

## Test Report

No. TSNEC1000227801

Date: 31 Mar 2010

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BEIJING SHOUKEHUA MICRO ELECTRONICS CO.,LTD  
SHAHE INDUSTRIAL DISTRICT CHANGPING DISTRICT BEIJING CITY  
CHINA

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

SGS Job No. : 1022948 - TJ  
Composition : EPOXY RESIN, SiO<sub>2</sub>  
Model No. : KH  
Date of Sample Received : 24 Mar 2010  
Testing Period : 24 Mar 2010 - 31 Mar 2010  
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 : 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-CSTC Ltd.



Lucid Qi  
Lab Manager

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## Test Results:

ID for specimen 1 : TSN10-002278.001  
 Description for specimen 1 : grey black solid

## RoHS Directive 2002/95/EC

Test Item(s)	Unit	Test Method (Reference)	Result	MDL	Limit
Cadmium (Cd)	mg/kg	IEC 62321 Ed.1: 2008, ICP-AES	N.D.	2	100
Lead (Pb)	mg/kg	IEC 62321 Ed.1: 2008, ICP-AES	N.D.	2	1000
Mercury (Hg)	mg/kg	IEC 62321 Ed.1: 2008, ICP-AES	N.D.	2	1000
Hexavalent Chromium (CrVI) by alkaline extraction	mg/kg	IEC 62321 Ed.1: 2008, UV-Vis	N.D.	2	1000
Sum of PBBs	mg/kg	-	N.D.	-	1000
Monobromobiphenyl	mg/kg	IEC 62321 Ed.1: 2008, GC-MS	N.D.	5	
Dibromobiphenyl	mg/kg	IEC 62321 Ed.1: 2008, GC-MS	N.D.	5	
Tribromobiphenyl	mg/kg	IEC 62321 Ed.1: 2008, GC-MS	N.D.	5	
Tetrabromobiphenyl	mg/kg	IEC 62321 Ed.1: 2008, GC-MS	N.D.	5	
Pentabromobiphenyl	mg/kg	IEC 62321 Ed.1: 2008, GC-MS	N.D.	5	
Hexabromobiphenyl	mg/kg	IEC 62321 Ed.1: 2008, GC-MS	N.D.	5	
Heptabromobiphenyl	mg/kg	IEC 62321 Ed.1: 2008, GC-MS	N.D.	5	
Octabromobiphenyl	mg/kg	IEC 62321 Ed.1: 2008, GC-MS	N.D.	5	
Nonabromobiphenyl	mg/kg	IEC 62321 Ed.1: 2008, GC-MS	N.D.	5	
Decabromobiphenyl	mg/kg	IEC 62321 Ed.1: 2008, GC-MS	N.D.	5	
Sum of PBDEs	mg/kg	-	N.D.	-	1000
Monobromodiphenyl ether	mg/kg	IEC 62321 Ed.1: 2008, GC-MS	N.D.	5	
Dibromodiphenyl ether	mg/kg	IEC 62321 Ed.1: 2008, GC-MS	N.D.	5	
Tribromodiphenyl ether	mg/kg	IEC 62321 Ed.1: 2008, GC-MS	N.D.	5	
Tetrabromodiphenyl ether	mg/kg	IEC 62321 Ed.1: 2008, GC-MS	N.D.	5	
Pentabromodiphenyl ether	mg/kg	IEC 62321 Ed.1: 2008, GC-MS	N.D.	5	
Hexabromodiphenyl ether	mg/kg	IEC 62321 Ed.1: 2008, GC-MS	N.D.	5	
Heptabromodiphenyl ether	mg/kg	IEC 62321 Ed.1: 2008, GC-MS	N.D.	5	
Octabromodiphenyl ether	mg/kg	IEC 62321 Ed.1: 2008, GC-MS	N.D.	5	
Nonabromodiphenyl ether	mg/kg	IEC 62321 Ed.1: 2008, GC-MS	N.D.	5	
Decabromodiphenyl ether	mg/kg	IEC 62321 Ed.1: 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
5. The maximum permissible limit is quoted from the document 2005/618/EC amending RoHS directive 2002/95/EC

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### Halogen, EN14582

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	69	50
Bromine (Br)	mg/kg	BS EN 14582:2007, IC	4151	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

### PFOA & PFOS (Perfluorooctanoic acid & Perfluorooctane sulfonates)

Test Item(s)	Unit	Test Method (Reference)	Result	MDL
Perfluorooctanoic acid (PFOA)	mg/kg	EPA 3550C: 2007, LC-MS	N.D.	10
Perfluorooctane sulfonates (PFOS)	mg/kg	EPA 3550C: 2007, LC-MS	N.D.	10
PFOS Acid				
PFOS Metal Salt				
PFOS Amide				

**Note:**

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

For reference: Entry 53 of Regulation (EC) No 552/2009 amending Annex XVII of REACH Regulation (EC) No 1907/2006 (previously restricted under Directive 2006/122/EC):

- (1) May not be placed on the market or used as a substance or constituent of preparations in a concentration equal to or higher than 0.005 % by mass.
- (2) May 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.

### TBBP-A (Tetrabromobisphenol-A)

Test Item(s)	Unit	Test Method (Reference)	Result	MDL
Tetrabromobisphenol-A (TBBP-A)	mg/kg	EPA 3550C: 2007, GC-MS	N.D.	10

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

### Phthalate(s)

Test Item(s)	Unit	Test Method (Reference)	Result	MDL
Dibutyl Phthalate (DBP)	% (w/w)	EN14372: 2004, GC-MS	N.D.	0.003
Benzylbutyl Phthalate (BBP)	% (w/w)	EN14372: 2004, GC-MS	N.D.	0.003
Bis-(2-ethylhexyl) Phthalate (DEHP)	% (w/w)	EN14372: 2004, GC-MS	N.D.	0.003
Diisononyl Phthalate (DINP)	% (w/w)	EN14372: 2004, GC-MS	N.D.	0.01
Di-n-octyl Phthalate (DNOP)	% (w/w)	EN14372: 2004, GC-MS	N.D.	0.003
Diisodecyl Phthalate (DIDP)	% (w/w)	EN14372: 2004, GC-MS	N.D.	0.01
Di-n-hexyl phthalate (DNHP)	% (w/w)	EN14372: 2004, GC-MS	N.D.	0.003

#### Note :

1. mg/kg = ppm; 0.1% = 1000ppm
2. N.D. = Not Detected (< MDL)
3. MDL = Method Detection Limit

#### For reference:

Entry 51/52 of Regulation (EC) No 552/2009 amending Annex XVII of REACH Regulation (EC) No 1907/2006 (previously restricted under Directive 2005/84/EC):

For DBP, BBP, DEHP content

(1) Shall not be used as substances or in mixtures, in concentrations greater than 0,1 % by weight of the plasticised material, in toys and childcare articles.

(2) Toys and childcare articles containing these phthalates in a concentration greater than 0,1 % by weight of the plasticised material shall not be placed on the market.

For DINP, DNOP, DIDP content

(1) Shall not be used as substances or in mixtures, in concentrations greater than 0,1 % by weight of the plasticised material, in toys and childcare articles which can be placed in the mouth by children.

(2) Such toys and childcare articles containing these phthalates in a concentration greater than 0,1 % by weight of the plasticised material shall not be placed on the market.

### PAHs (Polynuclear Aromatic Hydrocarbons)

Test Item(s)	Unit	Test Method	Result	MDL
Naphthalene	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Acenaphthylene	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Acenaphthene	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Fluorene	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Phenanthrene	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Anthracene	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Fluoranthene	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2

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Test Item(s)	Unit	Test Method	Result	MDL
Pyrene	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Benzo(a)anthracene	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Chrysene	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Benzo(b)fluoranthene	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Benzo(k)fluoranthene	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Benzo(a)pyrene	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Indeno(1,2,3-c,d)pyrene	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Dibenzo(a,h)anthracene	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Benzo(g,h,i)perylene	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Sum of 16 PAHs acc. US EPA	mg/kg	-	N.D.	-

**Note:**

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

**ZEK 01.2-08 : Restraining maximum values for products**

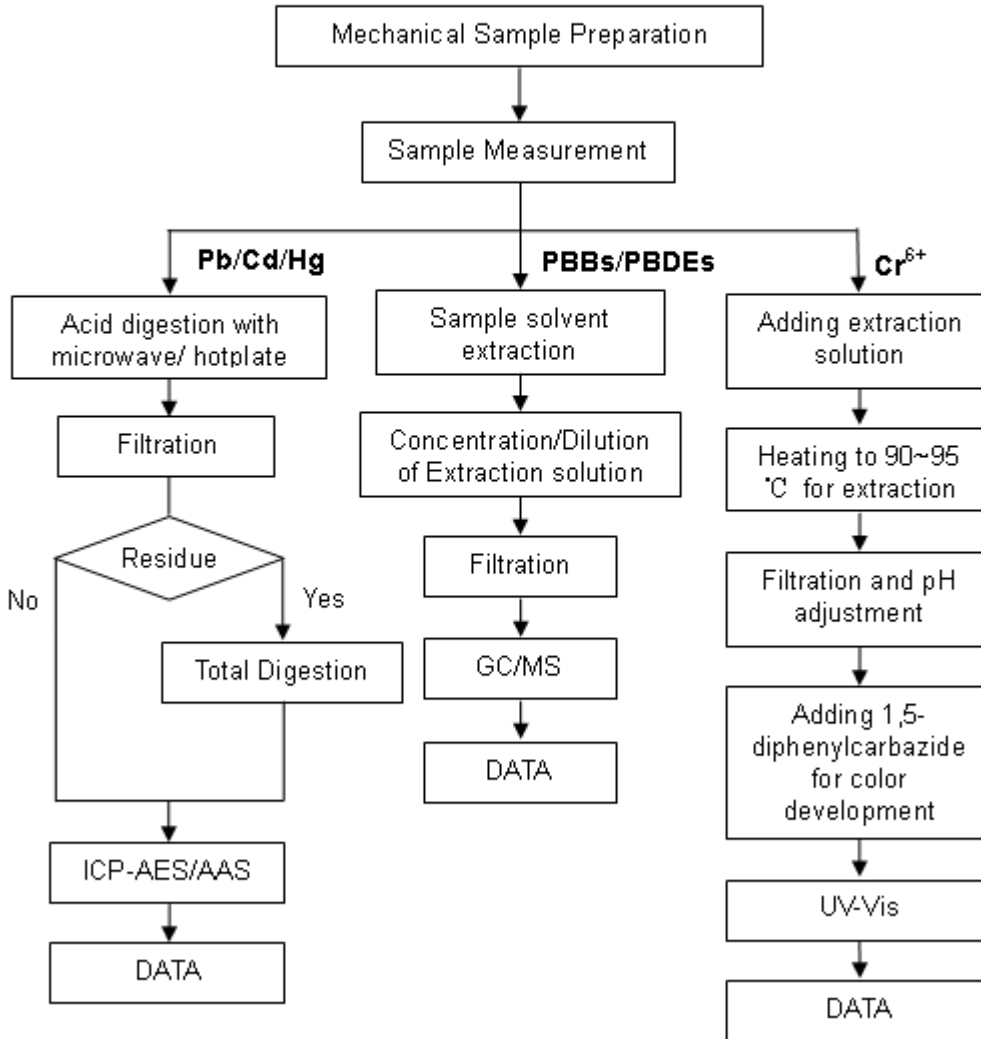
Parameter	Category 1 Material intended to be put in the mouth or material for toys with normal skin contact for children aged < 36 months	Category 2 Materials those are not included in Category 1, with predictable contact with the skin longer than 30 s. (long-term skin contact).	Category 3 Materials those are not included in Category 1 or 2, with predictable skin contact up to 30 s (short-term skin contact).
Benzo[a]pyrene (mg/kg)	<MDL (<0.2)***	1	20
Sum 16 PAH (US EPA) (mg/kg)**	<MDL (<0.2)***	10	200

Remark : \*\* = Only PAH substances >0.2 mg/kg are taken into account while calculating the sum of PAHs  
 \*\*\* = In case that the maximum values exceed the limits of category 1, but are within the limits of category 2, one may confirm the suitability of the tested material which intended to be put in the mouth by additional specific migration tests of PAH components based on DIN EN 1186ff and §64 LFGB 80.30-1. The conclusion of the migration test results must be made based on food law criteria.

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

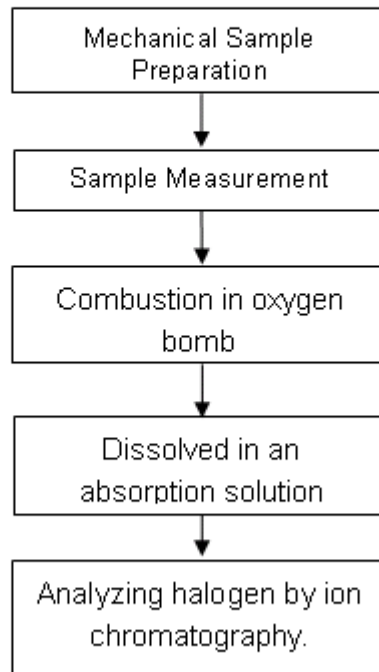
- 1) Operator : Amy Wang
- 2) Section Chief : Cindy Yin



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## Halogen Testing Flow Chart

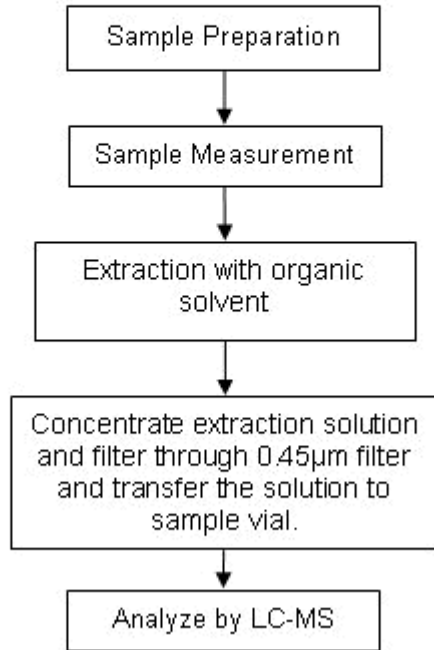
- 1) Operator : Marina Sun
- 2) Section Chief : Rex Zhu



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## PFOS/PFOA Testing Flow Chart

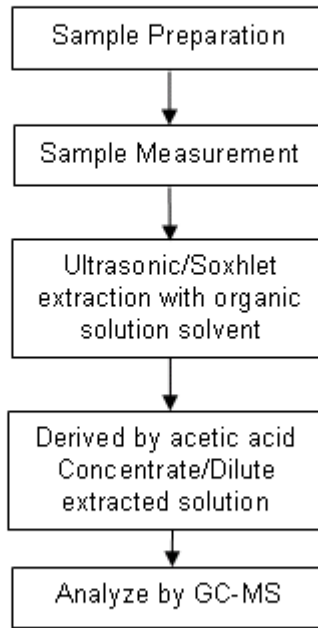
- 1) Operator : Marina Sun
- 2) Section Chief : Rex Zhu



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### TBBP-A Testing Flow Chart

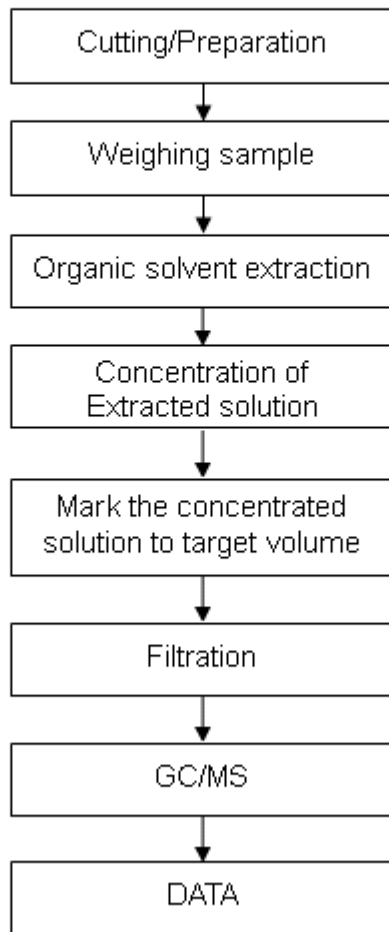
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- 2) Section Chief : Rex Zhu



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### Phthalate Testing Flow Chart

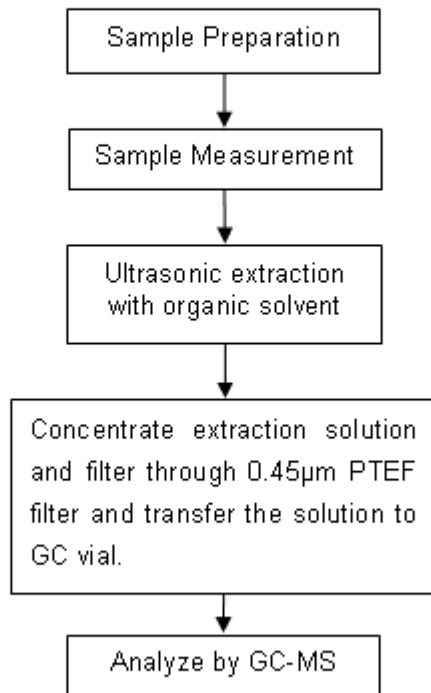
- 1) Operator: Marina Sun
- 2) Section Chief: Rex Zhu



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## PAHs Testing Flow Chart

- 1) Operator : Marina Sun
- 2) Section Chief : Rex Zhu



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Sample photo:



SGS authenticate the photo on original report only

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## Test Report

No. SH9172135/CHEM

Date: Sep. 7, 2009

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NINGBO HUALONG ELECTRONICS CO., LTD  
JIUZHAI INDUSTRIAL ZONE, NINGBO, CHINA

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

Sample Name : LEAD FRAME  
SGS Ref No. : 10000653  
Part No. : TO-220FM  
Material : KFC

Sample Receiving Date : Sep.03, 2009  
Testing Period : Sep.03 – 07, 2009

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

Test Method : With reference to IEC 62321:2008  
(1) Determination of Cadmium by ICP-OES.  
(2) Determination of Lead by ICP-OES and AAS.  
(3) Determination of Mercury by ICP-OES.  
(4) Determination of Hexavalent Chromium by Spot test / Colorimetric Method.

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



Sandy Hao  
Lab Manager

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

Test Item(s):	Method (refer to)	1	MDL	RoHS Limit
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	#	-

### Test Part Description:

1. Copper metal sheet

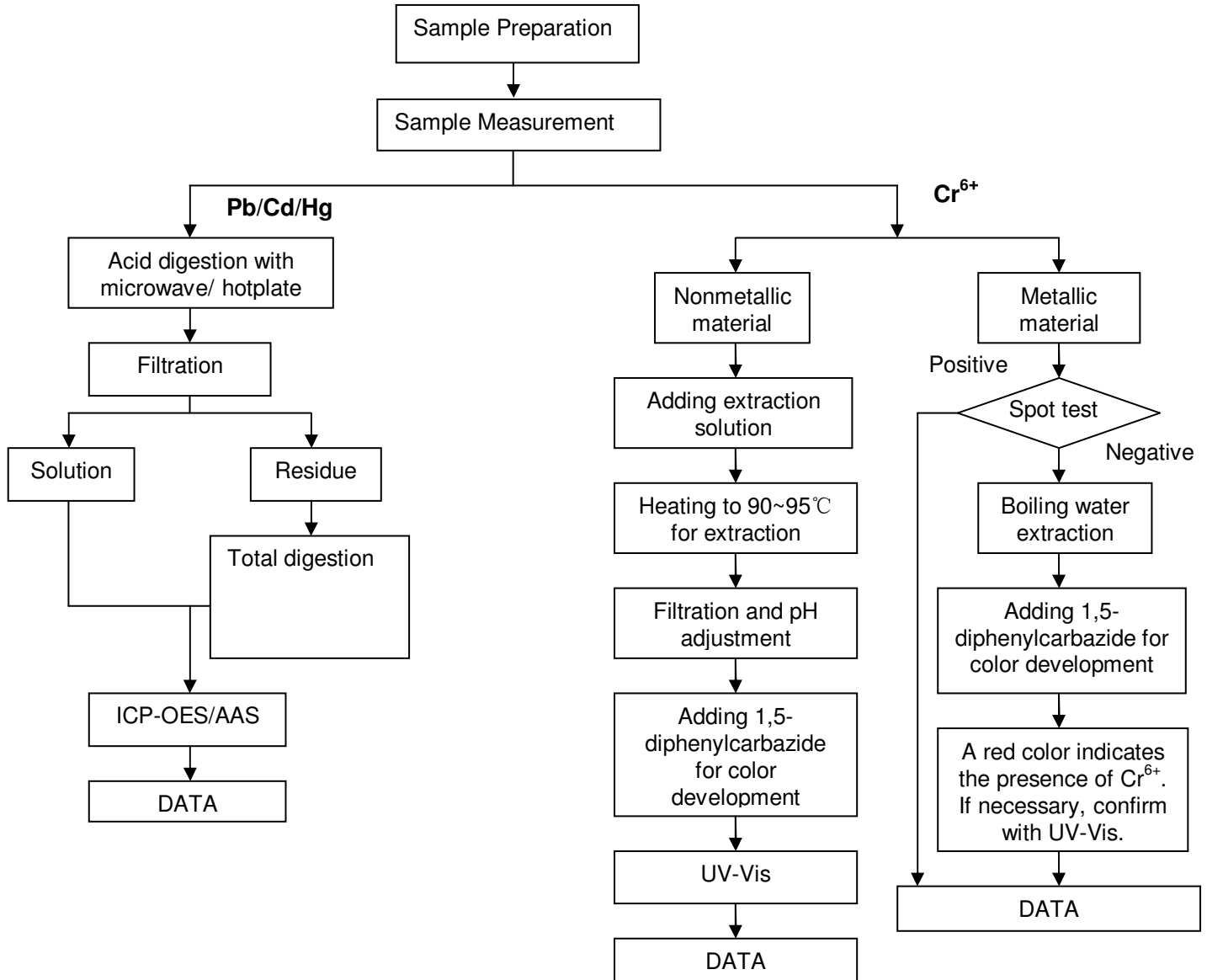
### Note:

- (1) mg/kg = ppm
- (2) ND = Not Detected
- (3) MDL = Method Detection Limit
- (4) # = 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.  
 For corrosion protection coatings on metals: Information on storage conditions and production date of the tested sample is unavailable and thus results of Cr(VI) represent status of the sample at the time of testing.
- (5) “-” = Not Regulated
- (6) The maximum permissible limit is quoted from the document 2005/618/EC amending RoHS directive 2002/95/EC

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**ATTACHMENTS**

- 1) Name of the person who made measurement: Jeff Zhang/Even Xu/Frank Fang
- 2) Name of the person in charge of measurement: Terry Wang
- 3) These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr<sup>6+</sup> test method excluded)



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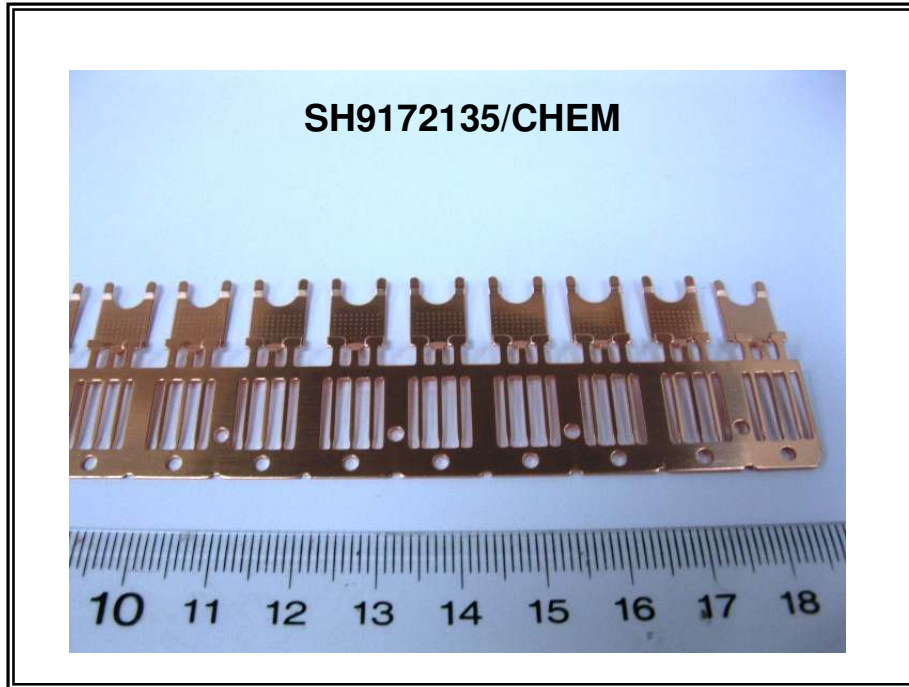
## Test Report

No. SH9172135/CHEM

Date: Sep. 7, 2009

Page 4 of 4

Sample photo:



SGS authenticate the photo on original report only

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

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## Test Report

No. SHAEC1004251801

Date: 19 Apr 2010

Page 1 of 8

SUZHOU NUONENGDA CHEMICAL.,LTD

NO.10 GUANG CHENG INDUSTRY GARDEN ZANG SHU MUDU WUZHONG SUZHOU,CITY

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

SGS Job No. : SP10-011559 - SUZ

Composition : TIN

Date of Sample Received : 14 Apr 2010

Testing Period : 14 Apr 2010 - 19 Apr 2010

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 : 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 Ltd.



Hao Jinyu, Sandy  
Lab Manager

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Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
1	SHA10-042518.001	Silvery metal half ball

Remarks :

- (1) 1 mg/kg = 1 ppm = 0.0001%
- (2) MDL = Method Detection Limit
- (3) ND = Not Detected ( < MDL )
- (4) "-" = Not Regulated

RoHS Directive 2002/95/EC

Test Method : With reference to IEC 62321:2008

- (1) Determination of Cadmium by ICP-OES.
- (2) Determination of Lead by ICP-OES.
- (3) Determination of Mercury by ICP-OES.
- (4) Determination of Hexavalent Chromium by Spot test / Colorimetric Method using UV-Vis.
- (5) Determination of PBBs / PBDEs by GC-MS.

Test Item(s)	Limit	Unit	MDL	001
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	16
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (CrVI)	-	-	◇	Negative
Sum of PBBs	1,000	mg/kg	-	ND
Monobromobiphenyl	-	mg/kg	5	ND
Dibromobiphenyl	-	mg/kg	5	ND
Tribromobiphenyl	-	mg/kg	5	ND
Tetrabromobiphenyl	-	mg/kg	5	ND
Pentabromobiphenyl	-	mg/kg	5	ND
Hexabromobiphenyl	-	mg/kg	5	ND
Heptabromobiphenyl	-	mg/kg	5	ND
Octabromobiphenyl	-	mg/kg	5	ND
Nonabromobiphenyl	-	mg/kg	5	ND
Decabromobiphenyl	-	mg/kg	5	ND
Sum of PBDEs	1,000	mg/kg	-	ND
Monobromodiphenyl ether	-	mg/kg	5	ND

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# Test Report

No. SHAEC1004251801

Date: 19 Apr 2010

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<u>Test Item(s)</u>	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>001</u>
Dibromodiphenyl ether	-	mg/kg	5	ND
Tribromodiphenyl ether	-	mg/kg	5	ND
Tetrabromodiphenyl ether	-	mg/kg	5	ND
Pentabromodiphenyl ether	-	mg/kg	5	ND
Hexabromodiphenyl ether	-	mg/kg	5	ND
Heptabromodiphenyl ether	-	mg/kg	5	ND
Octabromodiphenyl ether	-	mg/kg	5	ND
Nonabromodiphenyl ether	-	mg/kg	5	ND
Decabromodiphenyl ether	-	mg/kg	5	ND

**Notes :**

- (1) The maximum permissible limit is quoted from the document 2005/618/EC amending RoHS directive 2002/95/EC
- (2) ◇ 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.  
 For corrosion protection coatings on metals: Information on storage conditions and production date of the tested sample is unavailable and thus results of Cr(VI) represent status of the sample at the time of testing

**Halogen**

Test Method : With reference to EN 14582: 2007, analysis was performed by Ion Chromatograph (IC).

<u>Test Item(s)</u>	<u>Unit</u>	<u>MDL</u>	<u>001</u>
Fluorine (F)	mg/kg	50	ND
Chlorine (Cl)	mg/kg	50	ND
Bromine (Br)	mg/kg	50	ND
Iodine (I)	mg/kg	50	ND

**Element(s)-Sb**

Test Method : With reference to US EPA Method 3050B:1996, analysis was performed by ICP-OES.

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## Test Report

No. SHAEC1004251801

Date: 19 Apr 2010

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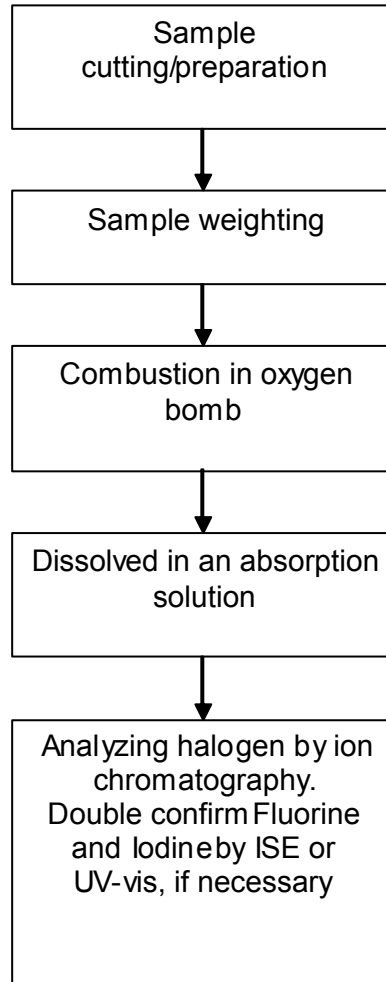
<u>Test Item(s)</u>	<u>Unit</u>	<u>MDL</u>	<u>001</u>
Antimony (Sb)	mg/kg	2	ND

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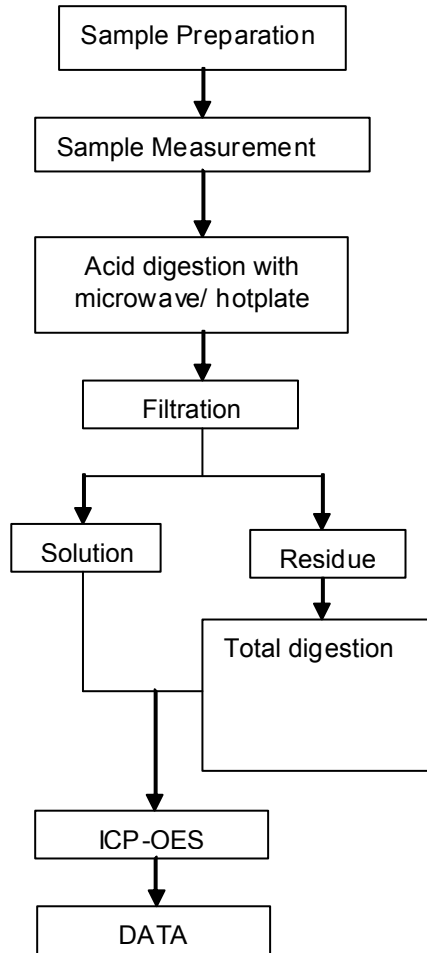
### Halogen Measurement Flowchart for sample



Tested by : Daisy Gong  
Checked by : Alex Jiang

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Antimony Measurement Flowchart for sample



Tested by : Even Xu  
 Checked by : Terry Wang

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## Test Report

No. CANEC1000535601

Date: 21 Feb 2010

Page 1 of 9

WUXI LIHONG ELECTRONIC MATERIALS CO.,LTD  
SHUANGXIN INDUSTRIAL PARK,TAI LAKE TOWN,WUXI CITY,JIANGSU PROVINCE  
CHINA

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

SGS Job No. : 12390794 - GZ  
SGS Internal Reference No. : 2.1  
Client Ref. Information : Pb-Sn-Ag  
Date of Sample Received : 09 Feb 2010  
Testing Period : 09 Feb 2010 - 21 Feb 2010  
  
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 **comply with** the RoHS Directive 2002/95/EC and its subsequent amendments.

Signed for and on behalf of  
SGS-CSTC Ltd.



Manson Yang  
Sr. Engineer

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# Test Report

No. CANEC1000535601

Date: 21 Feb 2010

Page 2 of 9

## Test Results:

ID for specimen 1 : CAN10-005356.001  
 Description for specimen 1 : Silvery metal wire

### 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	774188 <sup>&lt;1&gt;</sup>	2	1000
Mercury (Hg)	mg/kg	IEC 62321:2008, ICP-OES	N.D.	2	1000
Hexavalent Chromium (CrVI) by boiling water extraction	-	IEC 62321:2008, UV-Vis	Negative	◇	#
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	

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Note:

1. mg/kg = ppm
2. N.D. = Not Detected (< MDL)
3. MDL = Method Detection Limit
4. ◇ = 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.  
 Storage conditions and production date of the tested sample are unavailable and thus results of Cr(VI) represent status of the sample at the time of testing.
5. # = Positive indicates the presence of CrVI on the tested areas.  
 Negative indicates the absence of CrVI on the tested areas.
6. "-" = Not regulated
7. Result of Pb is only for reference

**B::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	N.D.	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

**C: PFOA & PFOS ( Perfluorooctanoic acid & Perfluorooctane sulfonates )**

Test Item(s)	Unit	Test Method (Reference)	Result	MDL
Perfluorooctanoic acid (PFOA)	mg/kg	EPA 3550C: 2007, LC-MS	N.D.	10
Perfluorooctane sulfonates (PFOS)	mg/kg	EPA 3550C: 2007, LC-MS	N.D.	10
PFOS Acid				
PFOS Metal Salt				
PFOS Amide				

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## Note:

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

For reference: Entry 53 of Regulation (EC) No 552/2009 amending Annex XVII of REACH Regulation (EC) No 1907/2006 (previously restricted under Directive 2006/122/EC):

(1) May not be placed on the market or used as a substance or constituent of preparations in a concentration equal to or higher than 0,005 % by mass.

(2) May 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.

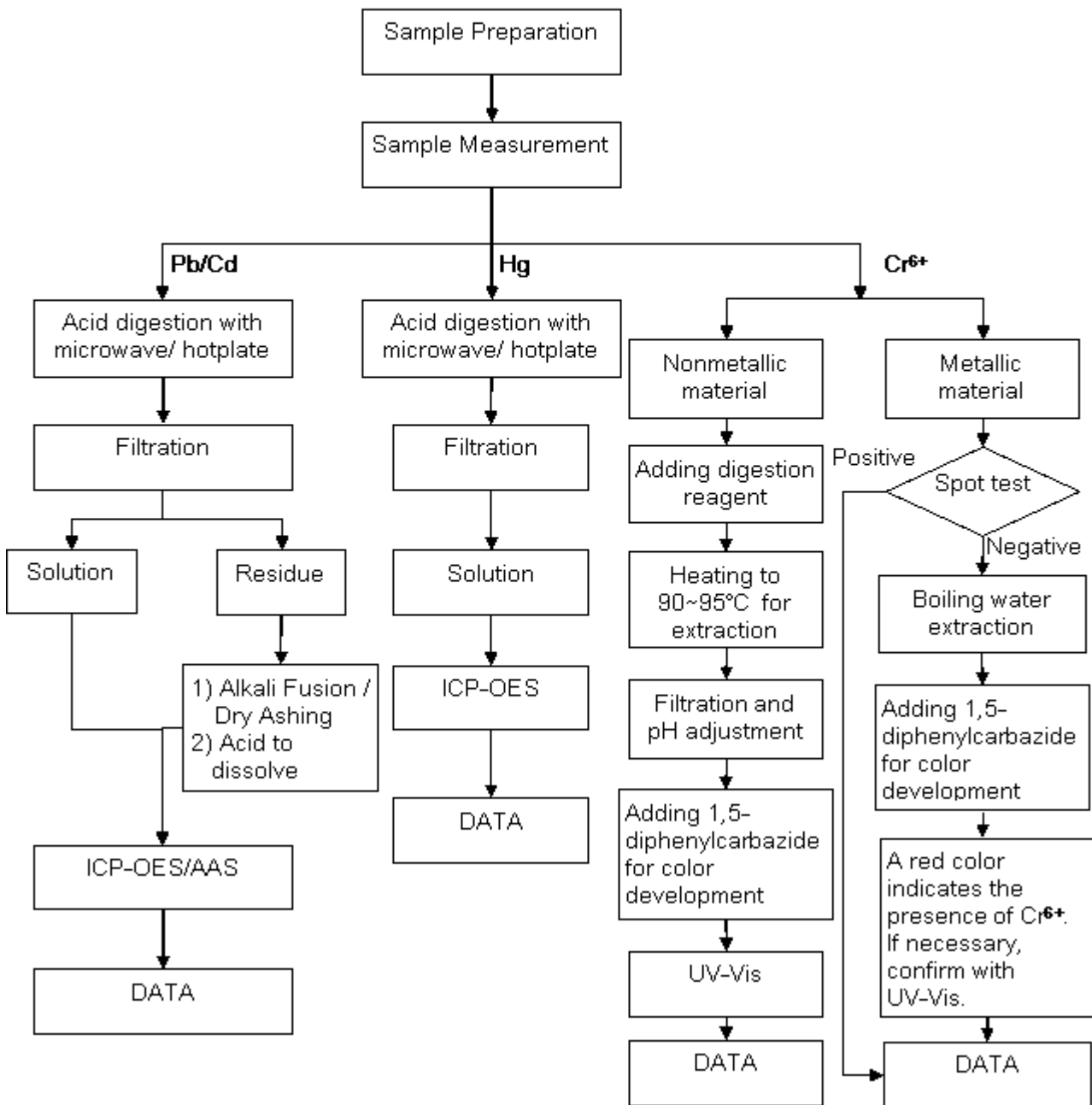
Remark<1>: According to the declaration from client, specimen is high melting temperature type solder, while Lead in high melting temperature type solders is exempted by RoHS regulatory (Directive 2002/95/EC of the European Parliament and of the council of 27 January 2003).

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ATTACHMENTS

Testing Flow Chart

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

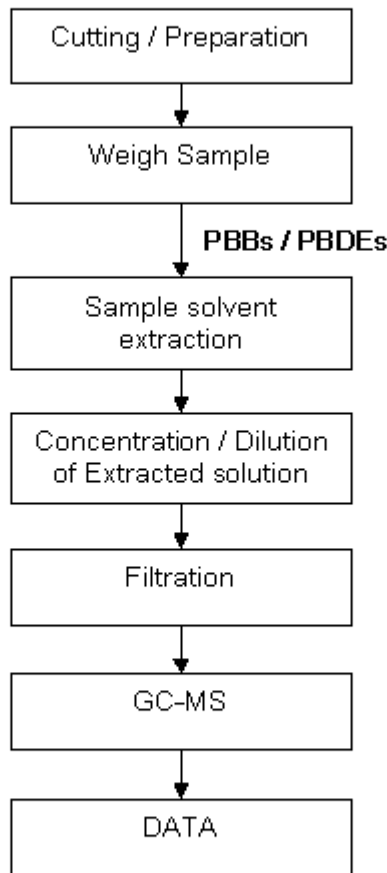


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### Testing Flow Chart

- 1) Name of the person who made measurement: Tina Zhao
- 2) Name of the person in charge of measurement: Ryan Yang

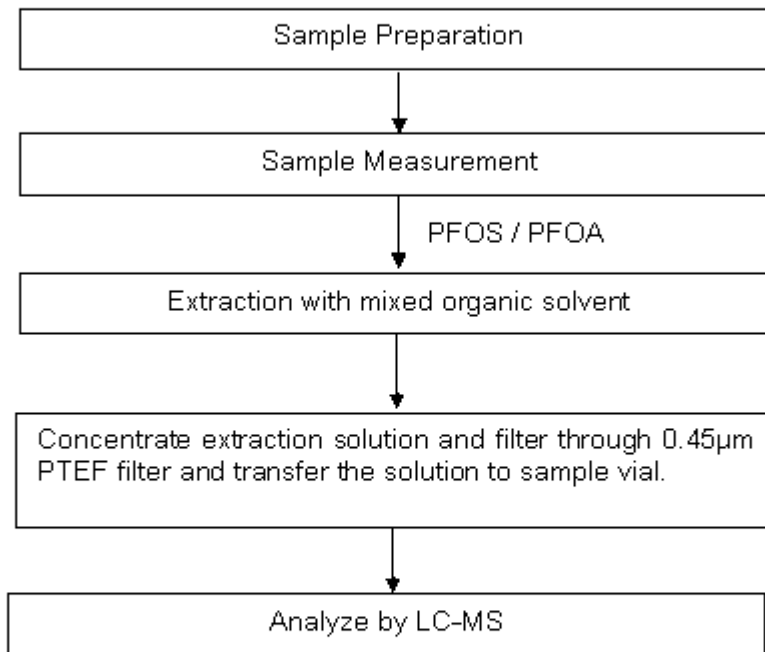


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## ATTACHMENTS

### Testing Flow Chart

- 1) Name of the person who made measurement: Cindy Huang
- 2) Name of the person in charge of measurement: Ryan Yang

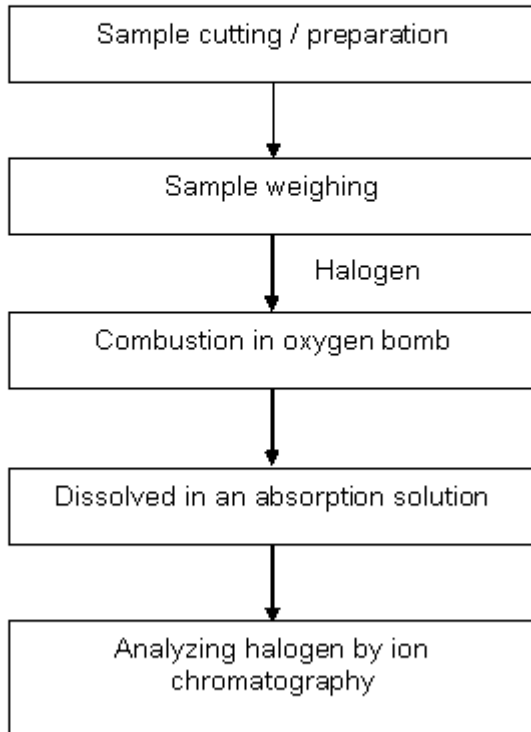


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## ATTACHMENTS

### Testing Flow Chart

- 1) Name of the person who made measurement: Sawen, Chen
- 2) Name of the person in charge of measurement: Michael Tso



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## COMMISSION DECISION

of 21 October 2005

**amending for the purposes of adapting to technical progress the Annex to Directive 2002/95/EC of the European Parliament and of the Council on the restriction of the use of certain hazardous substances in electrical and electronic equipment***(notified under document number C(2005) 4054)***(Text with EEA relevance)**

(2005/747/EC)

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Community,

Having regard to 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 <sup>(1)</sup>, and in particular Article 5(1)(b) thereof,

Whereas:

- (1) In accordance with Directive 2002/95/EC the Commission is required to evaluate certain hazardous substances prohibited pursuant to Article 4(1) of that Directive.
- (2) Certain materials and components containing lead and cadmium should be exempt (or continue to be exempt) from the prohibition, since the use of these hazardous substances in those specific materials and components is still unavoidable.
- (3) Some exemptions from the prohibition for certain specific materials or components should be limited in their scope, in order to achieve a gradual phase-out of hazardous substances in electrical and electronic equipment, given that the use of those substances in such applications will become avoidable.
- (4) Pursuant to Article 5(1)(c) of Directive 2002/95/EC each exemption listed in the Annex must be subjected to a review, at least every four years or four years after an item is added to the list, with the aim of considering deletion of materials and components of electrical and electronic equipment if their elimination or substitution via design changes or materials and components which do not require any of the materials or substances referred to in Article 4(1) are technically or scientifically possible,

provided that the negative environmental, health and/or consumer safety impacts caused by substitution do not outweigh the possible environmental, health and/or consumer safety benefits thereof.

- (5) Directive 2002/95/EC should therefore be amended accordingly.
- (6) Pursuant to Article 5(2) of Directive 2002/95/EC the Commission has consulted producers of electrical and electronic equipment, recyclers, treatment operators, environmental organisations and employee and consumers associations and forwarded the comments to the Committee established by Article 18 of Council Directive 75/442/EEC of 15 July 1975 on waste <sup>(2)</sup>, hereinafter 'the Committee'.
- (7) The measures provided for in this Decision are in accordance with the opinion of the Committee,

HAS ADOPTED THIS DECISION:

*Article 1*

The Annex to Directive 2002/95/EC is amended as set out in the Annex to this Decision.

*Article 2*

This Decision is addressed to the Member States.

Done at Brussels, 21 October 2005.

*For the Commission*

Stavros DIMAS

*Member of the Commission*

<sup>(1)</sup> OJ L 37, 13.2.2003, p. 19. Directive as amended by Commission Decision 2005/717/EC (OJ L 271, 15.10.2005, p. 48).

<sup>(2)</sup> OJ L 194, 25.7.1975, p. 39. Directive as last amended by Regulation (EC) No 1882/2003 of the European Parliament and of the Council (OJ L 284, 31.10.2003, p. 1).

## ANNEX

Annex to Directive 2002/95/EC is amended as follows:

1. point 7 is replaced by the following:

- '7. — Lead in high melting temperature type solders (i.e. lead-based alloys containing 85 % by weight or more lead),
  - lead in solders for servers, storage and storage array systems, network infrastructure equipment for switching, signalling, transmission as well as network management for telecommunications,
  - lead in electronic ceramic parts (e.g. piezoelectronic devices).';

2. point 8 is replaced by the following:

- '8. Cadmium and its compounds in electrical contacts and 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.

(\*) OJ L 186, 12.7.1991, p. 59.

(\*\*) OJ L 262, 27.9.1976, p. 201.;

3. the following points are added:

- '11. Lead used in compliant pin connector systems.
- 12. Lead as a coating material for the thermal conduction module c-ring.
- 13. Lead and cadmium in optical and filter glass.
- 14. Lead in solders consisting of more than two elements for the connection between the pins and the package of microprocessors with a lead content of more than 80 % and less than 85 % by weight.
- 15. Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit Flip Chip packages.'

## Test Report

No. SHAEC1002221701

Date: 15 Mar 2010

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HERAEUS ZHAOYUAN PRECIOUS METAL MATERIALS CO.,LTD/HERAEUS  
ZHAOYUAN(CHANGSHU)ELECTRONIC MATERIAL CO.,LTD  
NO.238 LINGLONG ROAD,ZHAOYUAN SHANDONG/HUANGPUJIANG ROAD,CHANGSHU,SOUTHEAST  
ECONOMIC DEVELOPMENT ZONE,CHANGSHU,JIANGSU

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

SGS Job No. : SP10-006324 - SH  
Date of Sample Received : 10 Mar 2010  
Testing Period : 10 Mar 2010 - 15 Mar 2010  
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 : 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 Ltd.



Hao Jinyu, Sandy  
Lab Manager

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# Test Report

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Date: 15 Mar 2010

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Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
1	SHA10-022217.001	Silvery metal wire

Remarks :

- (1) 1 mg/kg = 1 ppm = 0.0001%
- (2) MDL = Method Detection Limit
- (3) ND = Not Detected ( < MDL )
- (4) "-" = Not Regulated

**RoHS Directive 2002/95/EC**

Test Method : With reference to IEC 62321:2008

- (1) Determination of Cadmium by ICP-OES.
- (2) Determination of Lead by ICP-OES.
- (3) Determination of Mercury by ICP-OES.
- (4) Determination of Hexavalent Chromium by Spot test / Colorimetric Method using UV-Vis.
- (5) Determination of PBBs / PBDEs by GC-MS.

Test Item(s)	Limit	Unit	MDL	001
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	4
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (CrVI)	-	-	◇	Negative
Sum of PBBs	1,000	mg/kg	-	ND
Monobromobiphenyl	-	mg/kg	5	ND
Dibromobiphenyl	-	mg/kg	5	ND
Tribromobiphenyl	-	mg/kg	5	ND
Tetrabromobiphenyl	-	mg/kg	5	ND
Pentabromobiphenyl	-	mg/kg	5	ND
Hexabromobiphenyl	-	mg/kg	5	ND
Heptabromobiphenyl	-	mg/kg	5	ND
Octabromobiphenyl	-	mg/kg	5	ND
Nonabromobiphenyl	-	mg/kg	5	ND
Decabromobiphenyl	-	mg/kg	5	ND
Sum of PBDEs	1,000	mg/kg	-	ND
Monobromodiphenyl ether	-	mg/kg	5	ND

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<u>Test Item(s)</u>	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>001</u>
Dibromodiphenyl ether	-	mg/kg	5	ND
Tribromodiphenyl ether	-	mg/kg	5	ND
Tetrabromodiphenyl ether	-	mg/kg	5	ND
Pentabromodiphenyl ether	-	mg/kg	5	ND
Hexabromodiphenyl ether	-	mg/kg	5	ND
Heptabromodiphenyl ether	-	mg/kg	5	ND
Octabromodiphenyl ether	-	mg/kg	5	ND
Nonabromodiphenyl ether	-	mg/kg	5	ND
Decabromodiphenyl ether	-	mg/kg	5	ND

**Notes :**

- (1) The maximum permissible limit is quoted from the document 2005/618/EC amending RoHS directive 2002/95/EC
- (2) ◇ 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.  
 For corrosion protection coatings on metals: Information on storage conditions and production date of the tested sample is unavailable and thus results of Cr(VI) represent status of the sample at the time of testing

**PFOS (Perfluorooctane Sulfonates) and PFOA (Perfluorooctanoic Acid)**

Test Method : With reference to US EPA 3550C: 2007, analysis was performed by HPLC-MS.

<u>Test Item(s)</u>	<u>Unit</u>	<u>MDL</u>	<u>001</u>
Perfluorooctane Sulfonates (PFOS) and related Acid, Metal Salt and Amide	mg/kg	10	ND
Perfluorooctyl Acid (PFOA)	mg/kg	10	ND

**Notes :**

- (1) PFOS Reference Information: Entry 53 of Regulation (EC) No 552/2009 amending Annex XVII of REACH Regulation (EC) No 1907/2006 (previously restricted under Directive 2006/122/EC)
  - (i) May not be placed on the market or used as a substance or constituent of preparations in a concentration equal to or higher than 0.005 % by mass.
  - (ii) May 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

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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  $1\mu\text{g}/\text{m}^2$  of the coated material. Please refer to Regulation (EC) No 552/2009 to get more detail information

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