Certificate of non-use of The Controlled Substances

Company name Littelfuse, Inc.

Product Covered SIDACtor®, QFN Package
PLED, QFN Package

Issue Date February 8, 2014

It is hereby certified by Littelfuse, Inc., that there is neither RoHS (EU Directive 2011/65/EU)-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 JORDANUFF H. CABILAN
[Global EHS Engineer]

(1) Parts, sub-materials and unit parts
This document covers SIDACtor & PLED QFN Package supplied by Littelfuse, Inc.
Please see page 2-4 for the complete list of part number covered by this report.

＜Homogeneous Materials used＞
Please see figure and table 1 on page 5 and table 2 on page 6 of this document.

(2) The analytical data on all measurable substances
Please see pages 6-57, attached to this document.

Remarks :

1. Pb (lead) contained in die bonding solder (item 8 on page 47-57) and passivation glass (item 7 on page 40-46) to be categorized as exempt in RoHS Annex III 7(a) and 7(c)-I.

Please refer to last page of this report for the extract of the applicable exemptions of RoHS (EU Directive 2011/65/EU).

Littelfuse Part Number covered by this report

SIDACtor® QFN package products supplied by Littelfuse are categorized into three groups by Pb (lead) contents due to their design.
All products use the same raw materials and all products listed in this report meet RoHS requirement by using lead (Pb) exemptions.

Please follow table below to locate specific part number and its material breakdown.

Group #	Package	Generic Description	P/N table
1	QFN 3mm x 3mm x 1mm (2-leaded)	SIDACtor® PxxxxQ12ALRP PxxxxQ12BLRP SDP0242Q12FLRP PLED PLEDxxQ12 PLEDxxUQ12	See page 3
2	QFN 3.3mm x 3.3mm x 1mm (2-leaded)	SIDACtor® PxxxxQ22CLRP	See page 3
3	QFN 5mm x 6mm x 1.5mm (8-leaded)	SIDACtor® SDPxxxxQ38B SDPxxxxQ38CB SEPxxxxQ38CB	See page 4

GROUP 1: QFN 3mm x 3mm x 1mm

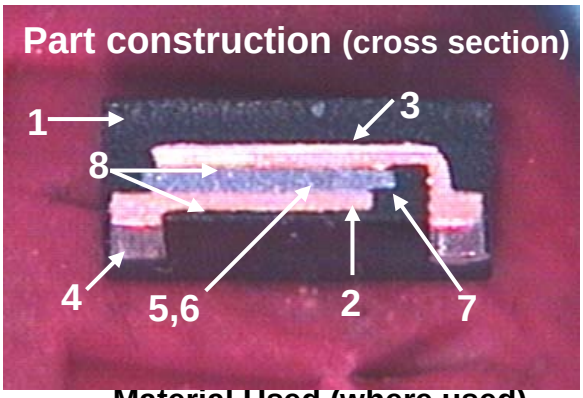
Standard (Catalog) Part Number			SPECIAL DEVICE P/N
PLED6Q12	P0900Q12ALRP	P0720Q12BLRP	Any Special P/N that has base standard P/N listed in this table.
PLED9Q12	P1100Q12ALRP	P0900Q12BLRP	
PLED13Q12	P1200Q12ALRP	P1100Q12BLRP	
PLED18Q12	P1300Q12ALRP	P1200Q12BLRP	
	P1500Q12ALRP	P1300Q12BLRP	
PLED6UQ12	P1800Q12ALRP	P1500Q12BLRP	
PLED9UQ12	P2000Q12ALRP	P1800Q12BLRP	
PLED13UQ12	P2300Q12ALRP	P2000Q12BLRP	
PLED18UQ12	P2500Q12ALRP	P2300Q12BLRP	
	P2600Q12ALRP	P2500Q12BLRP	
	P3100Q12ALRP	P2600Q12BLRP	
	P3500Q12ALRP	P3100Q12BLRP	
P0080Q12ALRP		P3500Q12BLRP	
P0300Q12ALRP	P0080Q12BLRP		
P0640Q12ALRP	P0300Q12BLRP	SDP0242Q12FLRP	
P0720Q12ALRP	P0640Q12BLRP		

GROUP 2: QFN 3.3mm x 3.3mm x 1mm

Standard (Catalog) Part Number			SPECIAL DEVICE P/N
P0080Q22CLRP	P1101Q22CLRP	P2500Q22CLRP	Any Special P/N that has base standard P/N listed in this table.
P0300Q22CLRP	P1200Q22CLRP	P2600Q22CLRP	
P0640Q22CLRP	P1300Q22CLRP	P3100Q22CLRP	
P0641Q22CLRP	P1301Q22CLRP	P3500Q22CLRP	
P0720Q22CLRP	P1500Q22CLRP	P4500Q22SCLRP	
P0721Q22CLRP	P1701Q22CLRP		
P0900Q22CLRP	P1800Q22CLRP		
P0901Q22CLRP	P2000Q22CLRP		
P1100Q22CLRP	P2300Q22CLRP		

GROUP 3: QFN 5mm x 6mm x 1.5mm

Standard (Catalog) Part Number			SPECIAL DEVICE P/N
SDP0080Q38B	SDP0080Q38CB	SEP0080Q38CB	Any Special P/N that has base-standard P/N listed in this table.
SDP0640Q38B	SDP0640Q38CB	SEP0640Q38CB	
SDP0720Q38B	SDP0720Q38CB	SEP0720Q38CB	
SDP0900Q38B	SDP0900Q38CB	SEP0900Q38CB	
SDP1100Q38B	SDP1100Q38CB		
SDP1300Q38B	SDP1300Q38CB		
SDP1800Q38B	SDP1800Q38CB		
SDP2600Q38B	SDP2600Q38CB		
SDP3100Q38B	SDP3100Q38CB		
SDP3500Q38B	SDP3500Q38CB		



Material Used (where used)

Table 1: Homogeneous Material Used

#	Description	Name of Material	Type	Pages
1	Molding compound	epoxy resin	plastic	Page 7-14
2	Lead frame	copper alloy	metal	Page 15-23
3	Copper Slug/ Spacer	copper alloy	metal	Pages 24-27 (Applicable to QFN 5mmx6mmx1.5mm only)
4	Matte-Tin plating	Tin	metal	Pages 28-33 tested as plating cathode (Tin ball)
5	Silicon die	silicon	metal	Pages 34-38, tested as Nickel-plated wafer.
6	Nickel electrode	nickel	metal	
7	Passivation glass	glass	glass	Pages 39-45, Pb in this glass is exempted by RoHS Annex III 7(c)-I.
8	Die bonding solder	solder	metal	A page 46-56, Pb in this solder is exempted by RoHS Annex III 7(a).
9	Annex 8: Applicable RoHS exemptions (2011/65/EU Annex III)			Page 57

Table 2: RoHS-regulated substance in raw materials

Components	Analysis Result						
	Cd Cadmium	Cr Chromium	Hg Mercury	Pb Lead	PBB	PBDE	Total Halogen
As Component Total	**< 2ppm**	**< 2ppm**	**< 5ppm**	**< 10ppm*1 (7.0%*2)**	**< 5ppm**	**< 5ppm**	**<50ppm**
Epoxy Resin compound (mixture of phenolix resin, epoxy resin, filler and non-Brominated fire retardant) See Page 7-14 for the detail.	< 2ppm	< 2ppm	< 2ppm	< 2ppm	< 5ppm	<5ppm	< 50ppm
Lead frame / Clip / Slug (Copper Alloy, CDA194) See Page 15-23, 24-27for the detail.	< 2ppm	< 2ppm	< 2ppm	< 2ppm	< 5ppm	< 5ppm	< 50ppm
Outside lead finish (Matte-Tin plated, Sn 100%) See Pages 28-33 for the detail.	< 2ppm	< 2ppm	< 2ppm	< 2ppm	< 5ppm	< 5ppm	< 50ppm
Silicon Die (Silicon + Ni electrode) See Pages 34-38 for the detail.	< 2ppm	< 2ppm	< 2ppm	25ppm *3	< 5ppm	< 5ppm	<50ppm
Passivation Glass See Pages 39-45 for the detail.	< 2ppm	< 2ppm	< 2ppm	31.2% *4	< 5ppm	< 5ppm	< 50ppm
Die Bonding Solder (Pb/Sn=95/5) See Pages 46-56 for the detail.	< 2ppm	< 2ppm	< 2ppm	92.5% *5	< 5ppm	< 5ppm	---

***1 Less than 10ppm Pb content overall, excluding Pb from the die bonding solder and the passivation glass on the silicon die.**

***2 Group 1 products: 7.0wt% or 2.0mg, Group 2 products: 6.8wt% or 2.3mg, Group 3 products: 5.6wt% or 8.0mg of Pb (lead) content overall including the RoHS-exempted use of Pb (lead)**

***3 Pb (lead) contained in silicon wafer is not exempted from restriction by RoHS, but considered as process contamination or naturally-occurring impurity in raw materials. Littelfuse does not add Pb (lead) intentionally.**

***4 Pb (lead) contained in passivation glass is exempted from restriction by RoHS Annex III 7(c)-I.**

***5 Pb (lead) contained in die bonding solder is exempted from restriction by RoHS Annex III 7(a).**

Please refer to last page of this report for the applicable exemptions of RoHS (EU Directive 2011/65/EU)

Test Report

REPORT NO. : **CTSSA/01998-1/14**
CTS REF. : **CTSSA/14/0336**
DATE REPORTED : 24th Feb, 2014
PAGE : 1 of 5

Littelfuse Philippines Inc.
LIMA Technology Center, Lipa City,
Malvar, Batangas

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

Sample Description	:	Epoxy Molding Compound
Sample Name	:	CEL-9220HF 13 Series
Sample Receiving Date	:	03/02/2014
Testing Period	:	03/02/2014 to 07/02/2014
Date Completed	:	07/02/2014
Reporting Date	:	24/02/2014

Test Result : Please see the next page

Analysts : Ng Jing Wei, Cho Kar Yen, Tan Li Wei & Isabelle Chan Suet Yee

SGS LABORATORY SERVICES (M) SDN. BHD.

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B.Sc.(HONS) AMIC
SENIOR LAB MANAGER

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Test Report

REPORT NO. : **CTSSA/01998-1/14**
CTS REF. : **CTSSA/14/0336**
DATE REPORTED : 24th Feb, 2014
PAGE : 2 of 5

Test Result

Sample Description : Epoxy Molding Compound
Sample Name : CEL-9220HF 13 Series

RoHS Directive 2011/65/EU Annex II

Test Item (s) :	Unit	Method	Instrument	MDL	Results	Limit
Chromium VI (Cr6+)	ppm	IEC 62321 : 2008 Annex C	UV Vis - Spectrophotometer	2	N.D.	1000
Cadmium (Cd)	ppm	IEC 62321 : 2008	ICP OES	2	N.D.	100
Mercury (Hg)	ppm	IEC 62321 : 2008	ICP OES	2	N.D.	1000
Lead (Pb)	ppm	IEC 62321 : 2008	ICP OES	2	N.D.	1000

NOTE: (a) N.D. = Not detected (<MDL)
(b) ppm = mg/kg
(c) MDL= Method Detection Limit
(d) Testing based on original basis

Analysts: Ng Jing Wei & Cho Kar Yen

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Test Report

REPORT NO. : **CTSSA/01998-1/14**
CTS REF. : **CTSSA/14/0336**
DATE REPORTED : 24th Feb, 2014
PAGE : 3 of 5

Test Result

Sample Description : Epoxy Molding Compound
Sample Name : CEL-9220HF 13 Series

RoHS Directive 2011/65/EU Annex II

Test Item (s) :	Unit	Method	Instrument	MDL	Result	Limit
PBBs (Polybrominated Biphenyls)						
Monobromo Biphenyl	ppm	GCMS as per IEC 62321 : 2008	GCMS	5	N.D.	1000
Dibromo Biphenyl	ppm	GCMS as per IEC 62321 : 2008	GCMS	5	N.D.	
Tribromo Biphenyl	ppm	GCMS as per IEC 62321 : 2008	GCMS	5	N.D.	
Tetrabromo Biphenyl	ppm	GCMS as per IEC 62321 : 2008	GCMS	5	N.D.	
Pentabromo Biphenyl	ppm	GCMS as per IEC 62321 : 2008	GCMS	5	N.D.	
Hexabromo Biphenyl	ppm	GCMS as per IEC 62321 : 2008	GCMS	5	N.D.	
Heptabromo Biphenyl	ppm	GCMS as per IEC 62321 : 2008	GCMS	5	N.D.	
Octabromo Biphenyl	ppm	GCMS as per IEC 62321 : 2008	GCMS	5	N.D.	
Nonabromo Biphenyl	ppm	GCMS as per IEC 62321 : 2008	GCMS	5	N.D.	
Decabromo Biphenyl	ppm	GCMS as per IEC 62321 : 2008	GCMS	5	N.D.	
PBDEs (Polybrominated Diphenyl ethers)						
Monobromo Diphenyl Ether	ppm	GCMS as per IEC 62321 : 2008	GCMS	5	N.D.	1000
Dibromo Diphenyl Ether	ppm	GCMS as per IEC 62321 : 2008	GCMS	5	N.D.	
Tribromo Diphenyl Ether	ppm	GCMS as per IEC 62321 : 2008	GCMS	5	N.D.	
Tetrabromo Diphenyl Ether	ppm	GCMS as per IEC 62321 : 2008	GCMS	5	N.D.	
Pentabromo Diphenyl Ether	ppm	GCMS as per IEC 62321 : 2008	GCMS	5	N.D.	
Hexabromo Diphenyl Ether	ppm	GCMS as per IEC 62321 : 2008	GCMS	5	N.D.	
Heptabromo Diphenyl Ether	ppm	GCMS as per IEC 62321 : 2008	GCMS	5	N.D.	
Octabromo Diphenyl Ether	ppm	GCMS as per IEC 62321 : 2008	GCMS	5	N.D.	
Nonabromo Diphenyl Ether	ppm	GCMS as per IEC 62321 : 2008	GCMS	5	N.D.	
Decabromo Diphenyl Ether	ppm	GCMS as per IEC 62321 : 2008	GCMS	5	N.D.	

NOTE: (a) N.D. = Not detected (<MDL)
(b) ppm = mg/kg
(c) MDL= Method Detection Limit

Analysts: Tan Li Wei & Isabelle Chan Suet Yee

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Test Report

REPORT NO. : **CTSSA/01998-1/14**
CTS REF. : **CTSSA/14/0336**
DATE REPORTED : 24th Feb, 2014
PAGE : 4 of 5

Test Result

Sample Description : Epoxy Molding Compound
Sample Name : CEL-9220HF 13 Series

HITACHI CHEMICAL (M) SDN. BHD.
CTSSA/01998-1/14

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Test Report

REPORT NO. : **CTSSA/01998-1/14**
CTS REF. : **CTSSA/14/0336**
DATE REPORTED : 24th Feb, 2014
PAGE : 5 of 5

1. DETERMINATION OF CADMIUM CONTENT BY IEC 62321 2008

Sample Receiving and Registration
↓
Sample Preparation
↓
Weight sample (0.2-0.5g) into digestion vessel
↓
Acid digestion (Microwave)
↓
"Totally Dissolved"
↓
Filtration
↓
Analyses by ICP

2. DETERMINATION OF LEAD CONTENT BY IEC 62321 2008

Sample Receiving and Registration
↓
Sample Preparation
↓
Weight sample (0.2-0.5g) into digestion vessel
↓
Acid digestion (Microwave)
↓
"Totally Dissolved"
↓
Filtration
↓
Analyses by ICP

3. DETERMINATION OF MERCURY CONTENT BY IEC 62321 2008

Sample Receiving and Registration
↓
Sample Preparation
↓
Weight sample (0.2-0.5g) into digestion vessel
↓
Acid digestion (Microwave)
↓
"Totally Dissolved"
↓
Filtration
↓
Analyses by ICP

4. DETERMINATION OF HEXAVALENT CHROMIUM BY IEC 62321 2008

Sample Preparation
↓
Add colour-developing reagent
↓
Acidify with H_2SO_4
↓
Let stand for 5-10 min
↓
Analyses by UV- Spectrophotometer (540 nm)

5. DETERMINATION OF PBB/PBDE WITH GC-MS BY IEC 62321 2008

Sample Preparation
↓
Weight sample (0.5-4.0g) into extraction thimble
↓
Soxhlet Extraction with Toluene
↓
Filter through 0.45 um membrane filter
↓
Analyses by GC-MS (with appropriate dilution)

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Test Report

REPORT NO. : **CTSSA/01998-3/14**
CTS REF. : **CTSSA/14/0336**
DATE REPORTED : 24th Feb, 2014
PAGE : 1 of 4

Littelfuse Philippines Inc.
LIMA Technology Center, Lipa City,
Malvar, Batangas

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

Sample Description	:	Epoxy Molding Compound
Sample Name	:	CEL-9220HF 13 Series
Sample Receiving Date	:	03/02/2014
Testing Period	:	03/02/2014 to 07/02/2014
Date Completed	:	07/02/2014
Reporting Date	:	24/02/2014

Test Result : Please see the next page

Analyst : Teh Pui Sean

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Test Report

REPORT NO. : **CTSSA/01998-3/14**
CTS REF. : **CTSSA/14/0336**
DATE REPORTED : 24th Feb, 2014
PAGE : 2 of 4

Test Result

Sample Description : Epoxy Molding Compound
Sample Name : CEL-9220HF 13 Series

Test Item (s):	Unit	Method	Result	MDL
Halogen	---	---	---	---
Halogen-Fluorine (F)	mg/kg	With reference to IEC 61189-2 Test 2C12 (Modified). Analysis was performed by IC method for Fluorine content.	N.D.	50
Halogen-Chlorine (Cl)	mg/kg	With reference to IEC 61189-2 Test 2C12 (Modified). Analysis was performed by IC method for Chlorine content.	65	50
Halogen-Bromine (Br)	mg/kg	With reference to IEC 61189-2 Test 2C12 (Modified). Analysis was performed by IC method for Bromine content.	N.D.	50
Halogen-Iodine (I)	mg/kg	With reference to IEC 61189-2 Test 2C12 (Modified). Analysis was performed by IC method for Iodine content.	N.D.	50

Note : (a) mg/kg = ppm
(b) N.D. = Not Detected
(c) MDL = Method Detection Limit
(d) --- = Not Conducted
(e) Testing based on original basis

Analyst : Teh Pui Sean

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Test Report

REPORT NO. : **CTSSA/01998-3/14**
CTS REF. : **CTSSA/14/0336**
DATE REPORTED : 24th Feb, 2014
PAGE : 3 of 4

Test Result

Sample Description : Epoxy Molding Compound
Sample Name : CEL-9220HF 13 Series

HITACHI CHEMICAL (M) SDN. BHD.
CTSSA/01998-3/14

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Test Report

REPORT NO. : **CTSSA/01998-3/14**
CTS REF. : **CTSSA/14/0336**
DATE REPORTED : 24th Feb, 2014
PAGE : 4 of 4

DETERMINATION OF HALOGEN CONTENT

Sample pretreatment
↓
Weighting and putting sample in cell
↓
Combustion / Absorption
↓
Dilution to fixed volume
↓
Analyses by IC

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Test Report

REPORT NO. : **CTSSA/01998-5/14**
CTS REF. : **CTSSA/14/0336**
DATE REPORTED : 24th Feb, 2014
PAGE : 1 of 4

Littelfuse Philippines Inc.
LIMA Technology Center, Lipa City,
Malvar, Batangas

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

Sample Description	:	Epoxy Molding Compound
Sample Name	:	CEL-9220HF 13 Series
Sample Receiving Date	:	03/02/2014
Testing Period	:	03/02/2014 to 07/02/2014
Date Completed	:	07/02/2014
Reporting Date	:	24/02/2014

Test Result : Please see the next page

Analysts : Ng Jing Wei & Cho Kar Yen

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Test Report

REPORT NO. : **CTSSA/01998-5/14**
CTS REF. : **CTSSA/14/0336**
DATE REPORTED : 24th Feb, 2014
PAGE : 2 of 4

Test Result

Sample Description : Epoxy Molding Compound
Sample Name : CEL-9220HF 13 Series

Test Item (s):	Unit	Method	Result	MDL
Antimony (Sb)	ppm	ICP-OES as per US EPA 3052 (acid digestion method)	N.D.	2

NOTE: (a) N.D. = Not detected (<MDL)
(b) ppm = mg/kg
(c) MDL= Method Detection Limit
(d) Testing based on original basis

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Test Report

REPORT NO. : **CTSSA/01998-5/14**
CTS REF. : **CTSSA/14/0336**
DATE REPORTED : 24th Feb, 2014
PAGE : 3 of 4

Test Result

Sample Description : Epoxy Molding Compound
Sample Name : CEL-9220HF 13 Series

HITACHI CHEMICAL (M) SDN. BHD.
CTSSA/01998-5/14

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Test Report

REPORT NO. : **CTSSA/01998-5/14**
CTS REF. : **CTSSA/14/0336**
DATE REPORTED : 24th Feb, 2014
PAGE : 4 of 4

MICROWAVE ASSISTED ACID DIGESTION OF SILICEOUS AND ORGANICALLY BASED METRICES (US EPA 3052)

Sample Preparation

↓

Weight sample (0.2-0.5g) into digestion vessel

↓

Acid digestion (HF and HNO_3) – Microwave

↓

"Totally Dissolved"

↓

Filtration

↓

Analyses by ICP

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LITTELFUSE PHILIPPINES INC.
LIMA TECHNOLOGY CENTER, LIPA CITY,
MALVAR, BATANGAS

The following sample(s) was/were submitted and identified on behalf of the clients as : A194(CDA194,C194)

SGS Job No. :	CP13-064138 - SZ
Client Ref. Info. :	Sample may cover:QFN,DFN,SOP,HD-BU,SBP,SOIC,DUAL,QFP,PLCC,PDIP,TQFP,LFGA/ELP,HDL
Date of Sample Received :	12 Dec 2013
Testing Period :	12 Dec 2013 - 18 Dec 2013
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 of Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBB), Polybrominated diphenyl ethers (PBDE) comply with the limits as set by RoHS Directive 2011/65/EU Annex II; recasting 2002/95/EC.

Signed for and on behalf of
SGS-CSTC Ltd.

Merry Lv
Approved Signatory

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Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	CAN13-194593.007	Copper-colored metal

Remarks :

(1) 1 mg/kg = 1 ppm = 0.0001%

(2) MDL = Method Detection Limit

(3) ND = Not Detected (< MDL)

(4) "-" = Not Regulated

RoHS Directive 2011/65/EU

Test Method : (1)With reference to IEC 62321-5:2013, determination of Cadmium by ICP-OES.
(2)With reference to IEC 62321-5:2013, determination of Lead by ICP-OES.
(3)With reference to IEC 62321-4:2013, determination of Mercury by ICP-OES.
(4)With reference to IEC 62321:2008, determination of Hexavalent Chromium by spot test / Colorimetric Method using UV-Vis.
(5)With reference to IEC 62321:2008, determination of PBBs and PBDEs by GC-MS.

Test Item(s)	Limit	Unit	MDL	*007*
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	12
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 Item(s)	Limit	Unit	MDL	*007*
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 directive 2011/65/EU, Annex II
(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 cm2 sample surface area.
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.

Elementary Analysis

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

Test Item(s)	Unit	MDL	*007*
Antimony (Sb)	mg/kg	10	ND

Halogen

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

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Test Item(s)	Unit	MDL	*007*
Fluorine (F)	mg/kg	50	ND
Chlorine (Cl)	mg/kg	50	ND
Bromine (Br)	mg/kg	50	ND
Iodine (I)	mg/kg	50	ND

Red Phosphorus as Phosphorus

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

Test Item(s)	Unit	MDL	*007*
Red Phosphorus as Phosphorus	mg/kg	20	228

Perfluorooctane Sulfonates (PFOS) and Perfluorooctanoic Acid (PFOA)

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

Test Item(s)	Unit	MDL	*007*
Perfluorooctane Sulfonates (PFOS) and related Acid,Metal Salt and Amide	µg/m²	1	ND
Perfluorooctanoic Acid (PFOA)	µg/m²	1	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 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 /m² of the coated material.
Please refer to Regulation (EC) No 552/2009 to get more detail information

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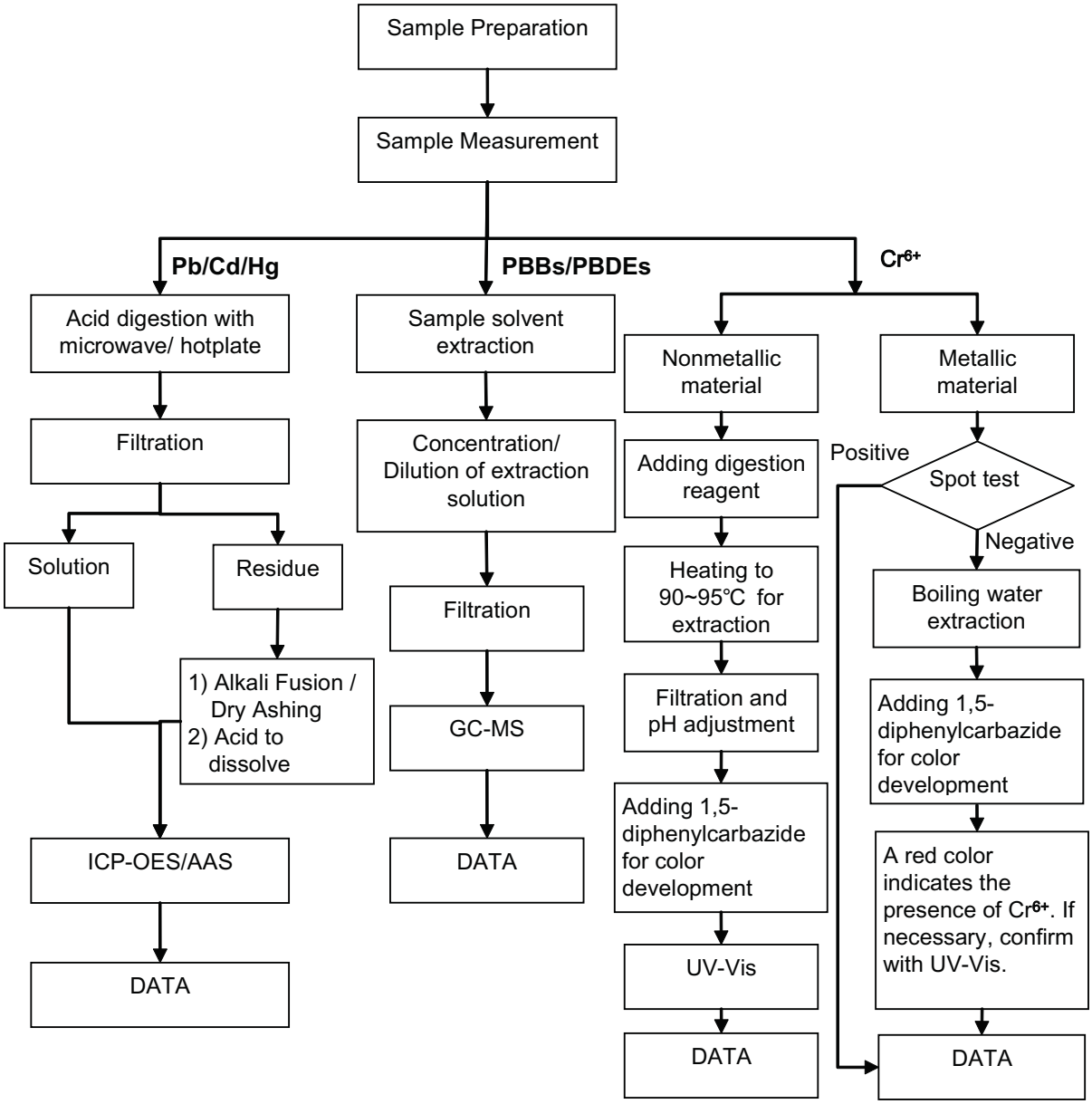
ATTACHMENTS

RoHS Testing Flow Chart

1) Name of the person who made testing: Michael Tso / Cutey Yu
2) Name of the person in charge of testing: Adams Yu / Yolanda Wei
3) These samples were dissolved totally by pre-conditioning method according to below flow chart (Cr^{6+} and PBBs/PBDEs test method excluded).



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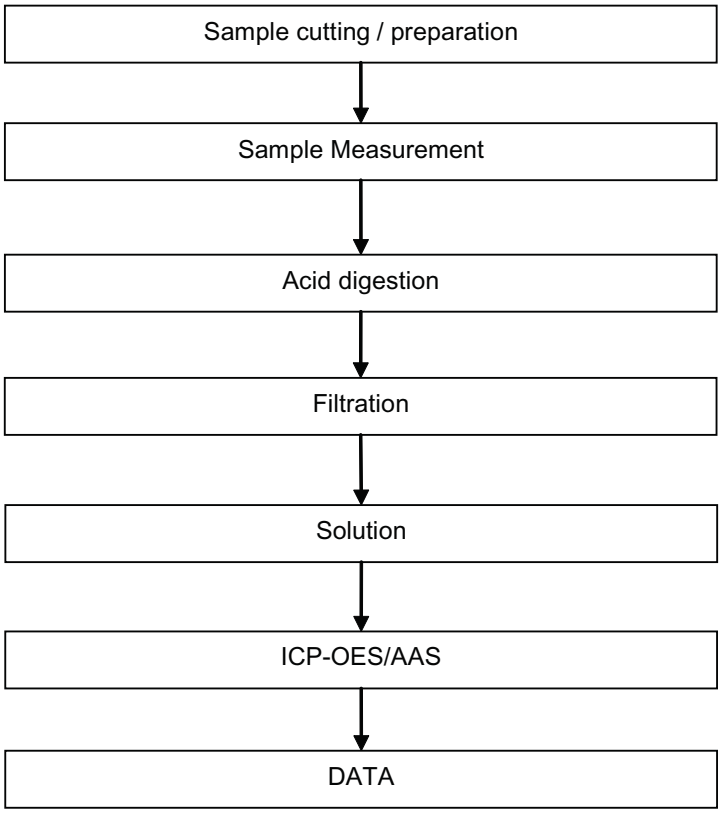
Elementary Testing Flow Chart

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



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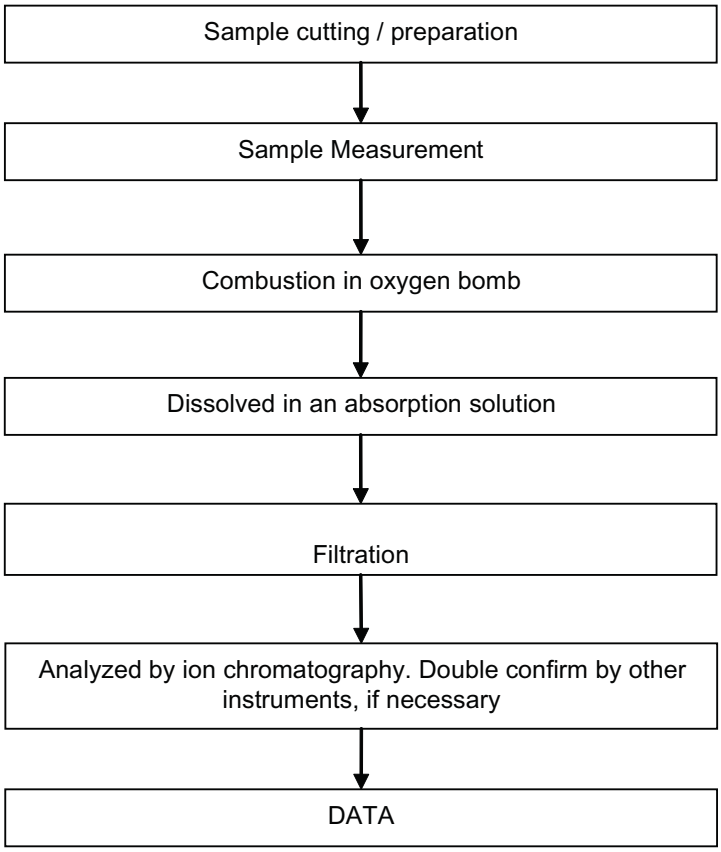
Halogen Testing Flow Chart

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



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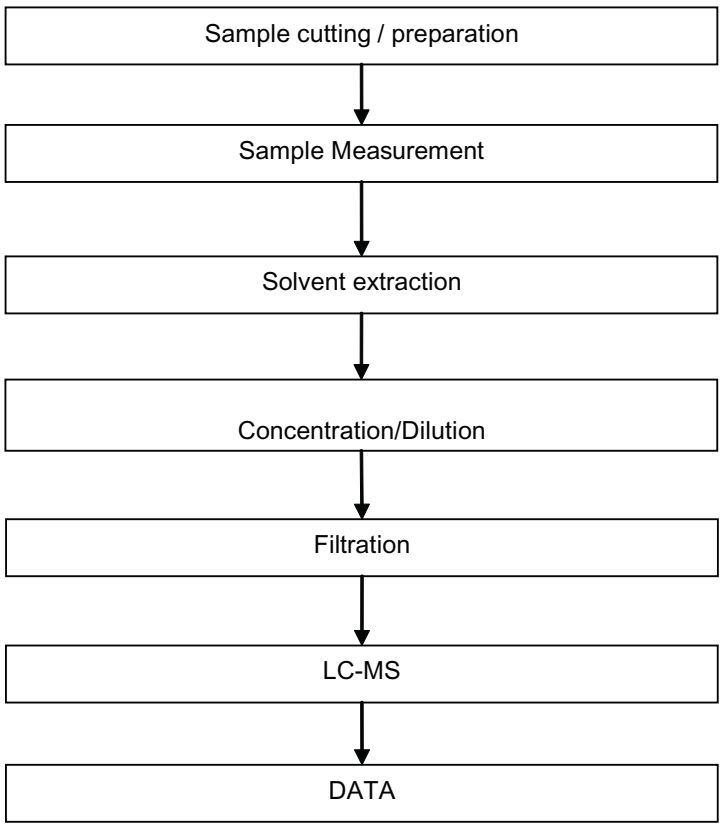
PFOA / PFOS Testing Flow Chart

1) Name of the person who made testing: Tina Zhao
2) Name of the person in charge of testing: Yolanda Wei



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Sample photo:

CAN13-194593.007

SGS authenticate the photo on original report only

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Number : WUXH00016505

Applicant : CONCORD SEMICONDUCTOR(WUXI) CO., LTD.
EAST 1#,ZHENFA 6 ROAD, SHUO FANG
INDUSTRIAL PARK WUXI NATIONAL HIGH-TECH
DEVELOPMENT ZONE, WUXI,JIANGSU,CHINA
Attn : ZHANG XIAOPENG

Date : Aug 02, 2013

Sample Description As Declared:

One (1) Piece Of Submitted Sample Said To Be : **Copper Metal.**

Item Name	: Copper Spacer(Double Head).
Vendor	: TAI-E Point Co., Ltd.
Component Or Part No.	: Copper.
Test Item	: Cd,Pb,Hg,CrVI.

Tests Conducted:

As Requested By The Applicant, For Details Refer To Attached Pages

Conclusion:

Tested Sample	Standard	Result
Submitted Sample	With Reference To Test Method Of IEC 62321 Edition 1.0: 2008 And Maximum Concentration Limits Quoted From RoHS Directive 2011/65/EU.	Pass

Prepared And Checked By:
For Intertek Testing Services Wuxi Ltd.

Jessica

Jessica Lu
General Manager

Intertek Testing Services Wuxi Ltd. 无锡天祥质量技术服务有限公司 检测报告专用章

Intertek Testing Services Wuxi Ltd.
No.8 Fubei Road, Xishan Economic Development Zone,
Wuxi 214101, Jiangsu, China
Tel: +86 510 8821 4567 Fax: +86 510 8820 0428 E-mail: consumergoods.wuxi@intertek.com

Number : WUXH00016505

Tests Conducted (As Requested By The Applicant)

1 (A) Test Result Of RoHS Directive:

Testing Item	**Result**
Cadmium (Cd) Content (mg/kg)	ND
Lead (Pb) Content (mg/kg)	ND
Mercury (Hg) Content (mg/kg)	ND
Chromium (VI)(Cr^{6+}) Result (By Boiling Water Extraction On Metal) (mg/kg With $50cm^2$)	N

Remark: mg/kg With $50cm^2$ = Milligram Per Kilogram With 50 Square Centimeter
mg/kg = Milligram Per Kilogram =ppm
ND = Not Detected
N = Negative

(B) RoHS Requirement:

Restricted Substances	**Limits**
Cadmium (Cd)	0.01% (100 mg/kg)
Lead (Pb)	0.1% (1000 mg/kg)
Mercury (Hg)	0.1% (1000 mg/kg)
Chromium (VI) (Cr^{6+})	0.1% (1000 mg/kg)

The Above Limits Were Quoted From Rohs Directive 2011/65/EU For Homogeneous Material.

(C) Test Method:

Testing Item	**Testing Method**	**Reporting Limit**
Cadmium (Cd) Content	With Reference To IEC 62321 Edition 1.0: 2008, By Acid Digestion Until The Tested Sample Was Totally Dissolved, And Determined By ICP-OES.	2 mg/kg
Lead (Pb) Content	With Reference To IEC 62321 Edition 1.0: 2008, By Acid Digestion Until The Tested Sample Was Totally Dissolved, And Determined By ICP-OES.	2 mg/kg
Mercury (Hg) Content	With Reference To IEC 62321 Edition 1.0: 2008, By Acid Digestion Until The Tested Sample Was Totally Dissolved, And Determined By ICP-OES.	2 mg/kg
Chromium (VI) (Cr^{6+}) Content (For Metal)	With Reference To IEC 62321 Edition 1.0: 2008, By Boiling Water Extraction And Determined By UV-VIS Spectrophotometer.	0.02mg/kg With $50cm^2$ (In Testing Solution)

Date Sample Received: Jul 30, 2013
Testing Period: Jul 30, 2013 To Aug 01, 2013

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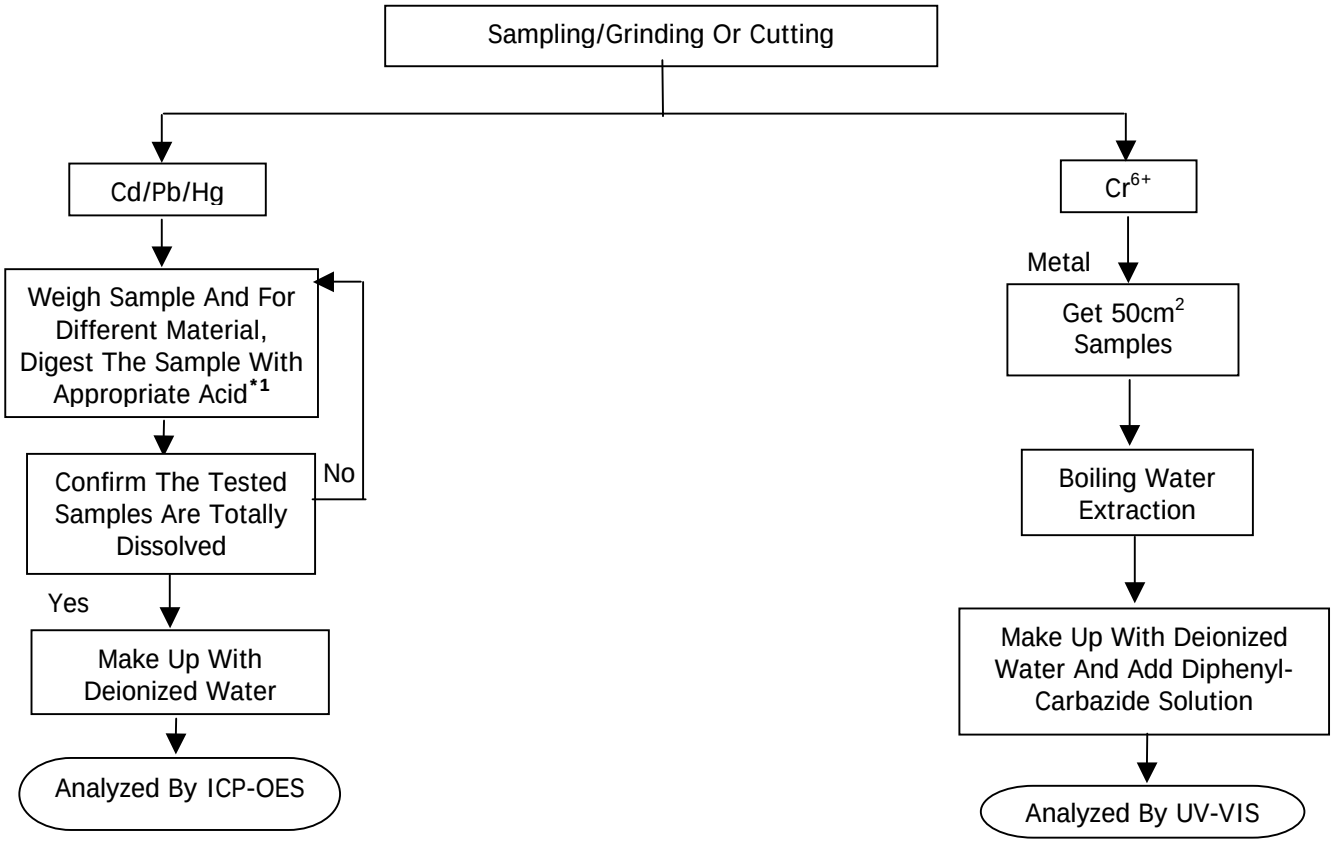
Number : WUXH00016505

Tests Conducted (As Requested By The Applicant)

(D) Measurement Flowchart:

Reference Standard: IEC 62321 Edition 1.0: 2008



Remarks:

*1: List Of Appropriate Acid:

Material	Acid Added For Digestion
Polymers	HNO_3,HCl,HF,H_2O_2,H_3BO_3
Metals	HNO_3,HCl,HF
Electronics	HNO_3,HCl,H_2O_2,HBF_4

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Number： WUXH00016505

Tests Conducted (As Requested By The Applicant)

Photo

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Test Report

Number : TWNC00353517
Date : Jan 24, 2014

Applicant: Littelfuse Philippines Inc.
LIMA Technology Center, Lipa City,
Malvar, Batangas

Sample Description:
One (1) group of submitted samples said to be :

Part Description	:	Tin
Part Number	:	Tin
Date Sample Received	:	Jan 17, 2014
Date Test Started	:	Jan 17, 2014

Test Conducted :
As requested by the applicant, for details please refer to attached pages.

Authorized by:
On Behalf of Intertek Testing Services Taiwan Limited

K. Y. Liang
Director

Intertek Testing Services Taiwan Ltd.
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Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

Intertek

Test Report

Number: TWNC00353517

Test Conducted

Test Result Summary:

Test Item	Unit	Test Method	Result	RL
			Silvery metal	
Heavy Metal				
Cadmium (Cd) content	ppm	With reference to IEC 62321-5: 2013, by microwave or acid digestion and determined by ICP-OES.	ND	2
Lead (Pb) content	ppm	With reference to IEC 62321-5: 2013, by microwave or acid digestion and determined by ICP-OES.	36	2
Mercury (Hg) content	ppm	With reference to IEC 62321-4: 2013, by microwave or acid digestion and determined by ICP-OES.	ND	2
Chromium VI (Cr^{6+}) content	mg/kg with 50 cm^2	With reference to IEC 62321: 2008, by boiling water extraction and determined by UV-Vis Spectrophotometer.	Negative(#)	0.02

Remarks: ppm = Parts per million based on weight of tested sample = mg/kg
ND = Not detected
RL = Reporting limit, quantitation limit of analyte in sample
mg/kg with 50cm^2 = Milligram per kilogram with 50 square centimeter
Negative = A negative test result indicated positive observation was not found at the time of test.
# = Due to the insufficient sample area, reduced total sample surface of 10 cm^2 was used and the dilution factor was adjusted accordingly.

Responsibility of Chemist: Kevin Liu/ Irene Chiou

Date Sample Received : Jan 17, 2014
Test Period : Jan 17, 2014 To Jan 23, 2014

RoHS Limit

Restricted Substances	Limits
Cadmium (Cd) content	0.01% (100ppm)
Lead (Pb) content	0.1% (1000ppm)
Mercury (Hg) content	0.1% (1000ppm)
Chromium VI (Cr^{6+}) content	0.1% (1000ppm)

The above limits were quoted from Annex II of 2011/65/EU for homogeneous material.

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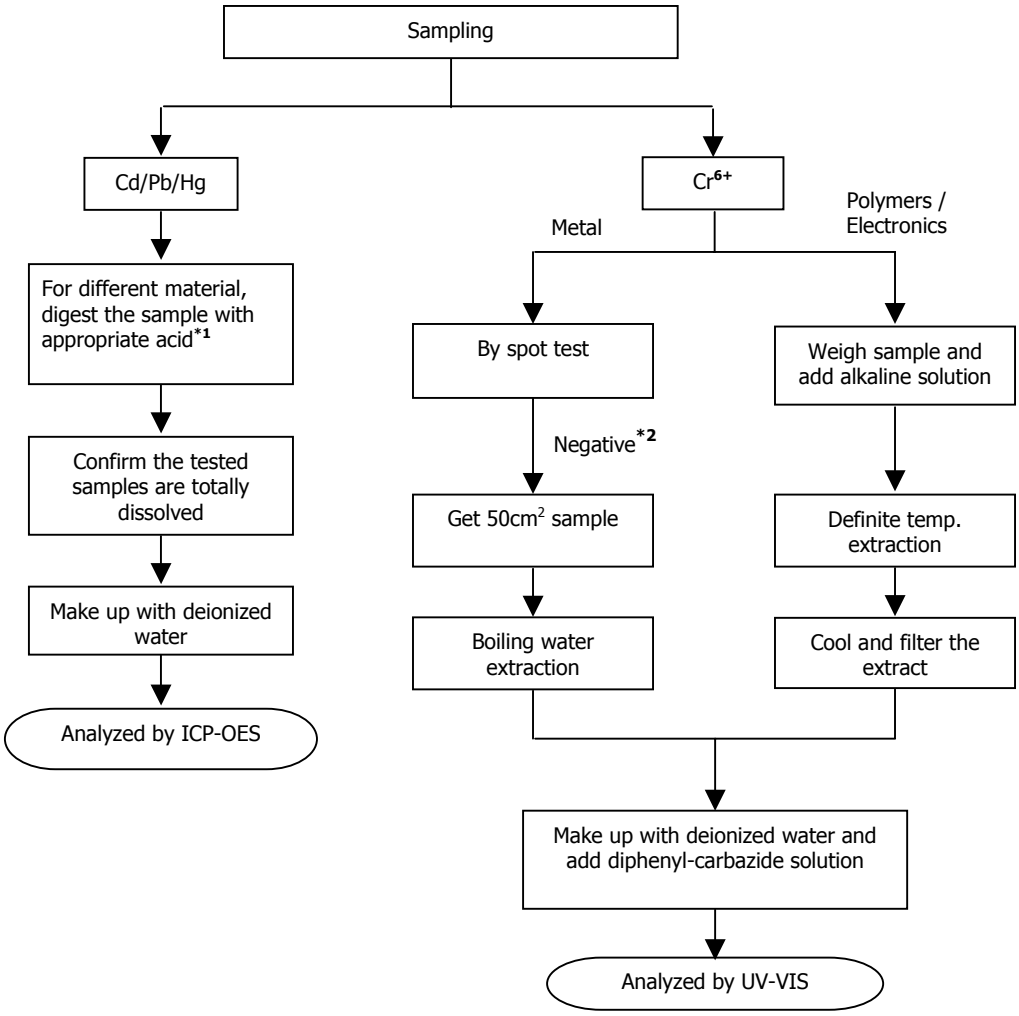
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

Test Report

Number: TWNC00353517

Test Conducted
Measurement Flowchart:

Test for Cd/Pb/Hg/Chromium (VI)
Reference Standard：Cd/Pb: IEC 62321-5:2013; Hg: IEC 62321-4:2013;
Chromium (VI): IEC 62321:2008



Remarks:
*1: List of Appropriate Acid：

Material	Acid Added for Digestion
Polymers	HNO_3,HCl,HF,H_2O_2,H_3BO_3
Metals	HNO_3,HCl,HF
Electronics	HNO_3,HCl,H_2O_2,HBF_4

*2: If the result of spot test is positive, Chromium VI would be determined as detected.

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Test Report

Number: TWNC00353517

End of Report

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Intertek

Number: TWNC00353517

TERMS AND CONDITIONS OF BUSINESS

1. Intertek Testing Services Taiwan Ltd. (hereinafter "the Company") agrees to provide its services in accordance with and subject to the terms and conditions herein contained (hereinafter "the Conditions"). The Conditions may only be modified by a variation expressed in writing and signed on behalf of the Company by a director and no other action on the part of the Company or its employees or agents shall be construed as an acceptance of any other terms and conditions.
2. The Company acts for the person or body from whom the request to provide its services has originated (hereinafter "the Principal"). No other party is entitled to give instructions to the Company unless agreed by the Company.
3. All rights (including but not limited to copyright) in any test reports, surveys, certificates of inspection or other material produced by the Company in the course of providing its services shall remain vested in the Company. The Principal shall not reproduce or make copies, publish or disclose the contents of any such material or extracts thereof to any third party without the Company's prior written consent, which may be refused at its discretion. The Principal further undertakes that its servants and agents shall keep confidential and shall not publish or otherwise use any information that may be acquired relating to the Company's activities.
4. 4.1 The Company undertakes to exercise due care and skill in the performance of its services and accepts responsibility only where such skill and care is not exercised.
   4.2 The liability of the Company in respect of any claims for loss, damage or expense of whatsoever nature and howsoever arising in respect of any breach of contract and/or any failure to exercise due skill and care by the Company shall in no circumstances exceed a total aggregate sum equal to ten (10) times the amount of the fee or commission payable in respect of the specific service required under the particular contract with the Company which gives rise to such claims provided however that the Company shall have no liability in respect of any claims for indirect or consequential loss including loss of profit and/or loss of future business and/or loss of production and/or cancellation of contracts entered into by the Principal.
   4.3 The Company shall not in any event be liable for any loss or damage caused by delay in performance or non-performance of any of its services where the same is occasioned by any cause whatsoever that is beyond the Company's control including but not limited to war, civil disturbance, requisitioning, governmental or parliamentary restriction, prohibitions or enactment of any kind, import or export regulations, strike or trade dispute (whether involving its own employees or those of any other person), difficulties in obtaining workmen or materials, breakdown of machinery, fire or accident. Should any such event occur the Company may cancel or suspend any contract for the provision of services without incurring any liability whatsoever.
   4.4 The Company will not be liable to the Principal for any loss or damage whatsoever sustained by the Principal as a result of any failure by the Company to comply with any time estimate given by the Company relating to the provision of its services. [See clause 9.1] [See clause 9.2]
   4.5 The Principal acknowledges that samples may be damaged or destroyed in the course of testing carried out by the Company or any of the Company's agent or subcontractor as part of the necessary testing process and the Company shall not in any event be liable for any loss or damage arising from the damage or destruction of the samples subject to testing.
   4.6 In the event that the Principal requests for the return of the samples, the Company shall not be responsible for any re-packaging of the samples prior to such return and the Company shall in no circumstances be liable for any loss or damage caused to any of the samples during or as a result of their shipment to the Principal for the purpose of this Clause 4.6.
5. 5.1 Subject to the Principal's instructions as accepted by the Company, the test reports, surveys, certificates of inspection or other material produced by the Company shall contain statements of opinion made with due care within the limitation of the instructions received by the Company. The Company is under no obligation to refer to or report upon any facts or circumstances which are outside the specific instructions received.
   5.2 For pre-shipment inspection or survey of goods, the Company's inspector shall perform the inspection or survey when goods are 100% completed, packed and marked (unless otherwise agreed between the Company and the Principal). Goods for inspection or survey shall be unpacked in the presence of the Company's inspector and inspection or survey shall, subject to Condition 5.3, take place at the place specified by the Principal.
   5.3 If the Company's inspector finds that the location is not suitable for carrying out a proper inspection or survey of goods or where necessary equipment for inspection or survey is not available the inspector may, if practical in the circumstances, draw samples of goods from the location and carry out the inspection or survey at the premises of the Company. The Principal shall be responsible for all costs and expenses incurred in relation thereto.
   5.4 Reports, surveys or certificates issued following testing or analysis of samples contain the Company's specific opinion on those samples only but do not express any opinion upon the bulk from which the samples were drawn. If an opinion on the bulk is requested special arrangements in writing must be made in advance with the Company for the inspection and sampling of the bulk. In no circumstances shall the Company's responsibility extend beyond inspection, testing and reporting upon the samples actually drawn from the bulk and inspected, tested and surveyed by the Company and any inference to be drawn from the results of such inspection or survey or testing shall be entirely in the discretion and at the sole and exclusive responsibility of the Principal.
6. The Company shall be entitled at its discretion to delegate the performance of the whole or any part of the services contracted for with the Principal to any agent or subcontractor.
7. Every officer, employee, agent or subcontractor of the Company shall have the benefit of the limitations of liability and the indemnities contained in the General Conditions. So far as relates to such limitations and indemnities, any contract entered into by the Company is entered into not only on its own behalf but also as agent and trustee for every such person as aforesaid.
8. If the requirements of the Principal necessitate the analysis of samples by the Principal or by any third party the Company will pass on the results of the analysis but without responsibility for its accuracy. Where the Company is only able to witness an analysis by the Principal or by any third party the Company will provide confirmation, if such be the case, that a correct sample has been analysed but will not otherwise be responsible for the accuracy of such analysis.
9. The Principal will:
   9.1 ensure that instructions to the Company are given in due time and are accompanied by sufficient information to enable the required services to be performed effectively;
   9.2 accept that documents reflecting arrangements or agreements made between the Principal and any third party, or third party documents such as copies of contracts of sale, letters of credit, bills of lading, etc. are -if received by the Company considered to be for information only, without extending or restricting the services to be provided or obligations accepted by the Company.
   9.3 procure all necessary access for the Company's representatives to enable the required services to be performed effectively.
   9.4 supply, if required, any special equipment and personnel necessary for the performance of the required services.
   9.5 ensure that all necessary measures are taken for safety and security of working conditions, sites and installations during the performance of the required services;

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9.6 take all necessary steps to eliminate or remedy any obstruction to or interruptions in the performance of the required services and repack all inspected goods immediately after any inspection or survey of them;

9.7 inform the Company in advance of any known hazards or dangers, actual or potential, associated with any request for the provision of services by the Company including but not limited to the presence or risk of radiation, toxic or noxious or explosive elements or materials, environmental pollution or poisons;

10. The Principal shall guarantee, hold harmless and indemnify the Company and its officers, employees, agents or subcontractors against :

10.1 all claims made by any third party for any loss, damage or expense of whatsoever nature and howsoever arising relating to the performance, purported performance or non-performance of any of services to the extent that the aggregate of any such claims relating to any one service exceeds the limit mentioned in Condition 4.2.

10.2 any loss or damage suffered by the Company as a result of the provision of services by the Company to the Principal otherwise than resulting from the Company's own error, negligence or wilful default.

11. 11.1 The Principal will punctually pay the Company immediately upon presentation of the relevant invoice or within such other period as may have been agreed in writing by the Company all charges rendered by the Company failing which interest will become due at the rate of 1.5 per cent per month from the date of invoice until payment. The Principal further agrees and undertakes to reimburse the Company all disbursements reasonably incurred in connection with the provision of its services.

11.2 The Principal shall not be entitled to retain or defer payment of any sums due to the Company on account of any dispute, cross claim or set off which it may allege against the Company.

11.3 In the event of any suspension of payment arrangement with creditors, bankruptcy, insolvency, receivership or cessation of business or failure of the Principal to pay part or all of any sums owing to the Company, the Company shall be entitled to suspend all further performance of its services and withhold the issue of any test report, survey, certificate of inspection or other material requested forthwith and without liability until payment of all sums owing to the Company together with interest thereon is made

12. Without prejudice to any rights the Company may have at law or under the Conditions, the Company has the following rights in the event of non-payment of sums owing to the Company as set out below:

12.1 The Company has a general and particular lien over all samples delivered to be tested for all claims and sums owing by the Principal to the Company under any contract whatsoever and in any other way whatsoever.

12.2 During the currency of any such lien the Company is entitled to be paid reasonable storage charges for samples retained in the Company's custody.

12.3 Without prejudice to the Company's lien and other rights under Conditions 12.1 to 12.2 above, if test, inspection or survey of the goods takes place on the premises of the Company, the Company may give notice to the Principal that the goods (or any part thereof) are ready for collection and the Principal shall collect the same within three (3) calendar days (Saturdays, Sundays and Public Holidays excepted). Upon the expiry of this period, if the goods are not collected by the Principal, at the sole discretion of the Company the goods may be deemed abandoned and/or destroyed.

12.4 Without prejudice to Conditions 12.3 above, the Company shall have the discretion to store the goods (or any of them) at their own premises or elsewhere at the Principal's expense if the Principal has deposited the goods at the Company's premises for the performance of these services and has subsequently failed to collect the said goods.

12.5 The expenses by way of disbursements that the Company may reclaim from the Principal include all reasonable costs incurred by the Company (whether by way of storage, insurance or otherwise) in respect of the goods and it is expressly declared that it shall be reasonable but not mandatory for the Company to effect comprehensive insurance in respect of the goods.

12.6 Without prejudice to the Company's lien and other rights under Conditions 12.1 to 12.5 above, the risk and property in the goods shall remain at all times in the Principal.

13. In the event of the Company being prevented by reason of any cause whatsoever outside the Company's control from performing or completing any service for which an order has been given or an agreement made, the Principal will pay to the Company:

13.1 the amount of all abortive expenditure actually made or incurred; and

13.2 a proportion of the agreed fee or commission equal to the proportion (if any) of the service actually carried out;

and the Company shall be relieved of all responsibility whatsoever for the partial or total non-performance of the required service.

14. The Company shall be discharged from all liability to the Principal for all claims for loss, damage or expense unless suit is brought within twelve (12) months after the date of the performance by the Company of the service which gives rise to the claim or in the event of any alleged non-performance within twelve (12) months of the date when such service should have been completed.

15. In the event that any unforeseen additional time or costs are incurred in the course of carrying out any of its services the Company shall be entitled to render additional charges as shall reasonably reflect such additional time and costs incurred.

16. All contracts for provision of services by the Company and the Conditions shall be construed in accordance with and governed by the laws of the ROC and for the purpose of any arbitral or litigation proceedings such contracts shall be deemed to have been made and performed in Taiwan. If any provision contained in the Conditions is and/or becomes invalid, illegal or unenforceable in any respect under the laws of the ROC, the validity, legality and enforceability of the remaining provisions hereof shall not in any way be affected or impaired thereby.

17. Any dispute or claim arising out of or relating to the provision of, or any agreement to provide, services by the Company shall be referred to and determined by arbitration subject to the Company's sole and overriding discretion to commence litigation proceedings in the courts of Taiwan or the courts of any other country as the Company may choose. The parties may agree to the appointment of an arbitrator failing which either party may, after having made a written request to concur in the appointment of an arbitrator, request the ROC Arbitration Association to appoint an arbitrator. The place of arbitration shall be in Taiwan. There shall only be one arbitrator.

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Number : WUXH00016496

Applicant : CONCORD SEMICONDUCTOR(WUXI) CO., LTD.
EAST 1#,ZHENFA 6 ROAD, SHUO FANG
INDUSTRIAL PARK WUXI NATIONAL HIGH-TECH
DEVELOPMENT ZONE, WUXI,JIANGSU,CHINA
Attn : ZHANG XIAOPENG

Date : Aug 01, 2013

Sample Description As Declared:

One (1) Piece Of Submitted Sample Said To Be : **Silvery Grey Metal.**

Item Name	: Silicon Wafer With Nickel Plating.
Vendor	: Littelfuse.
Component Or Part No.	: Silicon+Nickel.
Test Item	: Cd,Pb,Hg,CrVI,PBBs,PBDEs.
Remark	: As Requested By The Applicant, Tested As A Whole And Sampled Randomly.

Tests Conducted:

As Requested By The Applicant, For Details Refer To Attached Pages

Prepared And Checked By:
For Intertek Testing Services Wuxi Ltd.

Jessica

Jessica Lu
General Manager

Intertek Testing Services Wuxi Ltd. 无锡天祥质量技术服务有限公司 检测报告专用章

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Number : WUXH00016496

Tests Conducted (As Requested By The Applicant)

1 RoHS Directives Test

(A) Test Result Summary:

Testing Item	**Result**
Cadmium (Cd) Content (mg/kg)	ND
Lead (Pb) Content (mg/kg)	25
Mercury (Hg) Content (mg/kg)	ND
Chromium (VI)(Cr^{6+}) Result (By Boiling Water Extraction On Metal) (mg/kg With $50cm^2$)	N
Polybrominated Biphenyls (PBBs)(mg/kg)	
Monobrominated Biphenyls (MonoBB)	ND
Dibrominated Biphenyls (DiBB)	ND
Tribrominated Biphenyls (TriBB)	ND
Tetrabrominated Biphenyls (TetraBB)	ND
Pentabrominated Biphenyls (PentaBB)	ND
Hexabrominated Biphenyls (HexaBB)	ND
Heptabrominated Biphenyls (HeptaBB)	ND
Octabrominated Biphenyls (OctaBB)	ND
Nonabrominated Biphenyls (NonaBB)	ND
Decabrominated Biphenyl (DecaBB)	ND
Sum Of PBBs	ND
Polybrominated Diphenyl Ethers (PBDEs)(mg/kg)	
Monobrominated Diphenyl Ethers (MonoBDE)	ND
Dibrominated Diphenyl Ethers (DiBDE)	ND
Tribrominated Diphenyl Ethers (TriBDE)	ND
Tetrabrominated Diphenyl Ethers (TetraBDE)	ND
Pentabrominated Diphenyl Ethers (PentaBDE)	ND
Hexabrominated Diphenyl Ethers (HexaBDE)	ND
Heptabrominated Diphenyl Ethers (HeptaBDE)	ND
Octabrominated Diphenyl Ethers (OctaBDE)	ND
Nonabrominated Diphenyl Ethers (NonaBDE)	ND
Decabrominated Diphenyl Ether (DecaBDE)	ND
Sum Of PBDEs	ND

Remark:
mg/kg = Milligram Per Kilogram = ppm
mg/kg With $50cm^2$ = Milligram Per Kilogram With 50 Square Centimeter
ND = Not Detected
N=Negative

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Number : WUXH00016496

Tests Conducted (As Requested By The Applicant)

(B)RoHS Requirement:

Restricted Substances	Limits
Cadmium (Cd)	0.01% (100 mg/kg)
Lead (Pb)	0.1% (1000 mg/kg)
Mercury (Hg)	0.1% (1000 mg/kg)
Chromium (VI) (Cr^{6+})	0.1% (1000 mg/kg)
Polybrominated Biphenyls (PBBs)	0.1% (1000 mg/kg)
Polybrominated Diphenyl Ethers (PBDEs)	0.1% (1000 mg/kg)

The Above Limits Were Quoted From RoHS Directive 2011/65/EU For Homogeneous Material.

(C) Test Method:

Testing Item	Testing Method	Reporting Limit
Cadmium (Cd) Content	With Reference To IEC 62321 Edition 1.0: 2008, By Acid Digestion Until The Tested Sample Was Totally Dissolved, And Determined By ICP-OES.	2 mg/kg
Lead (Pb) Content	With Reference To IEC 62321 Edition 1.0: 2008, By Acid Digestion Until The Tested Sample Was Totally Dissolved, And Determined By ICP-OES.	2 mg/kg
Mercury (Hg) Content	With Reference To IEC 62321 Edition 1.0: 2008, By Acid Digestion Until The Tested Sample Was Totally Dissolved, And Determined By ICP-OES.	2 mg/kg
Chromium (VI) (Cr^{6+}) Content(For Metal)	With Reference To IEC 62321 Edition 1.0:2008, By Boiling Water Extraction And Determined By UV-VIS Spectrophotometer	0.02mg/kg With 50cm^2 (In Testing Solution)
Polybrominated Biphenyls (PBBs)& Polybrominated Diphenyl Ethers (PBDEs)	With Reference To IEC 62321 Edition 1.0: 2008, By Solvent Extraction And Determined By GC/MS And Further HPLC Confirmation When Necessary.	5 mg/kg

Date Sample Received: Jul 30, 2013
Testing Period: Jul 30, 2013 To Aug 01, 2013

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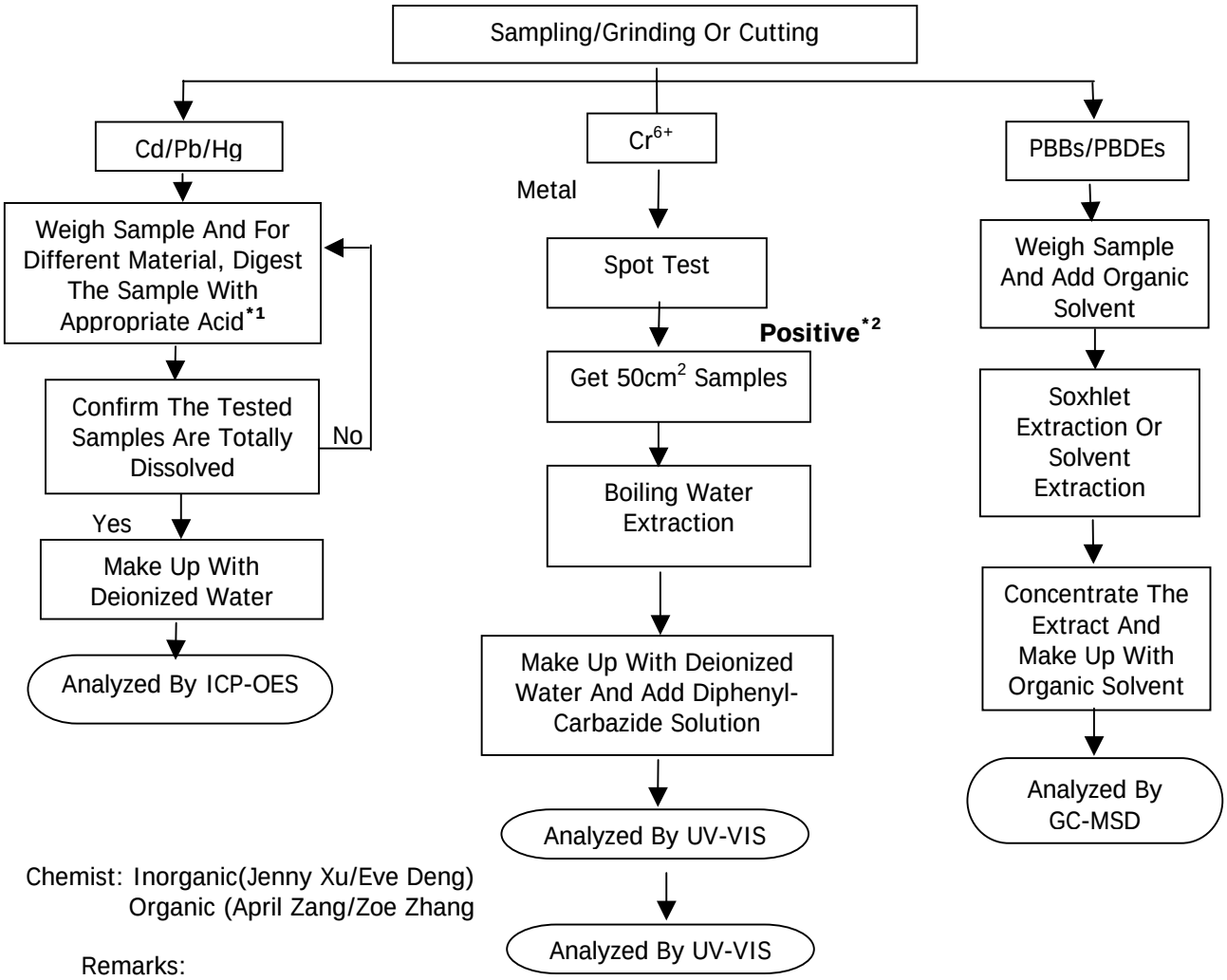
Number : WUXH00016496

Tests Conducted (As Requested By The Applicant)

(D) Measurement Flowchart:

Reference Standard: IEC 62321 Edition 1.0: 2008



Chemist: Inorganic(Jenny Xu/Eve Deng)
Organic (April Zang/Zoe Zhang

Remarks:

*1: List Of Appropriate Acid:

Material	Acid Added For Digestion
Polymers	HNO_3,HCl,HF,H_2O_2,H_3BO_3
Metals	HNO_3,HCl,HF
Electronics	HNO_3,HCl,H_2O_2,HBF_4

*2: If The Result Of Spot Test Is Positive, Chromium VI Would Be Determined As Detected.

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Number： WUXH00016496

Tests Conducted (As Requested By The Applicant)

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Number : WUXH00016497

Applicant : CONCORD SEMICONDUCTOR(WUXI) CO., LTD.
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INDUSTRIAL PARK WUXI NATIONAL HIGH-TECH
DEVELOPMENT ZONE, WUXI,JIANGSU,CHINA
Attn : ZHANG XIAOPENG

Date : Aug 01, 2013

Sample Description As Declared:

One (1) Piece Of Submitted Sample Said To Be : **White Powder.**

Item Name	: Wafer Passivation (Glass).
Vendor	: Propriety.
Component Or Part No.	: Propriety.
Test Item	: Cd,Pb,Hg,CrVI,PBBs,PBDEs,F,Cl,Br,I.

Tests Conducted:

As Requested By The Applicant, For Details Refer To Attached Pages

Prepared And Checked By:
For Intertek Testing Services Wuxi Ltd.

Jessica Lu
General Manager

Intertek Testing Services Wuxi Ltd. 无锡天祥质量技术服务有限公司 检测报告专用章

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Number : WUXH00016497

Tests Conducted (As Requested By The Applicant)

1 RoHS Directives Test

(A) Test Result Summary:

Testing Item	**Result**
Cadmium (Cd) Content (mg/kg)	ND
Lead (Pb) Content (mg/kg)	312500
Mercury (Hg) Content (mg/kg)	ND
Chromium (VI) (Cr^{6+}) Content (mg/kg)(For Non-Metal)	ND
Polybrominated Biphenyls (PBBs)(mg/kg)	
Monobrominated Biphenyls (MonoBB)	ND
Dibrominated Biphenyls (DiBB)	ND
Tribrominated Biphenyls (TriBB)	ND
Tetrabrominated Biphenyls (TetraBB)	ND
Pentabrominated Biphenyls (PentaBB)	ND
Hexabrominated Biphenyls (HexaBB)	ND
Heptabrominated Biphenyls (HeptaBB)	ND
Octabrominated Biphenyls (OctaBB)	ND
Nonabrominated Biphenyls (NonaBB)	ND
Decabrominated Biphenyl (DecaBB)	ND
Sum Of PBBs	ND
Polybrominated Diphenyl Ethers (PBDEs)(mg/kg)	
Monobrominated Diphenyl Ethers (MonoBDE)	ND
Dibrominated Diphenyl Ethers (DiBDE)	ND
Tribrominated Diphenyl Ethers (TriBDE)	ND
Tetrabrominated Diphenyl Ethers (TetraBDE)	ND
Pentabrominated Diphenyl Ethers (PentaBDE)	ND
Hexabrominated Diphenyl Ethers (HexaBDE)	ND
Heptabrominated Diphenyl Ethers (HeptaBDE)	ND
Octabrominated Diphenyl Ethers (OctaBDE)	ND
Nonabrominated Diphenyl Ethers (NonaBDE)	ND
Decabrominated Diphenyl Ether (DecaBDE)	ND
Sum Of PBDEs	ND

Remark:
mg/kg = Milligram Per Kilogram = ppm
ND = Not Detected

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Number : WUXH00016497

Tests Conducted (As Requested By The Applicant)

(B)RoHS Requirement:

Restricted Substances	Limits
Cadmium (Cd)	0.01% (100 mg/kg)
Lead (Pb)	0.1% (1000 mg/kg)
Mercury (Hg)	0.1% (1000 mg/kg)
Chromium (VI) (Cr^{6+})	0.1% (1000 mg/kg)
Polybrominated Biphenyls (PBBs)	0.1% (1000 mg/kg)
Polybrominated Diphenyl Ethers (PBDEs)	0.1% (1000 mg/kg)

The Above Limits Were Quoted From RoHS Directive 2011/65/EU For Homogeneous Material.

(C) Test Method:

Testing Item	Testing Method	Reporting Limit
Cadmium (Cd)Content	With Reference To IEC 62321 Edition 1.0: 2008, By Acid Digestion Until The Tested Sample Was Totally Dissolved, And Determined By ICP-OES.	2 mg/kg
Lead (Pb)Content	With Reference To IEC 62321 Edition 1.0: 2008, By Acid Digestion Until The Tested Sample Was Totally Dissolved, And Determined By ICP-OES.	2 mg/kg
Mercury (Hg)Content	With Reference To IEC 62321 Edition 1.0: 2008, By Acid Digestion Until The Tested Sample Was Totally Dissolved, And Determined By ICP-OES.	2 mg/kg
Chromium (VI) (Cr^{6+}) Content (For Non-Metal)	With Reference To IEC 62321 Edition 1.0: 2008, By Alkaline Digestion And Determined By UV-VIS Spectrophotometer.	1 mg/kg
Polybrominated Biphenyls (PBBs)& Polybrominated Diphenyl Ethers (PBDEs)	With Reference To IEC 62321 Edition 1.0: 2008, By Solvent Extraction And Determined By GC/MS And Further HPLC Confirmation When Necessary.	5 mg/kg

Date Sample Received: Jul 30, 2013

Testing Period: Jul 30 2013 To Jul 31, 2013

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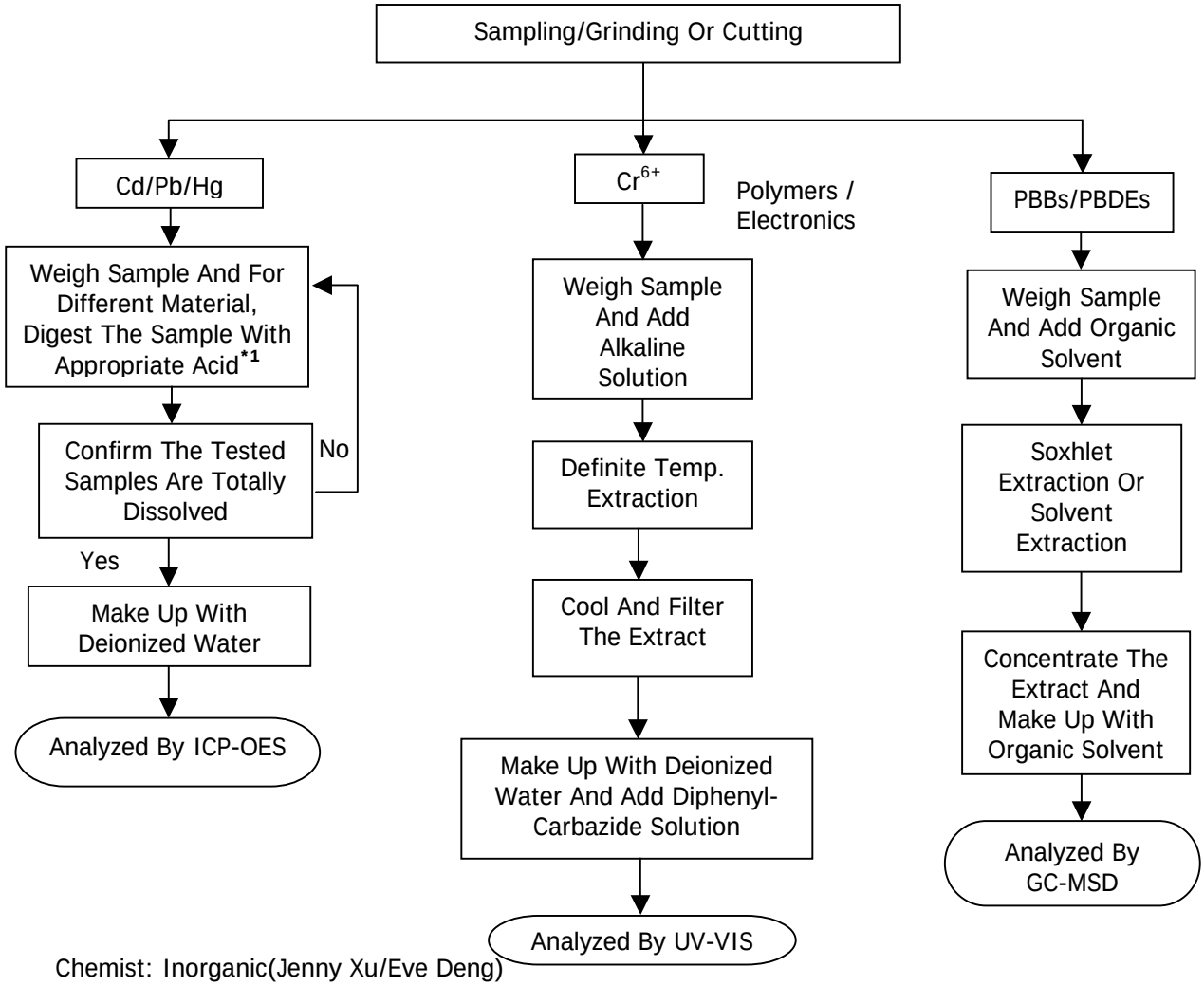
Tests Conducted (As Requested By The Applicant)

(D) Measurement Flowchart:

Reference Standard: IEC 62321 Edition 1.0: 2008



Chemist: Inorganic(Jenny Xu/Eve Deng)
Organic (April Zang/Zoe Zhang)

Remarks:

*1: List Of Appropriate Acid:

Material	Acid Added For Digestion
Polymers	HNO_3,HCl,HF,H_2O_2,H_3BO_3
Metals	HNO_3,HCl,HF
Electronics	HNO_3,HCl,H_2O_2,HBF_4

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Number : WUXH00016497

Tests Conducted (As Requested By The Applicant)

2 Halogen Test

(I) Test Result Summary :

Halogen Content:

Testing Item	Result (ppm)
Fluorine (F) Content	ND
Chlorine (Cl)Content	ND
Bromine (Br) Content	ND
Iodine (I) Content	ND

Remarks : ppm = Parts Per Million = mg/kg
ND = Not Detected

Date Sample Received: Jul 30, 2013
Testing Period: Jul 30 2013 To Jul 31, 2013

(II) Test Method :

Testing Item	Testing Method	Reporting Limit
Halogen (F,Cl, Br,I) Content	With Reference To EN 14582:2007 By Combustion In A Calorimetric Bomb And Determined By Ion Chromatography	50 ppm

Remarks : Reporting Limit = Quantitation Limit Of Analyte In Sample

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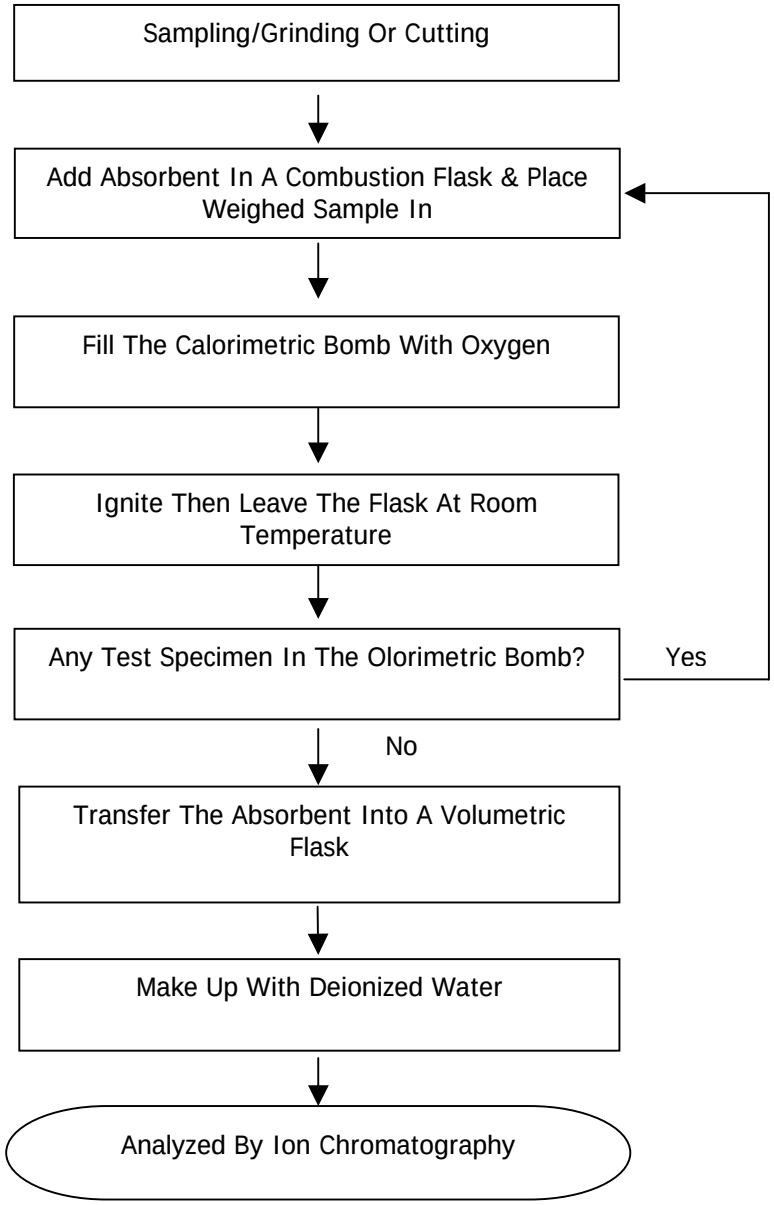
Tests Conducted (As Requested By The Applicant)

(III) Measurement Flowchart:

Test For Halogen Content Reference Method: EN 14582:2007



Chemist: Eve Deng

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INDUSTRIAL PARK WUXI NATIONAL HIGH-TECH
DEVELOPMENT ZONE, WUXI,JIANGSU,CHINA
Attn : ZHANG XIAOPENG

Date : Aug 05, 2013

Sample Description As Declared:

One (1) Piece Of Submitted Sample Said To Be : **Gray Paste.**

Item Name	: Solder Paste.
Vendor	: Heraeus Materials Technology Shanghai Ltd.
Component Or Part No.	: AG3-D3-NC237-6(Pb:Sn:Ag=92.5:5:2.5).
Test Item	: Cd,Pb,Hg,CrVI,PBBs,PBDEs,F,Cl,Br,I,Phthalate,HBCDD.

Tests Conducted:

As Requested By The Applicant, For Details Refer To Attached Pages

Prepared And Checked By:
For Intertek Testing Services Wuxi Ltd.

Jessica

Jessica Lu
General Manager

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Number : WUXH00016513

Tests Conducted (As Requested By The Applicant)

1 RoHS Directives Test

(A) Test Result Summary:

Testing Item	**Result**
Cadmium (Cd) Content (mg/kg)	ND
Lead (Pb) Content (mg/kg)	925100
Mercury (Hg) Content (mg/kg)	ND
Chromium (VI) (Cr^{6+}) Content (mg/kg)(For Non-Metal)	ND
Polybrominated Biphenyls (PBBs)(mg/kg)	
Monobrominated Biphenyls (MonoBB)	ND
Dibrominated Biphenyls (DiBB)	ND
Tribrominated Biphenyls (TriBB)	ND
Tetrabrominated Biphenyls (TetraBB)	ND
Pentabrominated Biphenyls (PentaBB)	ND
Hexabrominated Biphenyls (HexaBB)	ND
Heptabrominated Biphenyls (HeptaBB)	ND
Octabrominated Biphenyls (OctaBB)	ND
Nonabrominated Biphenyls (NonaBB)	ND
Decabrominated Biphenyl (DecaBB)	ND
Sum Of PBBs	ND
Polybrominated Diphenyl Ethers (PBDEs)(mg/kg)	
Monobrominated Diphenyl Ethers (MonoBDE)	ND
Dibrominated Diphenyl Ethers (DiBDE)	ND
Tribrominated Diphenyl Ethers (TriBDE)	ND
Tetrabrominated Diphenyl Ethers (TetraBDE)	ND
Pentabrominated Diphenyl Ethers (PentaBDE)	ND
Hexabrominated Diphenyl Ethers (HexaBDE)	ND
Heptabrominated Diphenyl Ethers (HeptaBDE)	ND
Octabrominated Diphenyl Ethers (OctaBDE)	ND
Nonabrominated Diphenyl Ethers (NonaBDE)	ND
Decabrominated Diphenyl Ether (DecaBDE)	ND
Sum Of PBDEs	ND

Remark:
mg/kg = Milligram Per Kilogram = ppm
ND = Not Detected

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Number : WUXH00016513

Tests Conducted (As Requested By The Applicant)

(B)RoHS Requirement:

Restricted Substances	Limits
Cadmium (Cd)	0.01% (100 mg/kg)
Lead (Pb)	0.1% (1000 mg/kg)
Mercury (Hg)	0.1% (1000 mg/kg)
Chromium (VI) (Cr^{6+})	0.1% (1000 mg/kg)
Polybrominated Biphenyls (PBBs)	0.1% (1000 mg/kg)
Polybrominated Diphenyl Ethers (PBDEs)	0.1% (1000 mg/kg)

The Above Limits Were Quoted From RoHS Directive 2011/65/EU For Homogeneous Material.

(C) Test Method:

Testing Item	Testing Method	Reporting Limit
Cadmium (Cd)Content	With Reference To IEC 62321 Edition 1.0: 2008, By Acid Digestion Until The Tested Sample Was Totally Dissolved, And Determined By ICP-OES.	2 mg/kg
Lead (Pb)Content	With Reference To IEC 62321 Edition 1.0: 2008, By Acid Digestion Until The Tested Sample Was Totally Dissolved, And Determined By ICP-OES.	2 mg/kg
Mercury (Hg)Content	With Reference To IEC 62321 Edition 1.0: 2008, By Acid Digestion Until The Tested Sample Was Totally Dissolved, And Determined By ICP-OES.	2 mg/kg
Chromium (VI) (Cr^{6+}) Content (For Non-Metal)	With Reference To IEC 62321 Edition 1.0: 2008, By Alkaline Digestion And Determined By UV-VIS Spectrophotometer.	1 mg/kg
Polybrominated Biphenyls (PBBs)& Polybrominated Diphenyl Ethers (PBDEs)	With Reference To IEC 62321 Edition 1.0: 2008, By Solvent Extraction And Determined By GC/MS And Further HPLC Confirmation When Necessary.	5 mg/kg

Date Sample Received: Jul 30, 2013

Testing Period: Jul 30 2013 To Aug 02, 2013

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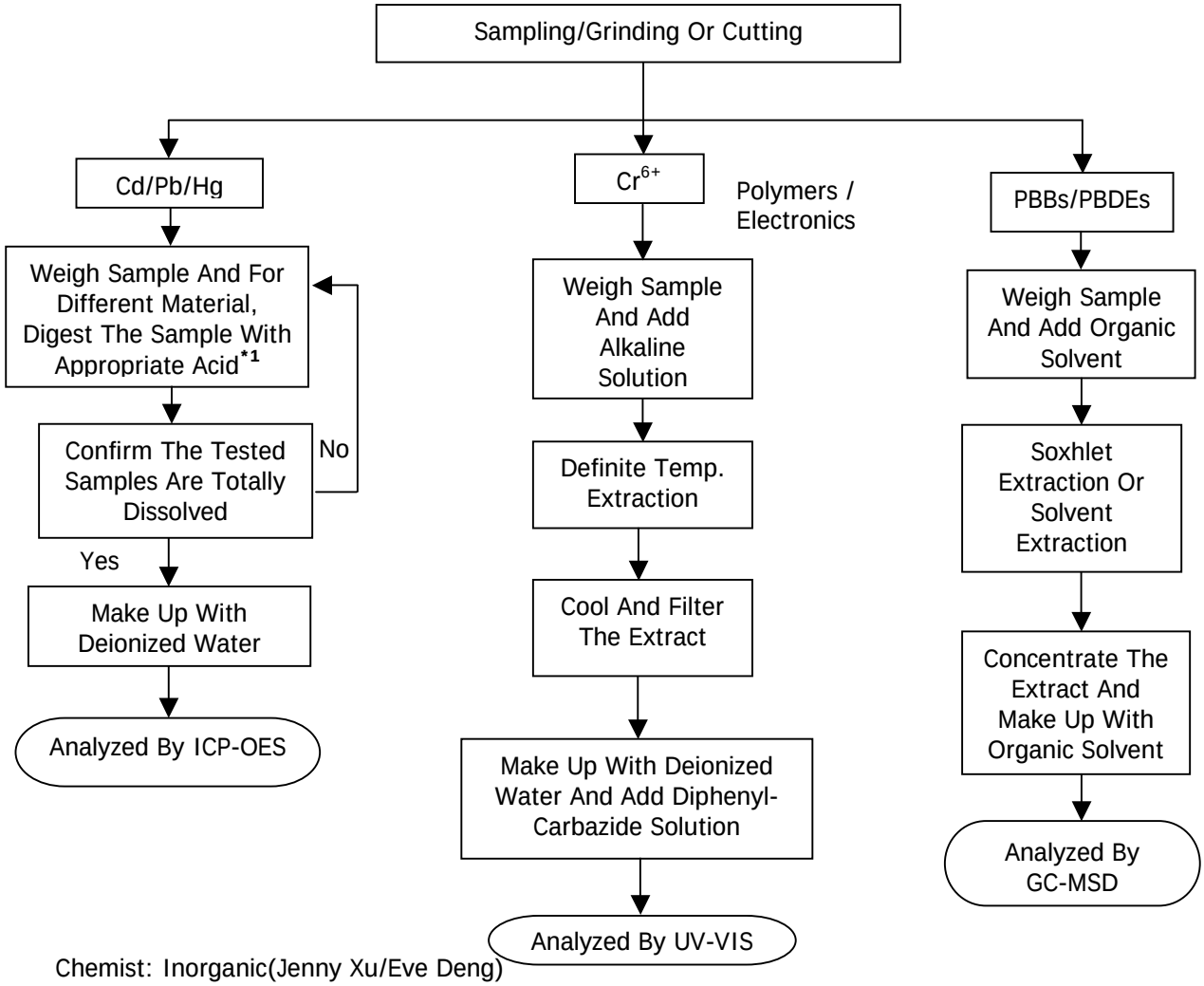
Tests Conducted (As Requested By The Applicant)

(D) Measurement Flowchart:

Reference Standard: IEC 62321 Edition 1.0: 2008



Chemist: Inorganic(Jenny Xu/Eve Deng)
Organic (April Zang/Zoe Zhang)

Remarks:

*1: List Of Appropriate Acid:

Material	Acid Added For Digestion
Polymers	HNO_3,HCl,HF,H_2O_2,H_3BO_3
Metals	HNO_3,HCl,HF
Electronics	HNO_3,HCl,H_2O_2,HBF_4

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Number : WUXH00016513

Tests Conducted (As Requested By The Applicant)

2 Halogen Test

(I) Test Result Summary :

Halogen Content:

Testing Item	Result (ppm)
Fluorine (F) Content	ND
Chlorine (Cl)Content	ND
Bromine (Br) Content	ND
Iodine (I) Content	ND

Remarks : ppm = Parts Per Million = mg/kg
ND = Not Detected

Date Sample Received: Jul 30, 2013
Testing Period: Jul 30 2013 To Aug 02, 2013

(II) Test Method :

Testing Item	Testing Method	Reporting Limit
Halogen (F,Cl, Br,I) Content	With Reference To EN 14582:2007 By Combustion In A Calorimetric Bomb And Determined By Ion Chromatography	50 ppm

Remarks : Reporting Limit = Quantitation Limit Of Analyte In Sample

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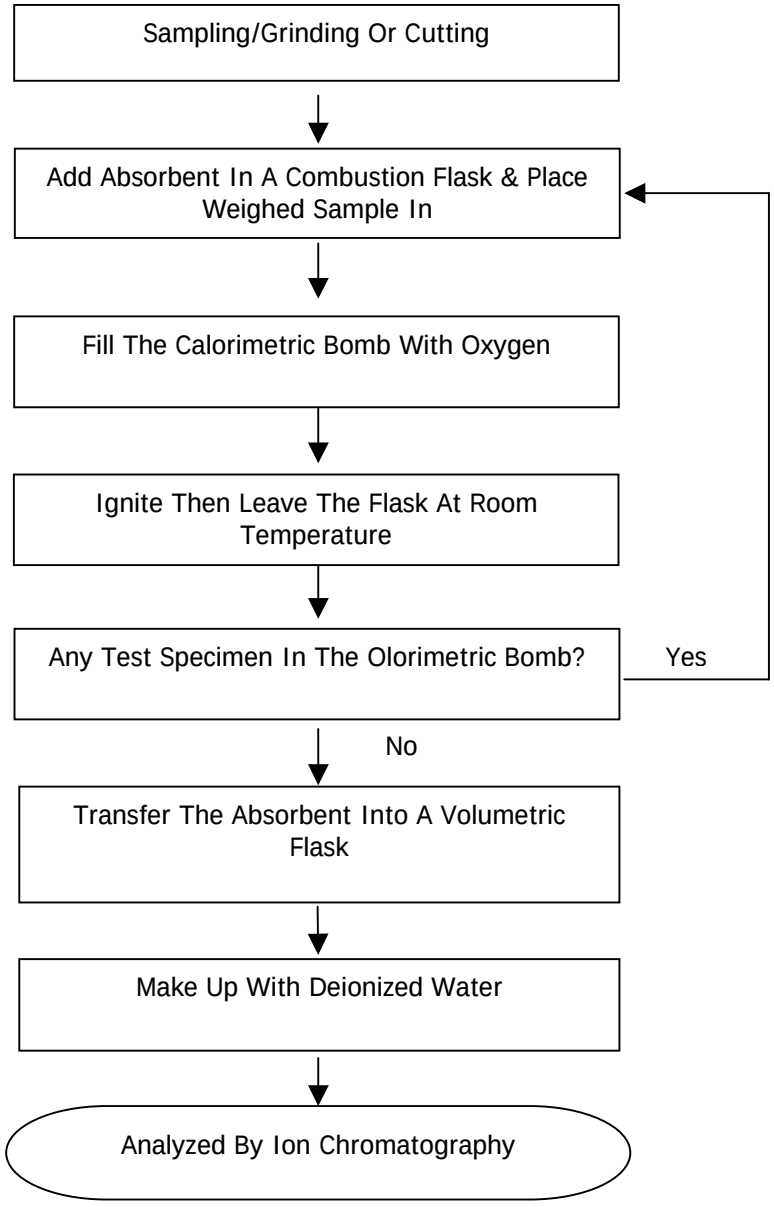
Tests Conducted (As Requested By The Applicant)

(III) Measurement Flowchart:

Test For Halogen Content Reference Method: EN 14582:2007



Chemist: Eve Deng

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Number : WUXH00016513

Tests Conducted (As Requested By The Applicant)

3 Phthalate Content Test

With Reference To EN14372, By Gas Chromatographic-Mass Spectrometric (GC-MSD) Analysis.

Tested Compound	Result (%,W/W)
Dibutyl Phthalate (DBP)	ND
Diethyl Hexyl Phthalate(DEHP)	ND
Benzyl Butyl Phthalate (BBP)	ND
Di-isobutyl phthalate(DIBP)	ND
Di-Iso-Nonyl Phthalate (DINP)	ND
Di-N-Octyl Phthalate (DNOP)	ND
Di-Iso-Decyl Phthalate (DIDP)	ND

Detection Limit = 0.01%(W/W)
ND = Not Detected

Date Sample Received : Jul 30, 2013
Testing Period : Jul 30, 2013 To Aug 02, 2013

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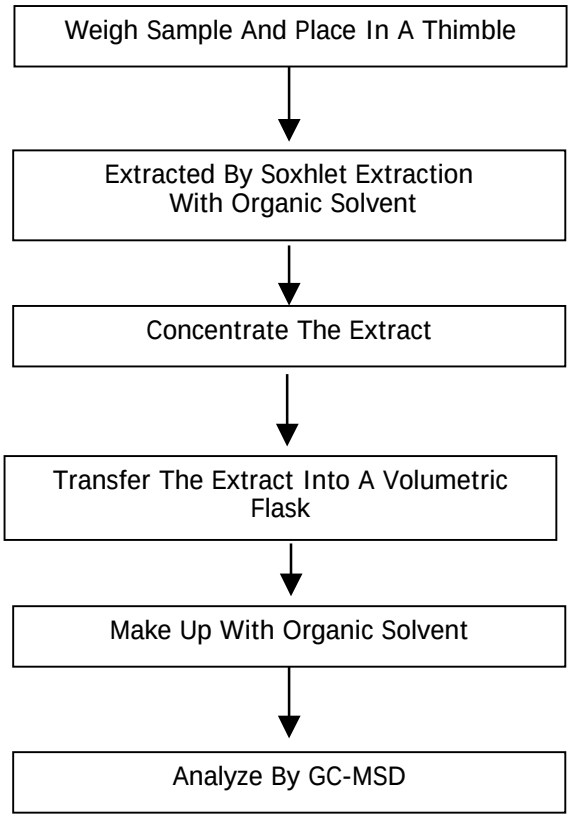
Number : WUXH00016513

Tests Conducted (As Requested By The Applicant)

Measurement Flowchart:

Test For Phthalates Contents



Chemist: Inorganic (Ann Luo/Fred Wang/Ally Wan)
Organic (Jenny Xu/Cherry Sun)

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Number : WUXH00016513

Tests Conducted (As Requested By The Applicant)

4 HBCDD (Hexabromocyclododecane)
(A) Test Result Summary:

Testing Item	Result(ppm)
HBCDD (Hexabromocyclododecane)	ND

Remarks:
ppm = Parts Per Million = mg/kg
ND = Not Detected

(B) Test Method :

Testing Item	Testing Method	Reporting Limit
HBCDD (Hexabromocyclododecane)	With Reference To US EPA 3540C, By Solvent Extraction And Determined By GC-MSD	10 ppm

Date Sample Received : Jul 30, 2013
Testing Period : Jul 30, 2013 To Aug 02, 2013

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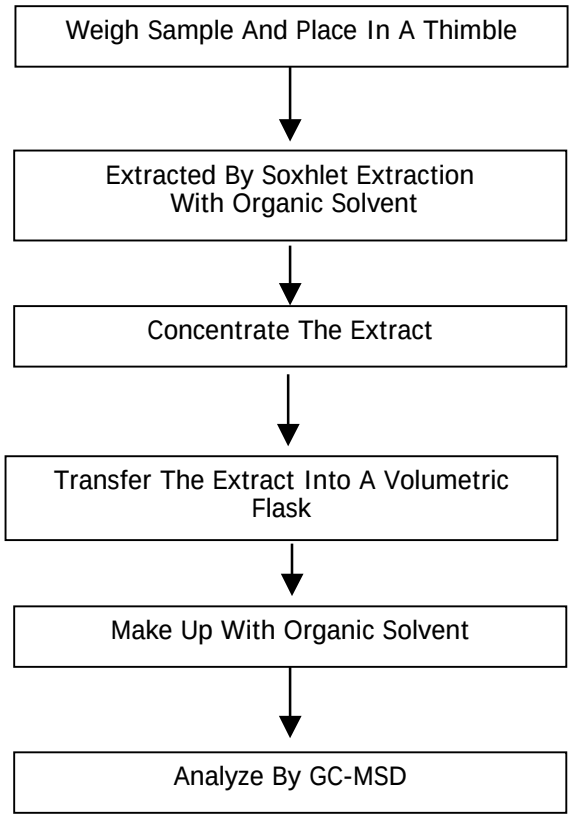
Number : WUXH00016513

Tests Conducted (As Requested By The Applicant)

Measurement Flowchart:

Test For HBCDD (Hexabromocyclododecane) Content



Chemist: Inorganic (Ann Luo/Fred Wang/Ally Wan)
Organic (Jenny Xu/Cherry Sun)

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Number： WUXH00016513

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Annex 8: Applicable RoHS exemptions (2011/65/EU Annex III)

Exemption		Scope and dates of applicability
6(a)	Lead as an alloying element in steel for machining purposes and in galvanised steel containing up to 0,35 % lead by weight	
6(b)	Lead as an alloying element in aluminium containing up to 0,4 % lead by weight	
6(c)	Copper alloy containing up to 4 % lead by weight	
7(a)	Lead in high melting temperature type solders (i.e. lead-based alloys containing 85 % by weight or more lead)	
7(b)	Lead in solders for servers, storage and storage array systems, network infrastructure equipment for switching, signalling, transmission, and network management for telecommunications	
7(c)-I	Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectronic devices, or in a glass or ceramic matrix compound	
7(c)-II	Lead in dielectric ceramic in capacitors for a rated voltage of 125 V AC or 250 V DC or higher	
7(c)-III	Lead in dielectric ceramic in capacitors for a rated voltage of less than 125 V AC or 250 V DC	Expires on 1 January 2013 and after that date may be used in spare parts for EEE placed on the market before 1 January 2013
8(a)	Cadmium and its compounds in one shot pellet type thermal cut-offs	Expires on 1 January 2012 and after that date may be used in spare parts for EEE placed on the market before 1 January 2012
8(b)	Cadmium and its compounds in electrical contacts	
9	Hexavalent chromium as an anticorrosion agent of the carbon steel cooling system in absorption refrigerators up to 0,75 % by weight in the cooling solution	
9(b)	Lead in bearing shells and bushes for refrigerant-containing compressors for heating, ventilation, air conditioning and refrigeration (HVACR) applications	
11(a)	Lead used in C-press compliant pin connector systems	May be used in spare parts for EEE placed on the market before 24 September 2010
11(b)	Lead used in other than C-press compliant pin connector systems	Expires on 1 January 2013 and after that date may be used in spare parts for EEE placed on the market before 1 January 2013
12	Lead as a coating material for the thermal conduction module C-ring	May be used in spare parts for EEE placed on the market before 24 September 2010
13(a)	Lead in white glasses used for optical applications	
13(b)	Cadmium and lead in filter glasses and glasses used for reflectance standards	
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	Expired on 1 January 2011 and after that date may be used in spare parts for EEE placed on the market before 1 January 2011