(4) With reference to IEC 62321, Ed1 (111 54 CDV) Section 8.5.1 for Hexavalent Chromium. Analysis was performed by UV/Vis Spectrophotometry.</li> <li>(5) With reference to IEC 62321, Ed1 (111 54 CDV). Determination of PBBs and PBDEs by GC/MS.</li> </ul>
Test Results	:	Please refer to next page.
Analysts	:	Lim Meng Hoe & Jocelyn Christmas

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

Test Item(s):	Method (refer to)	Result	MDL
Cadmium(Cd)	(1)	N.D.	2
Lead (Pb)	(2)	10	2
Mercury (Hg)	(3)	N.D.	2
Hexavalent Chromium (CrVI)	(4)	Negative	*
Sum of Polybrominated Biphenyl (PBBs)	(5)	N.D.	-
Monobromobiphenyl		N.D.	5
Dibromobiphenyl		N.D.	5
Tribromobiphenyl		N.D.	5
Tetrabromobiphenyl		N.D.	5
Pentabromobiphenyl		N.D.	5
Hexabromobiphenyl		N.D.	5
Heptabromobiphenyl		N.D.	5
Octabromobiphenyl		N.D.	5
Nonabromobiphenyl		N.D.	5
Decabromobiphenyl		N.D.	5
Sum of Polybrominated Diphenylethers (PBDEs)		N.D.	-
Monobromodiphenyl ether		N.D.	5
Dibromodiphenyl ether		N.D.	5
Tribromodiphenyl ether		N.D.	5
Tetrabromodiphenyl ether		N.D.	5
Pentabromodiphenyl ether		N.D.	5
Hexabromodiphenyl ether		N.D.	5
Heptabromodiphenyl ether		N.D.	5
Octabromodiphenyl ether		N.D.	5
Nonabromodiphenyl ether		N.D.	5
Decabromodiphenyl ether		N.D.	5

**Test Part Description :** As per page 3

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**Test Part Description :** 

Pure Tin Anode Sample Description :

Note : (a) mg/kg = ppm

- (b) N.D. = Not Detected
- (c) MDL = Method Detection Limit
- (d) \*Detection limit = 1 mg/kg of Hexavalent Chromium on the tested areas Negative = less than detection limit

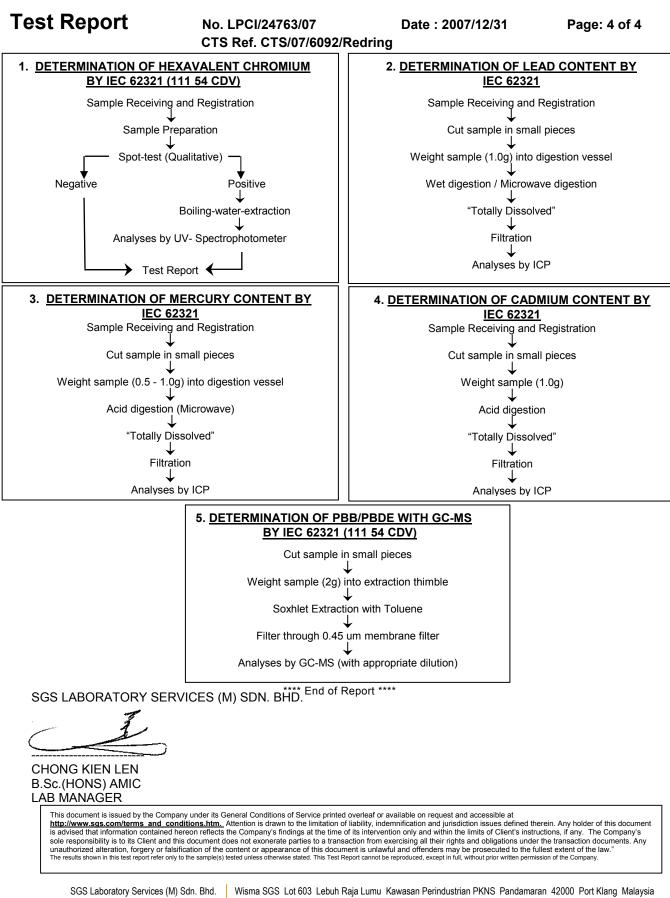
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