Littelfuse
Expertise Applied | Answers Delivered

Certificate of non-use of The Controlled Substances

Company name	Littelfuse, LP (Subsidiary of Littelfuse, Inc.)
Product Covered	Thyristor, TO-92 Package SIDAC, TO-92 Package SIDACtor® TO-92 Package
Issue Date	August 13, 2010

It is hereby certified by Littelfuse, Inc., that there is neither RoHS (EU Directive 2002/95/EC)-restricted substance, nor such use, for materials to be used for unit parts, for packing/packaging materials, and for additives and the like in the manufacturing processes.

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

In addition, it is hereby reported to you that the parts and sub-materials, the materials to be used for unit parts, the packing/packaging materials, and the additives and the like in the manufacturing processes, are all composed of the following components.

Issued by 

< K. Yoshimoto, Senior Product Engineer, Littelfuse, L.P.>

(1) Parts, sub-materials and unit parts

This document covers TO-92 RoHS-Compliant products series 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 annex 1 through 6, attached to this document

Remarks :

1. Pb (lead) contained in die bonding solder (item 7 on page 5) and passivation glass (item 6) to be categorized as exempt in RoHS Annex 5 and 7.

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

Littelfuse Part Number covered by this report

TO-92 products manufactured by Littelfuse are categorized into four 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, as well as Halogen-free requirement,.

Please follow table below to locate specific part number.

Group #	Package	Generic Description	P/N table
1	TO-92 (3-leaded)	Thyristor 2Nxxxx EC103xx LxxxEx QxxxEx SxxxEx TCR22-xx	See page 3
2	TO-92 (2-leaded)	SIDAC KxxxE70 SIDACtor PxxxxEAL PxxxxEBL PxxxxECL	See page 4

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GROUP 1: TO-92 Three-leaded

Standard (Catalog) Part Number				SPECIAL DEVICE P/N
2N5060	EC103D	L401E3	Q4X8E3	
2N5061	EC103D1	L401E5	Q4X8E4	Any Special P/N that has base standard P/N listed in this table
2N5062	EC103D2	L401E6	Q501E3	
2N5063	EC103D3	L401E8	Q501E4	
2N5064	EC103E	L4X8E3	Q601E3	
2N6504	EC103E1	L4X8E5	Q601E4	
2N6505	EC103E2	L4X8E6	Q6X8E3	
2N6506	EC103E3	L4X8E8	Q6X8E4	
2N6507	EC103M	L501E3		
2N6508	EC103M1	L501E5	S031E	
2N6564	EC103M2	L601E3	S051E	**OPTIONAL SUFFIX**
2N6565	EC103M3	L601E5	S101E	
	EC103Y	L601E6	S201E	Any Part Number listed here may be followed by suffix for packing options, such as “RP” or “AP”, or lead form options such as “73”, “75”, etc.
EC103A	EC103Y1	L601E8	S401E	
EC103A1	EC103Y2	L6X8E3	S601E	
EC103A2	EC103Y3	L6X8E5		
EC103A3		L6X8E6	TCR22-2	
EC103B	L201E3	L6X8E8	TCR22-3	
EC103B1	L201E5		TCR22-4	
EC103B2	L201E6	Q201E3	TCR22-6	
EC103B3	L201E8	Q201E4	TCR22-8	
EC103C	L2X8E3	Q2X8E3		
EC103C1	L2X8E5	Q2X8E4		
EC103C2	L2X8E6	Q401E3		
EC103C3	L2X8E8	Q401E4		

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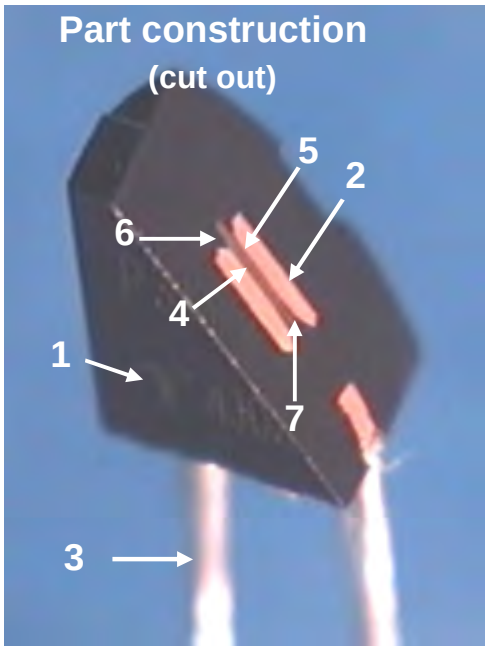
GROUP 2: TO-92 Two-leaded

Standard (Catalog) Part Number		SPECIAL DEVICE P/N
K0900E70	P0900ECL	Any Special P/N which has base standard P/N listed in this table.
K1050E70	P0900ECMCL	
K1100E70	P1100EAL	
K1200E70	P1100EBL	P637P2600EB
K1300E70	P1100ECL	P693P3100EC
K1400E70	P1100ECMCL	P694P3100EC
K1500E70	P1300EAL	
K2000E70	P1300EBL	
K2000EH70	P1300ECL	
K2200E70	P1300ECMCL	
K2200EH70	P1500EAL	
K2400E70	P1500EBL	
K2400EH70	P1500ECL	
K2500E70	P1500ECMCL	
K2500EH70	P1800EAL	
	P1800EBL	
P0080EAL	P1800ECL	
P0080EAMCL	P1800ECMCL	
P0080EBL	P2300EAL	
P0080EBMCL	P2300EBL	
P0080ECL	P2300ECL	
P0080ECMCL	P2300ECMCL	
P0300EAL	P2600EAL	
P0300EAMCL	P2600EBL	
P0300EBL	P2600ECL	
P0300EBMCL	P2600ECMCL	
P0300ECL	P3100EAL	
P0300ECMCL	P3100EBL	
P0640EAL	P3100ECL	
P0640EBL	P3100ECMCL	
P0640ECL	P3500EAL	
P0640ECMCL	P3500EBL	
P0720EAL	P3500ECL	
P0720EBL	P3500ECMCL	
P0720ECMCL		
P0720EC	Any Standard Part Number listed here may be followed by suffix for packing options, such as RP, RP1, RP2, RP3 or AP.	
P0900EAL		
P0900EBL		



Material Used (where used)

Table 1: Homogeneous Material Used

#	Description	Name of Material	Type	Analysis data
1	Molding compound	epoxy resin	plastic	annex 1
2	Lead frame	copper alloy	metal	annex 2
3	Lead finish	tin alloy	metal	annex 3
4	Silicon die	silicon	metal	annex 4, tested as Nickel-plated wafer.
5	Nickel electrode	nickel	metal	
6	Passivation glass	glass	glass	annex 5. Pb in this glass is exempted by RoHS Annex 7.
7	Die bonding solder	solder	metal	annex 6. Pb in this solder is exempted by RoHS Annex 5.

Littelfuse
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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 (Typical Value)	**< 2ppm**	**< 2ppm**	**< 2ppm**	**<10 ppm*1 (1.9%*2)**	**< 5 ppm**	**< 5 ppm**	**< 100ppm**
Epoxy Resin compound (mixture of phenolix resin, epoxy resin, filler and non-brominated fire retardant) See Annex 1 for the detail..	< 2ppm	< 2ppm	< 2ppm	< 2ppm	< 5ppm	<5 ppm	100ppm
Lead frame (Copper Alloy KFC) See Annex 2 for the detail.	< 2ppm	< 2ppm	< 2ppm	11 ppm *3	< 5ppm	<5 ppm	---
Outside lead finish (Matte-Tin plating) See Annex 3 for the detail.	< 2ppm	< 2ppm	< 2ppm	24 ppm *3	< 5ppm	<5 ppm	---
Silicon Die (Silicon + Ni electrode) See Annex 4 for the detail	< 2ppm	< 2ppm	< 2ppm	< 2ppm	< 5ppm	<5 ppm	< 50ppm
Passivation Glass See Annex 5 for the detail.	< 2ppm	< 2ppm	< 2ppm	41% *4	< 5ppm	<5 ppm	< 50ppm
Die Bonding Solder (Pb/Sn/Ag=88/10/2) See Annex 6 & 6A for the detail	< 2ppm	< 2ppm	< 2ppm	88 wt% *5	< 5ppm	<5 ppm	240ppm

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

***2 Maximum 1.9wt% or 3.2mg of Pb (lead) content overall, including the RoHS-exempted use of Pb**

***3 Pb (lead) contained in lead frame and outside finish is <u>not</u> exempted from restriction by RoHS, but considered as process contamination. Littelfuse does not add Pb (lead) intentionally.**

***4 Pb (lead) contained in passivation glass is exempted from restriction by RoHS Annex 5.**

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

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

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

Intertek

TEST REPORT NUMBER: WUXH00002758

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 06, 2010

SAMPLE DESCRIPTION:
ONE(1)PIECE OF SUBMITTED SAMPLE SAID TO BE :**BLACK COMPOUND.**
ITEM NAME : MOLDING COMPOUND.
VENDOR : COOKSON ELECTONICS SEMICONDUCTOR PRODUCTS.
COMPONENT OR PART NO. : CK2000C.
TEST ITEM : Pb,Cd,Hg,CrVI,PBB PBDE,F,Cl,Br,I.

****

TESTS CONDUCTED:
AS REQUESTED BY THE APPLICANT, FOR DETAILS REFER TO ATTACHED PAGE(S)

****

SUMMARY:

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 DIRECTIVES 2002/95/EC AND AMENDMENT 2005/618/EC	PASS

****

TO BE CONTINUED

PREPARED AND CHECKED BY:
FOR INTERTEK TESTING SERVICES WUXI LTD.

Jessica

JESSICA LU
GENERAL MANAGER

Intertek Testing Services Wuxi Ltd.
No.8 Fubei Road, Xishan Economic Development Zone,
Wuxi 214101, Jiangsu, China
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Annex 1: Analysis Result of Molding Compound (Page 2 of 7)

Intertek

TEST REPORT NUMBER: WUXH00002758

TESTS CONDUCTED

(A) TEST RESULT SUMMARY:

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+}) CONTENT (mg/kg) (FOR NON-METAL)	ND
POLYBROMINATED BIPHENYLS (PBBs) (mg/kg)	
MONOBROMO BIPHENYLS (MonoBB)	ND
DIBROMO BIPHENYLS (DiBB)	ND
TRIBROMO BIPHENYLS (TriBB)	ND
TETRABROMO BIPHENYLS (TetraBB)	ND
PENTABROMO BIPHENYLS (PentaBB)	ND
HEXABROMO BIPHENYLS (HexaBB)	ND
HEPTABROMO BIPHENYLS (HeptaBB)	ND
OCTABROMO BIPHENYLS (OctaBB)	ND
NONABROMO BIPHENYLS (NonaBB)	ND
DECABROMO BIPHENYL (DecaBB)	ND
POLYBROMINATED DIPHENYL ETHERS (PBDEs) (mg/kg)	
MONOBROMO DIPHENYL ETHERS (MonoBDE)	ND
DIBROMO DIPHENYL ETHERS (DiBDE)	ND
TRIBROMO DIPHENYL ETHERS (TriBDE)	ND
TETRABROMO DIPHENYL ETHERS (TetraBDE)	ND
PENTABROMO DIPHENYL ETHERS (PentaBDE)	ND
HEXABROMO DIPHENYL ETHERS (HexaBDE)	ND
HEPTABROMO DIPHENYL ETHERS (HeptaBDE)	ND
OCTABROMO DIPHENYL ETHERS (OctaBDE)	ND
NONABROMO DIPHENYL ETHERS (NonaBDE)	ND
DECABROMO DIPHENYL ETHER (DecaBDE)	ND

REMARK:
mg/kg = MILLIGRAM PER KILOGRAM BASED ON DRY WEIGHT= ppm
ND = NOT DETECTED
****

TO BE CONTINUED

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Annex 1: Analysis Result of Molding Compound (Page 3 of 7)

Intertek

TEST REPORT NUMBER: WUXH00002758

TESTS CONDUCTED

(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 2002/95/EC AND AMENDMENT 2005/618/EC 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 AND DETERMINED BY ICP-OES	2 mg/kg
LEAD (Pb) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0: 2008, BY ACID DIGESTION AND DETERMINED BY ICP-OES	2 mg/kg
MERCURY (Hg) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0: 2008, BY ACID DIGESTION 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 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:AUG 02, 2010
TESTING PERIOD:AUG 02, 2010 TO AUG 05, 2010

****

TO BE CONTINUED

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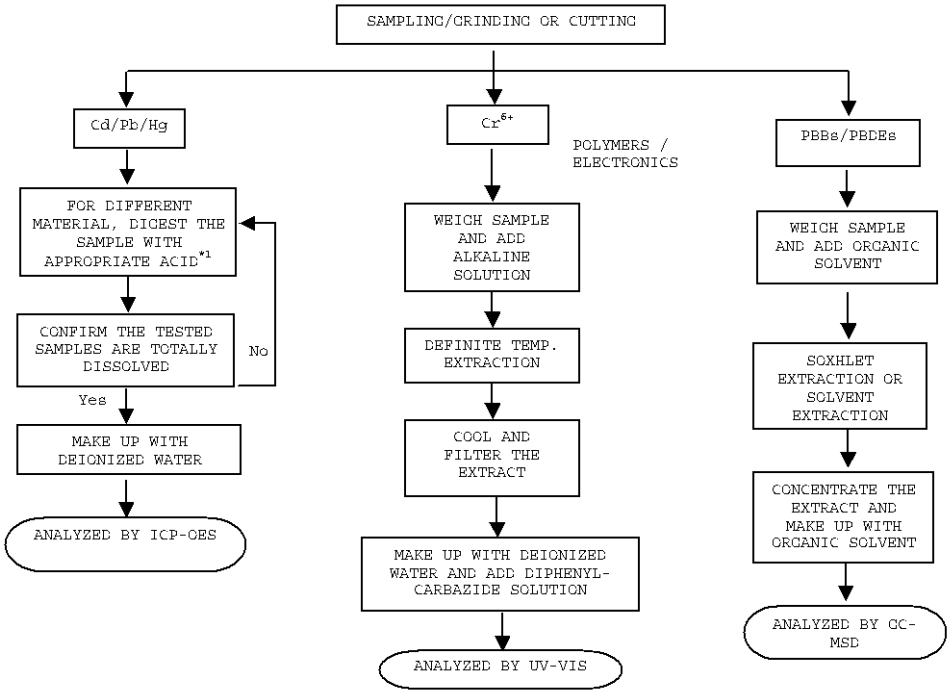
Annex 1: Analysis Result of Molding Compound (Page 4 of 7)

Intertek

TEST REPORT NUMBER: WUXH00002758

TESTS CONDUCTED

(D)MEASUREMENT FLOWCHART:
TEST FOR Cd/Pb/Hg/Cr (VI)/PBBs/PBDEs CONTENTS
REFERENCE STANDARD: IEC 62321 EDITION 1.0: 2008



CHEMIST: INORGANIC (ANN LUO/FRED WANG/ALLY WAN)
ORGANIC (JENNY XU/CHERRY SUN)

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.

****

TO BE CONTINUED

Intertek Testing Services Wuxi Ltd.
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Annex 1: Analysis Result of Molding Compound (Page 5 of 7)

Intertek

TEST REPORT NUMBER: WUXH00002758

TESTS CONDUCTED

(Ⅰ) TEST RESULT SUMMARY :
HALOGEN CONTENT :

TESTING ITEM	RESULT (ppm)
FLUORINE (F) CONTENT	ND
CHLORINE (Cl) CONTENT	100
BROMINE (Br) CONTENT	ND
IODINE (I) CONTENT	ND

REMARKS : ppm = PARTS PER MILLION = mg/kg
ND = NOT DETECTED
DATE SAMPLE RECEIVE: AUG 02, 2010
TEST PERIOD: AUG 02, 2010 TO AUG 05, 2010

(Ⅱ) TEST METHOD :

TESTING ITEM	TESTING METHOD	REPORTING LIMIT
HALOGEN (F,Cl, Br,I) CONTENT	WITH REFERENCE TO IEC 61189-2:2006 BY COMBUSTION FLASK AND DETERMINED BY ION CHROMATOGRAPHY	50 ppm

REMARKS : REPORTING LIMIT = QUANTITATION LIMIT OF ANALYTE IN SAMPLE
****
TO BE CONTINUED

Intertek Testing Services Wuxi Ltd.
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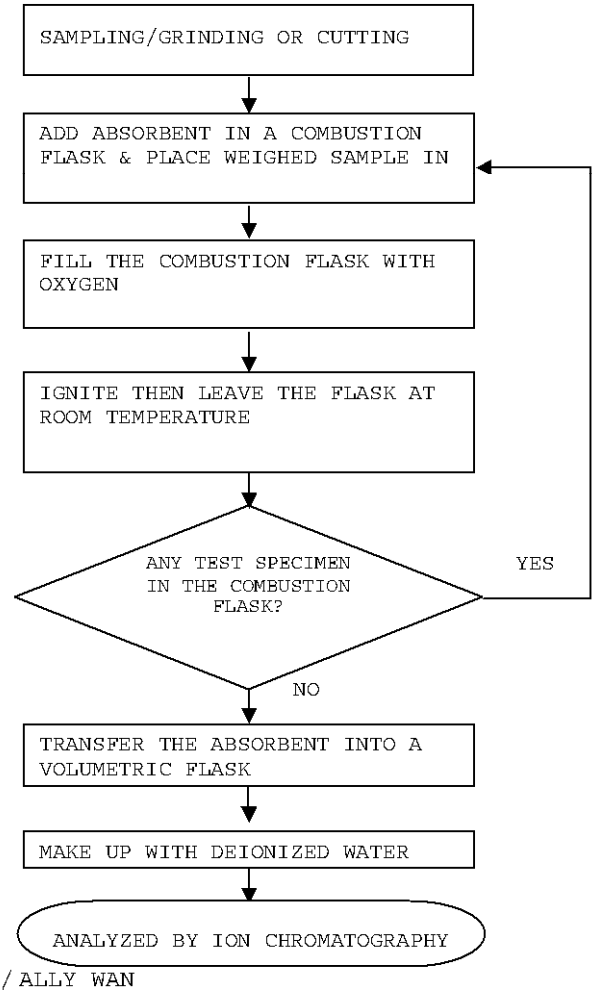
Annex 1: Analysis Result of Molding Compound (Page 6 of 7)

Intertek

TEST REPORT NUMBER: WUXH00002758

TESTS CONDUCTED

(III) MEASUREMENT FLOWCHART:
TEST FOR HALOGEN CONTENT
REFERENCE METHOD: IEC 61189-2 TEST 2C12



CHEMIST: FRED WANG/ ALLY WAN

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TO BE CONTINUED

Intertek Testing Services Wuxi Ltd.
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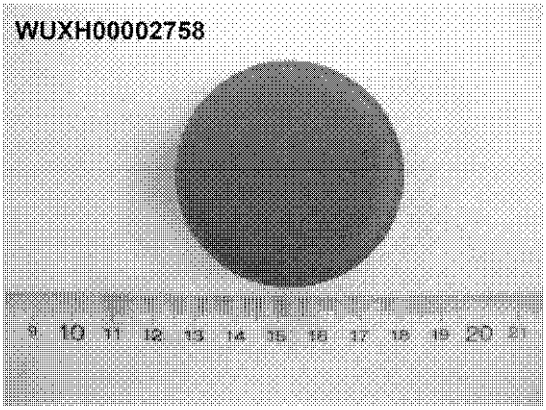
Annex 1: Analysis Result of Molding Compound (Page 7 of 7)

Intertek

TEST REPORT NUMBER: WUXH00002758

TESTS CONDUCTED

PHOTO



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END OF REPORT

Intertek Testing Services Wuxi Ltd.
No.8 Fubei Road, Xishan Economic Development Zone,
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Annex 2: Analysis Result of Lead frame (Page 1 of 4)

SGS

Test Report No. SHAML1008240101 Date: 21 Jun 2010 Page 1 of 4

NINGBO ESC PHOTOELECTRON CO., LTD
ECONOMIC & TECHNICAL DEVELOPMENT ZONE, NO.88 YICHENG RD, BEILUN NINGBO, CHINA

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

SGS Job No. :	SC100602277 - SH
Material and Mark :	KFC
Product Specification :	TO LEA FRAME Cu SERIES
Date of Sample Received :	12 Jun 2010
Testing Period :	12 Jun 2010 - 21 Jun 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).

Signed for and on behalf of
SGS-CSTC Ltd.

Fan Jingjie, JJ
Approved Signatory

No.99, Block 1159, East Kangqiao Road, Pudong District, Shanghai, China 201319 t (86-21) 61136300 f (86-21) 68183127/68183620 www.cn.sgs.com
中国·上海·浦东康桥东路1159弄6号 邮编:201319 t (86-21) 61136300 f (86-21) 68183127/68183620 e sgs.china@sgs.com

Annex 2: Analysis Result of Lead frame (Page 2 of 4)

SGS

Test Report No. SHAML1008240101 Date: 21 Jun 2010 Page 2 of 4

Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
1	SHA10-082401.001	Copper metal frame

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	11
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

No.88 Block 1155 East Kang Qiao Road, Pudong District, Shanghai, China 201319 t [86-21] 61136300 f [86-21] 58183122/58183620 www.cn.sgs.com
中国 · 上海 · 浦东康桥东路1155弄88号 邮编: 201319 t [86-21] 61136300 f [86-21] 58183122/58183620 e sgs.china@sgs.com

Annex 2: Analysis Result of Lead frame (Page 3 of 4)

SGS

Test Report No. SHAML1008240101 Date: 21 Jun 2010 Page 3 of 4

Test Item(s)	Limit	Unit	MDL	*001*
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^2 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.

SGS

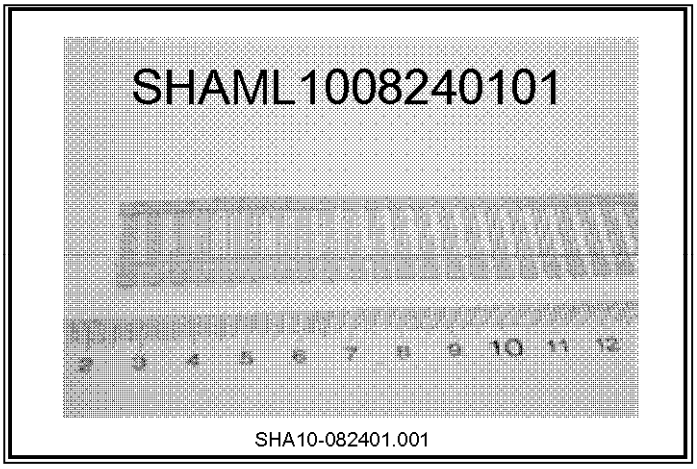
No.88 Block 1189, East Kang Qiao Road, Pudong District, Shanghai, China 201319 t (86-21) 61136300 f (86-21) 58183122/58183620 www.cn.sgs.com
中国 · 上海 · 浦东康桥东路1189弄88号 邮编: 201319 t (86-21) 61136300 f (86-21) 58183122/58183620 e sgs.china@sgs.com

Annex 2: Analysis Result of Lead frame (Page 4 of 4)

SGS

Test Report No. SHAML1008240101 Date: 21 Jun 2010 Page 4 of 4

Sample photo:



SHA10-082401.001

SGS authenticate the photo on original report only

*** End of Report ***

Annex 3: Analysis Result of Lead finish (page 1 of 6)

SGS

Test Report No.: GZ0912123513/CHEM Date: JAN 06, 2010 Page 1 of 6

GAOXIN STANNUM INDUSTRY (HUIZHOU) CO., LTD.
XIANAN INDUSTRIAL CENTRE, YUANZHOU TOWN, BOLUO, COUNTY, HUIZHOU CITY, CHINA

The following sample(s) was/were submitted and identified on behalf of the applicant as Solder Ball 99.98

SGS Job No.	: SZ12327648
SGS Internal Reference No.	: 47.24
Date of Sample Received	: DEC 30, 2009
Testing Period	: DEC 30, 2009 TO JAN 06, 2010
Test Requested	: Selected test (s) as requested by client.
Test Method	: Please refer to next page(s).
Test Result(s)	: Please refer to next page(s).

Signed for and on behalf of
SGS-CSTC Ltd.

Manson Yang
Sr. Engineer

Annex 3: Analysis Result of Lead finish (page 2 of 6)

SGS

Test Report No.: GZ0912123513/CHEM Date: JAN 06, 2010 Page 2 of 6

Test Results:
Description for specimen 1 : Silvery metal

Elementary Analysis

Test Item(s)	Unit	Test Method (Reference)	Result	MDL
Cadmium (Cd)	mg/kg	IEC 62321: 2008, ICP-OES	N.D.	2
Lead (Pb)	mg/kg	IEC 62321: 2008, ICP-OES	24	2
Mercury (Hg)	mg/kg	IEC 62321: 2008, ICP-OES	N.D.	2
Hexavalent Chromium (CrVI) by boiling water extraction	-	IEC 62321: 2008, UV-Vis	Negative	◇

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^2 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. "-" = Not regulated

Flame Retardants

Test Item(s)	Unit	Test Method (Reference)	Result	MDL
Sum of PBBs	mg/kg	-	N.D.	-
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.	-
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

Annex 3: Analysis Result of Lead finish (page 3 of 6)

SGS

Test Report No.: GZ0912123513/CHEM Date: JAN 06, 2010 Page 3 of 6

Pentabromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5
Hexabromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5
Heptabromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5
Octabromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5
Nonabromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5
Decabromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5

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

Remark: Results & photo(s) of this report refer to test report GZ0912123511/CHEM.

Annex 3: Analysis Result of Lead finish (page 4 of 6)

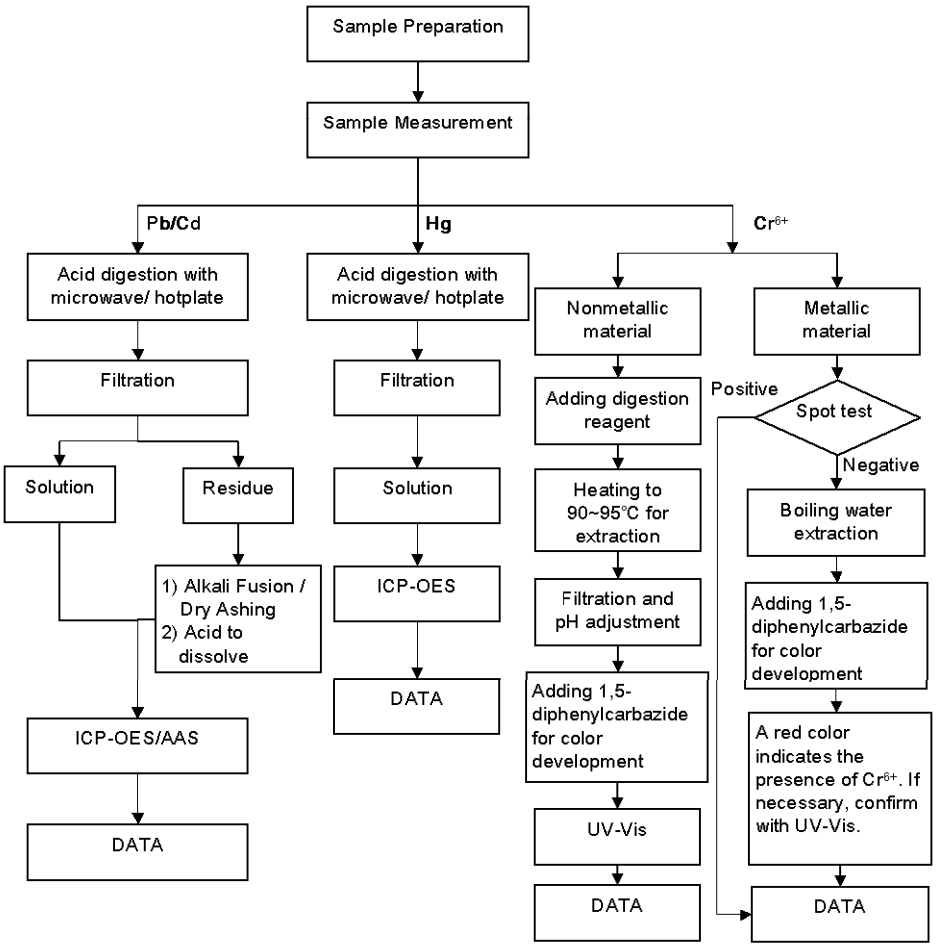
SGS

Test Report No.: GZ0912123513/CHEM Date: JAN 06, 2010 Page 4 of 6

ATTACHMENTS

Testing Flow Chart

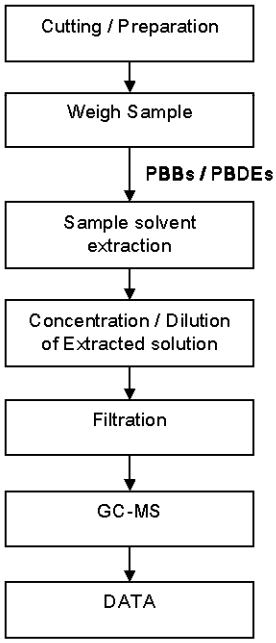
1) Name of the person who made measurement: Bella Wang
2) Name of the person in charge of measurement: Adams Yu



Annex 3: Analysis Result of Lead finish (page 5 of 6)

Testing Flow Chart

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

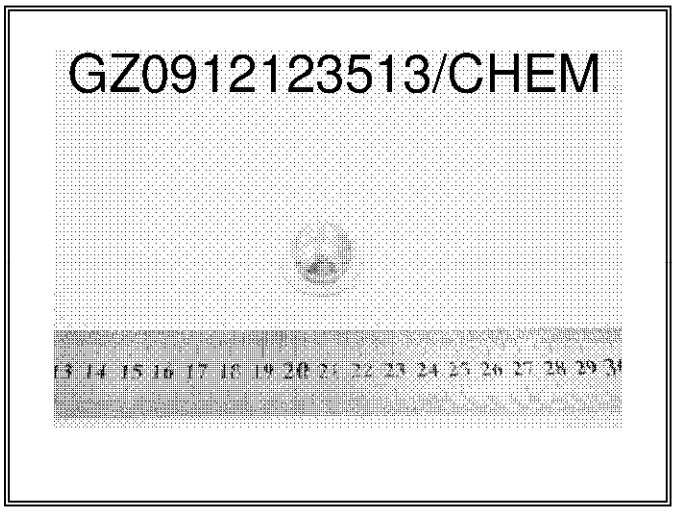


Annex 3: Analysis Result of Lead finish (page 6 of 6)

SGS

Test Report No.: GZ0912123513/CHEM Date: JAN 06, 2010 Page 6 of 6

Sample photo :



SGS authenticate the photo on original report only

*** End of Report ***

Annex 4: Analysis Result of Ni-plated Wafer (Page 1 of 7)

Intertek

TEST REPORT NUMBER: WUXH00002719

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 06, 2010

SAMPLE DESCRIPTION:
ONE(1)PIECE OF SUBMITTED SAMPLE SAID TO BE :**SILVER GREY METAL.**
ITEM NAME : SILICON WAFER WITH NICKEL PLATING.
VENDOR : CONCORD.
COMPONENT OR PART NO. : SILICON+NICKEL.
TEST ITEM : Pb,Cd,Hg,CrVI,PBB PBDE,F,Cl,Br,I.

****

TESTS CONDUCTED:
AS REQUESTED BY THE APPLICANT, FOR DETAILS REFER TO ATTACHED PAGE(S)

****

SUMMARY:

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 DIRECTIVES 2002/95/EC AND AMENDMENT 2005/618/EC	PASS

****

TO BE CONTINUED

PREPARED AND CHECKED BY:
FOR INTERTEK TESTING SERVICES WUXI LTD.

Jessica

JESSICA LU
GENERAL MANAGER

Intertek Testing Services Wuxi Ltd.
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Annex 4: Analysis Result of Ni-plated Wafer (Page 2 of 7)

Intertek

TEST REPORT NUMBER: WUXH00002719

TESTS CONDUCTED

(A) TEST RESULT SUMMARY:

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)	ND
POLYBROMINATED BIPHENYLS (PBBs) (mg/kg)	
MONOBROMO BIPHENYLS (MonoBB)	ND
DIBROMO BIPHENYLS (DiBB)	ND
TRIBROMO BIPHENYLS (TriBB)	ND
TETRABROMO BIPHENYLS (TetraBB)	ND
PENTABROMO BIPHENYLS (PentaBB)	ND
HEXABROMO BIPHENYLS (HexaBB)	ND
HEPTABROMO BIPHENYLS (HeptaBB)	ND
OCTABROMO BIPHENYLS (OctaBB)	ND
NONABROMO BIPHENYLS (NonaBB)	ND
DECABROMO BIPHENYL (DecaBB)	ND
POLYBROMINATED DIPHENYL ETHERS (PBDEs) (mg/kg)	
MONOBROMO DIPHENYL ETHERS (MonoBDE)	ND
DIBROMO DIPHENYL ETHERS (DiBDE)	ND
TRIBROMO DIPHENYL ETHERS (TriBDE)	ND
TETRABROMO DIPHENYL ETHERS (TetraBDE)	ND
PENTABROMO DIPHENYL ETHERS (PentaBDE)	ND
HEXABROMO DIPHENYL ETHERS (HexaBDE)	ND
HEPTABROMO DIPHENYL ETHERS (HeptaBDE)	ND
OCTABROMO DIPHENYL ETHERS (OctaBDE)	ND
NONABROMO DIPHENYL ETHERS (NonaBDE)	ND
DECABROMO DIPHENYL ETHER (DecaBDE)	ND

REMARK:

mg/kg = MILLIGRAM PER KILOGRAM BASED ON DRY WEIGHT= ppm

ND = NOT DETECTED

mg/kg WITH 50cm^2 = MILLIGRAM PER KILOGRAM WITH 50 SQUARE CENTIMETER

****

TO BE CONTINUED

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Annex 4: Analysis Result of Ni-plated Wafer (Page 3 of 7)

Intertek

TEST REPORT NUMBER: WUXH00002719

TESTS CONDUCTED

(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 2002/95/EC AND AMENDMENT 2005/618/EC 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 AND DETERMINED BY ICP-OES	2 mg/kg
LEAD (Pb) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0: 2008, BY ACID DIGESTION AND DETERMINED BY ICP-OES	2 mg/kg
MERCURY (Hg) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0: 2008, BY ACID DIGESTION 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 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:AUG 02, 2010
TESTING PERIOD:AUG 02, 2010 TO AUG 05, 2010

****

TO BE CONTINUED

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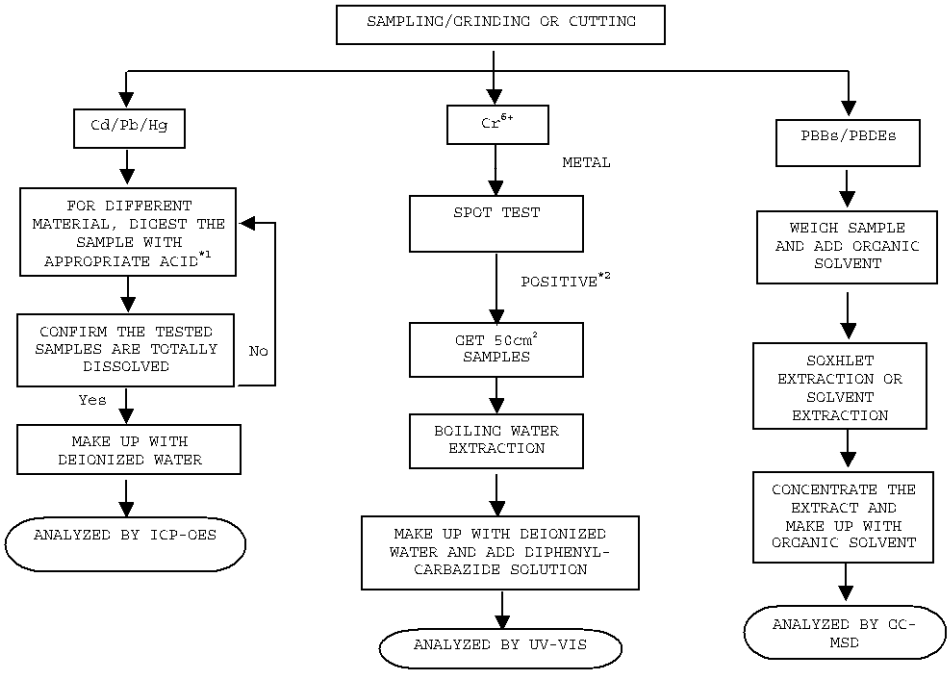
Annex 4: Analysis Result of Ni-plated Wafer (Page 4 of 7)

Intertek

TEST REPORT NUMBER: WUXH00002719

TESTS CONDUCTED

(D)MEASUREMENT FLOWCHART:
TEST FOR Cd/Pb/Hg/Cr (VI)/PBBs/PBDEs CONTENTS
REFERENCE STANDARD: IEC 62321 EDITION 1.0: 2008



CHEMIST: INORGANIC (ANN LUO/FRED WANG/ALLY WAN)
ORGANIC (JENNY XU/CHERRY SUN)

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.

****

TO BE CONTINUED

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Annex 4: Analysis Result of Ni-plated Wafer (Page 5 of 7)

Intertek

TEST REPORT NUMBER: WUXH00002719

TESTS CONDUCTED

(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 RECEIVE: AUG 02, 2010

TEST PERIOD: AUG 02, 2010 TO AUG 05, 2010

(Ⅱ) TEST METHOD :

TESTING ITEM	TESTING METHOD	REPORTING LIMIT
HALOGEN (F,Cl, Br,I) CONTENT	WITH REFERENCE TO IEC 61189-2:2006 BY COMBUSTION FLASK AND DETERMINED BY ION CHROMATOGRAPHY	50 ppm

REMARKS : REPORTING LIMIT = QUANTITATION LIMIT OF ANALYTE IN SAMPLE

****

TO BE CONTINUED

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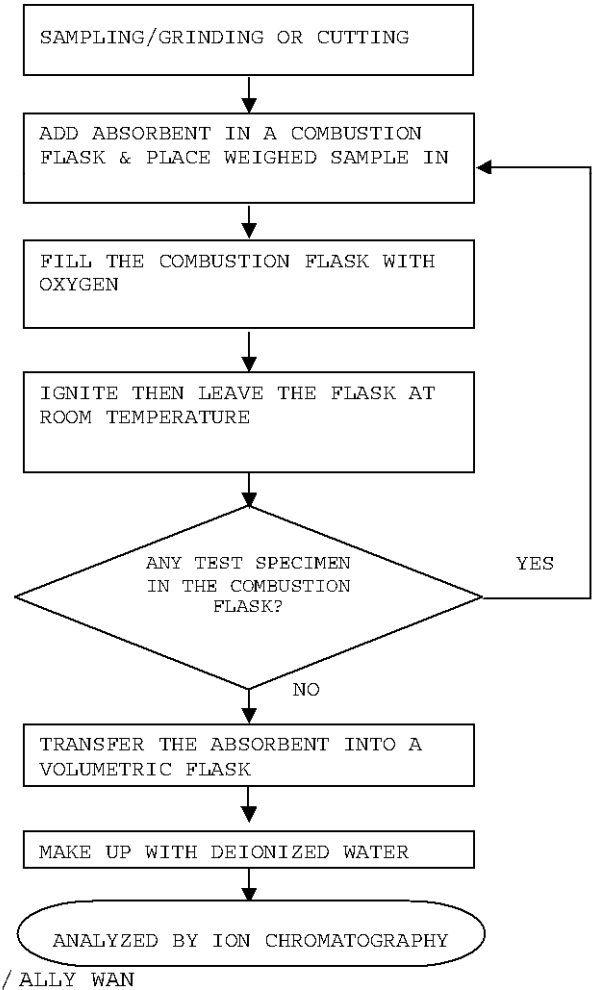
Annex 4: Analysis Result of Ni-plated Wafer (Page 6 of 7)

Intertek

TEST REPORT NUMBER: WUXH00002719

TESTS CONDUCTED

(III) MEASUREMENT FLOWCHART:
TEST FOR HALOGEN CONTENT
REFERENCE METHOD: IEC 61189-2 TEST 2C12



CHEMIST: FRED WANG/ ALLY WAN

****

TO BE CONTINUED

PAGE 6 OF 7

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Annex 4: Analysis Result of Ni-plated Wafer (Page 7 of 7)

Intertek

TEST REPORT NUMBER: WUXH00002719

TESTS CONDUCTED

PHOTO

****

END OF REPORT

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Annex 5: Analysis Result of Passivation Glass (Page 1 of 7)

Intertek

TEST REPORT NUMBER: WUXH00002721

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 06, 2010

SAMPLE DESCRIPTION:
ONE(1)PIECE OF SUBMITTED SAMPLE SAID TO BE :**WHITE POWDER.**
ITEM NAME : WAFER PASSIVATION.
VENDOR : PROPRIETY.
COMPONENT OR PART NO. : PROPRIETY.
TEST ITEM : Pb,Cd,Hg,CrVI,PBB PBDE,F,Cl,Br,I.

****

TESTS CONDUCTED:
AS REQUESTED BY THE APPLICANT, FOR DETAILS REFER TO ATTACHED PAGE(S)

****

TO BE CONTINUED

PREPARED AND CHECKED BY:
FOR INTERTEK TESTING SERVICES WUXI LTD.

Jessica

JESSICA LU
GENERAL MANAGER

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Annex 5: Analysis Result of Passivation Glass (Page 2 of 7)

Intertek

TEST REPORT NUMBER: WUXH00002721

TESTS CONDUCTED

(A) TEST RESULT SUMMARY:

TESTING ITEM	RESULT
CADMIUM (Cd) CONTENT (mg/kg)	ND
LEAD (Pb) CONTENT (mg/kg)	207400
MERCURY (Hg) CONTENT (mg/kg)	ND
CHROMIUM (VI) (Cr^{6+}) CONTENT (mg/kg) (FOR NON-METAL)	ND
POLYBROMINATED BIPHENYLS (PBBs) (mg/kg)	
MONOBROMO BIPHENYLS (MonoBB)	ND
DIBROMO BIPHENYLS (DiBB)	ND
TRIBROMO BIPHENYLS (TriBB)	ND
TETRABROMO BIPHENYLS (TetraBB)	ND
PENTABROMO BIPHENYLS (PentaBB)	ND
HEXABROMO BIPHENYLS (HexaBB)	ND
HEPTABROMO BIPHENYLS (HeptaBB)	ND
OCTABROMO BIPHENYLS (OctaBB)	ND
NONABROMO BIPHENYLS (NonaBB)	ND
DECABROMO BIPHENYL (DecaBB)	ND
POLYBROMINATED DIPHENYL ETHERS (PBDEs) (mg/kg)	
MONOBROMO DIPHENYL ETHERS (MonoBDE)	ND
DIBROMO DIPHENYL ETHERS (DiBDE)	ND
TRIBROMO DIPHENYL ETHERS (TriBDE)	ND
TETRABROMO DIPHENYL ETHERS (TetraBDE)	ND
PENTABROMO DIPHENYL ETHERS (PentaBDE)	ND
HEXABROMO DIPHENYL ETHERS (HexaBDE)	ND
HEPTABROMO DIPHENYL ETHERS (HeptaBDE)	ND
OCTABROMO DIPHENYL ETHERS (OctaBDE)	ND
NONABROMO DIPHENYL ETHERS (NonaBDE)	ND
DECABROMO DIPHENYL ETHER (DecaBDE)	ND

REMARK:
mg/kg = MILLIGRAM PER KILOGRAM BASED ON DRY WEIGHT= ppm
ND = NOT DETECTED
# = THE RESULT IS FOR REFERENCE ONLY

****

TO BE CONTINUED

Intertek Testing Services Wuxi Ltd.
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Annex 5: Analysis Result of Passivation Glass (Page 3 of 7)

Intertek

TEST REPORT NUMBER: WUXH00002721

TESTS CONDUCTED

(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 2002/95/EC AND AMENDMENT 2005/618/EC 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 AND DETERMINED BY ICP-OES	2 mg/kg
LEAD (Pb) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0: 2008, BY ACID DIGESTION AND DETERMINED BY ICP-OES	2 mg/kg
MERCURY (Hg) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0: 2008, BY ACID DIGESTION 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 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:AUG 02, 2010
TESTING PERIOD:AUG 02, 2010 TO AUG 05, 2010

****

TO BE CONTINUED

Intertek Testing Services Wuxi Ltd.
No.8 Fubei Road, Xishan Economic Development Zone,
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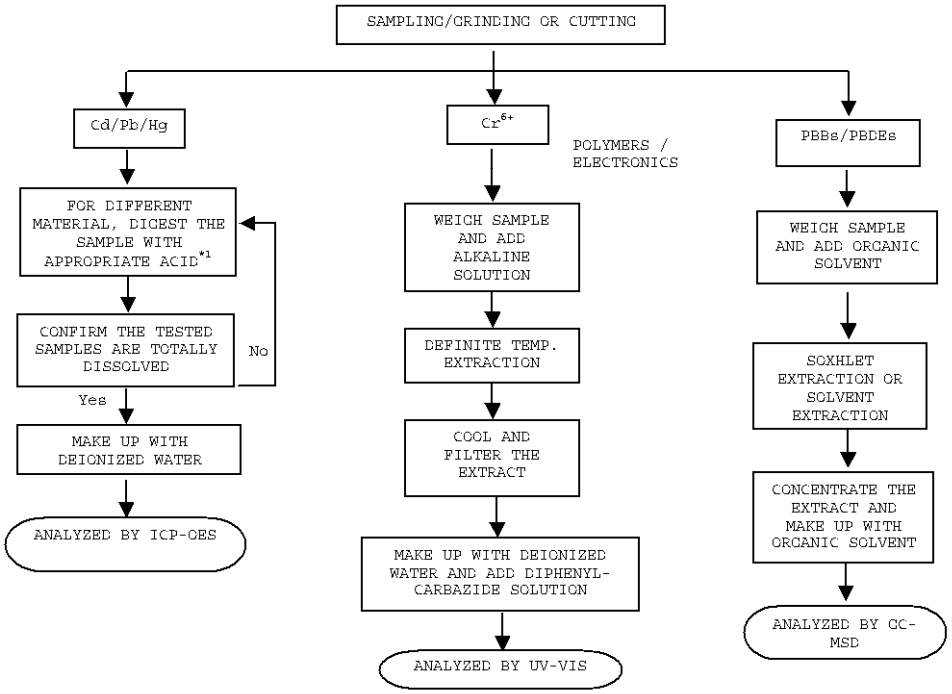
Annex 5: Analysis Result of Passivation Glass (Page 4 of 7)

Intertek

TEST REPORT NUMBER: WUXH00002721

TESTS CONDUCTED

(D)MEASUREMENT FLOWCHART:
TEST FOR Cd/Pb/Hg/Cr (VI)/PBBs/PBDEs CONTENTS
REFERENCE STANDARD: IEC 62321 EDITION 1.0: 2008



CHEMIST: INORGANIC (ANN LUO/FRED WANG/ALLY WAN)
ORGANIC (JENNY XU/CHERRY SUN)

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.

****

TO BE CONTINUED

Intertek Testing Services Wuxi Ltd.
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Annex 5: Analysis Result of Passivation Glass (Page 5 of 7)

Intertek

TEST REPORT NUMBER: WUXH00002721

TESTS CONDUCTED

(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 RECEIVE: AUG 02, 2010
TEST PERIOD: AUG 02, 2010 TO AUG 05, 2010

(Ⅱ) TEST METHOD :

TESTING ITEM	TESTING METHOD	REPORTING LIMIT
HALOGEN (F,Cl, Br,I) CONTENT	WITH REFERENCE TO IEC 61189-2:2006 BY COMBUSTION FLASK AND DETERMINED BY ION CHROMATOGRAPHY	50 ppm

REMARKS : REPORTING LIMIT = QUANTITATION LIMIT OF ANALYTE IN SAMPLE
****

TO BE CONTINUED

Intertek Testing Services Wuxi Ltd.
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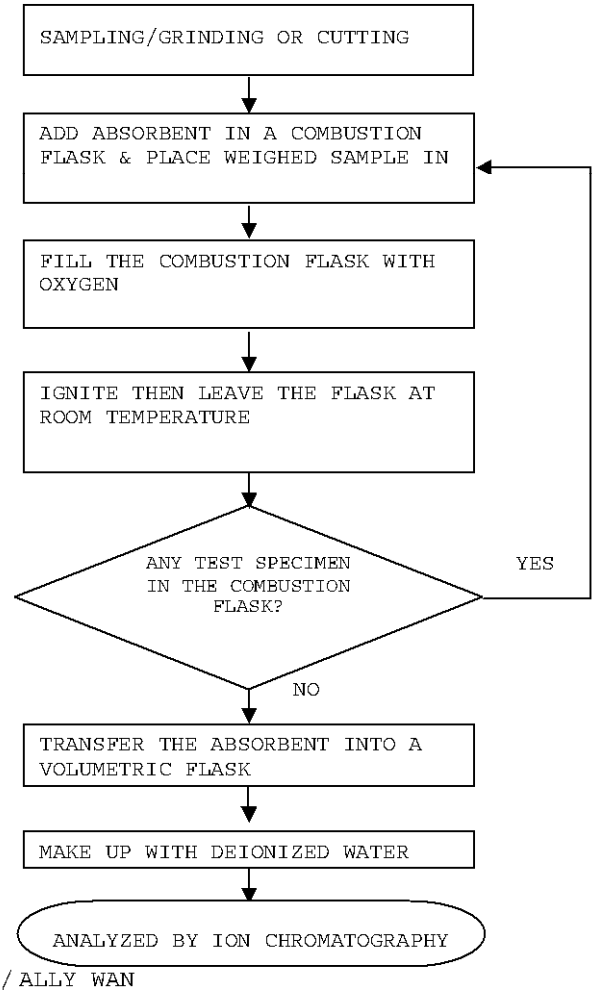
Annex 5: Analysis Result of Passivation Glass (Page 6 of 7)

Intertek

TEST REPORT NUMBER: WUXH00002721

TESTS CONDUCTED

(III) MEASUREMENT FLOWCHART:
TEST FOR HALOGEN CONTENT
REFERENCE METHOD: IEC 61189-2 TEST 2C12



CHEMIST: FRED WANG/ ALLY WAN

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TO BE CONTINUED

PAGE 6 OF 7

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

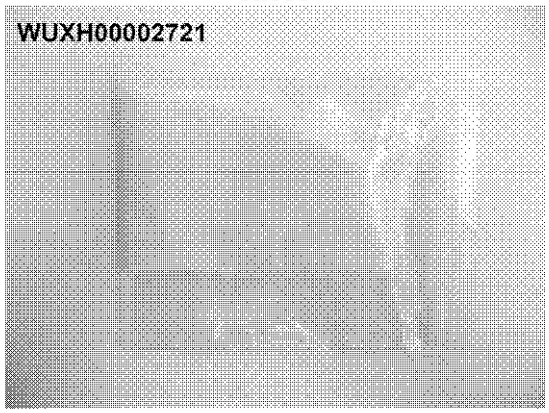
Annex 5: Analysis Result of Passivation Glass (Page 7 of 7)

Intertek

TEST REPORT NUMBER: WUXH00002721

TESTS CONDUCTED

PHOTO



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END OF REPORT

PAGE 7 OF 7

Intertek Testing Services Wuxi Ltd.
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Annex 6: Analysis Result of Die Bonding Solder (Page 1 of 7)

SGS

Test Report No. CANEC1001775101 Date: 29 Apr 2010 Page 1 of 7

SHENZHEN EARLYSUN TECHNOLOGY CO.,LTD
6F,BUILDING OF BAODAZHOU,INTERCHANGE OF LONGZHU AVENUE AND LONGZHU 3 ROAD,TAOYUAN STEET,NANSHAN,SHENZHEN,CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as :
High-temperature Solder Paste

SGS Job No.	:	12486589 - SZ
Client Ref. Information	:	ES-500、ES-660 (Sn5Pb92.5Ag2.5 Sn5Pb95 Sn10Pb90 Sn20Pb88Ag2 Sn20Pb78Ag2 Sn3Pb97 Sn5Pb93Ag2) MIXTURE
Date of Sample Received	:	31 Mar 2010
Testing Period	:	31 Mar 2010 - 06 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	:	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

Manson Yang
Sr. Engineer

Annex 6: Analysis Result of Die Bonding Solder (Page 2 of 7)

SGS

Test Report No. CANEC1001775101 Date: 29 Apr 2010 Page 2 of 7

Test Results:
ID for specimen 1 : CAN10-017751.001
Description for specimen 1 : Grey paste

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	891100<1>	2	1000
Mercury (Hg)	mg/kg	IEC 62321:2008, ICP-OES	N.D.	2	1000
Hexavalent Chromium (CrVI) by alkaline extraction	mg/kg	IEC 62321:2008, UV-Vis	N.D.	2	1000
Sum of PBBs	mg/kg	-	N.D.	-	1000
Monobromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Dibromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Tribromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Tetrabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Pentabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Hexabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Heptabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Octabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Nonabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Decabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Sum of PBDEs	mg/kg	-	N.D.	-	1000
Monobromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Dibromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Tribromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Tetrabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Pentabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Hexabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Heptabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Octabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Nonabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Decabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	

Note:
1. mg/kg = ppm
2. N.D. = Not Detected (< MDL)
3. MDL = Method Detection Limit
4. "-" = Not regulated
5. The results of Pb shown are only for reference
6.The result(s) shown is/are of the total weight of dried sample.
7.Remark<1>: According to the declaration from client, the source of Lead in specimen could be from the high melting temperature type solder, while Lead in high melting temperature type solders is exempted by RoHS

Annex 6: Analysis Result of Die Bonding Solder (Page 3 of 7)

SGS

Test Report No. CANEC1001775101 Date: 29 Apr 2010 Page 3 of 7

regulatory (Directive 2002/95/EC of the European Parliament and of the council of 27 January 2003).

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	240	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
4. The result(s) shown is/are of the total weight of wet sample.

Remark1: For Halogen tests, specimen is/are extracted by organic solvent and subsequently burned in oxygen bomb.
Remark2: Results and photo(s) of this report refer to test report CANEC1001467301.
Remark3: Results and photo(s) of test report CANEC1001467301 refer to test report CANEC1001261801.

Annex 6: Analysis Result of Die Bonding Solder (Page 4 of 7)

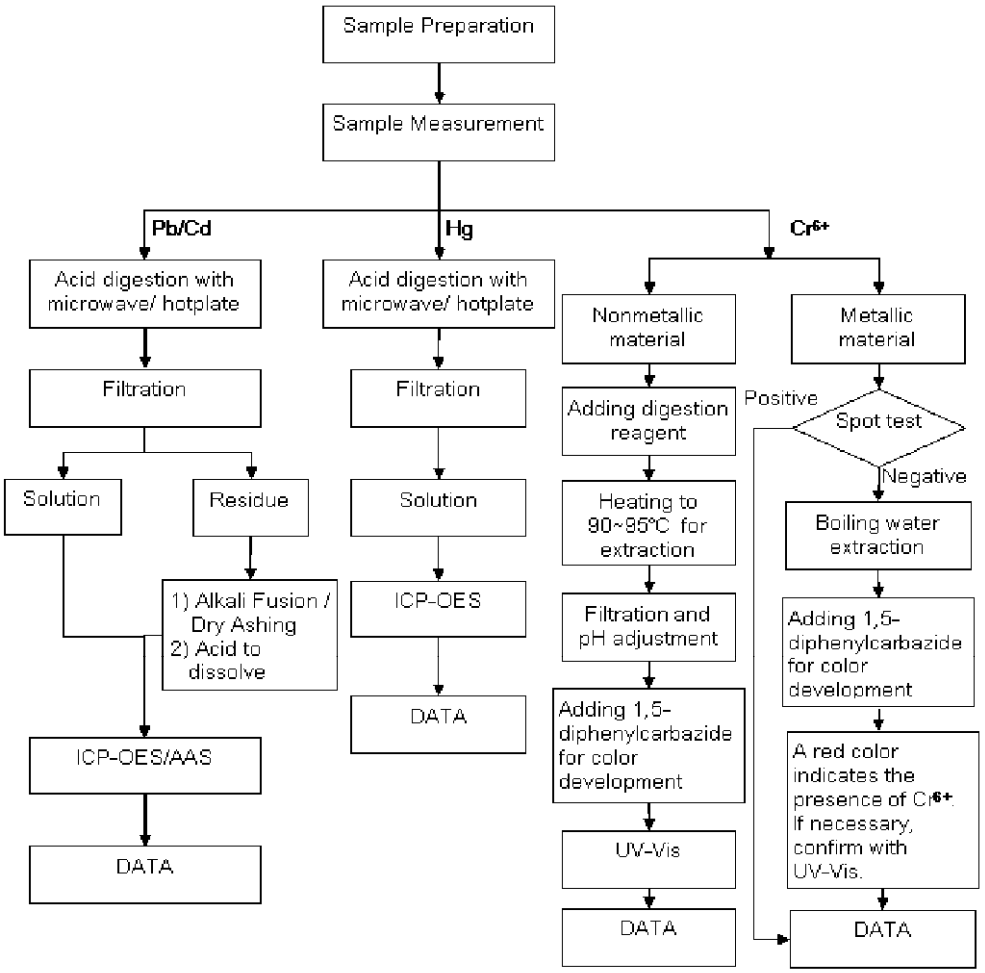
SGS

Test Report No. CANEC1001775101 Date: 29 Apr 2010 Page 4 of 7

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^{6+} test method excluded) .



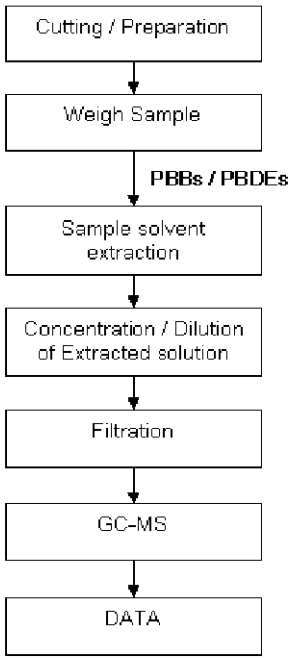
Annex 6: Analysis Result of Die Bonding Solder (Page 5 of 7)

SGS

Test Report No. CANEC1001775101 Date: 29 Apr 2010 Page 5 of 7

Testing Flow Chart

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



Annex 6: Analysis Result of Die Bonding Solder (Page 6 of 7)

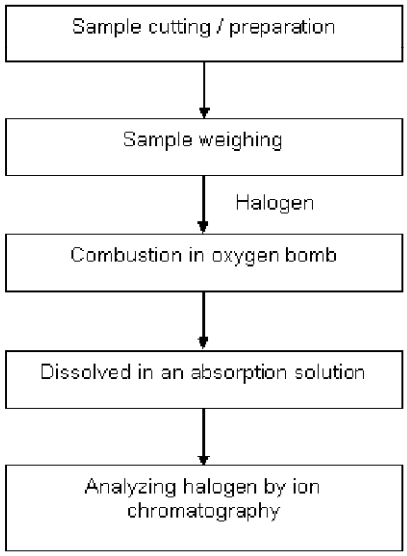
SGS

Test Report No. CANEC1001775101 Date: 29 Apr 2010 Page 6 of 7

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



Annex 6: Analysis Result of Die Bonding Solder (Page 7 of 7)

SGS

Test Report No. CANEC1001775101 Date: 29 Apr 2010 Page 7 of 7

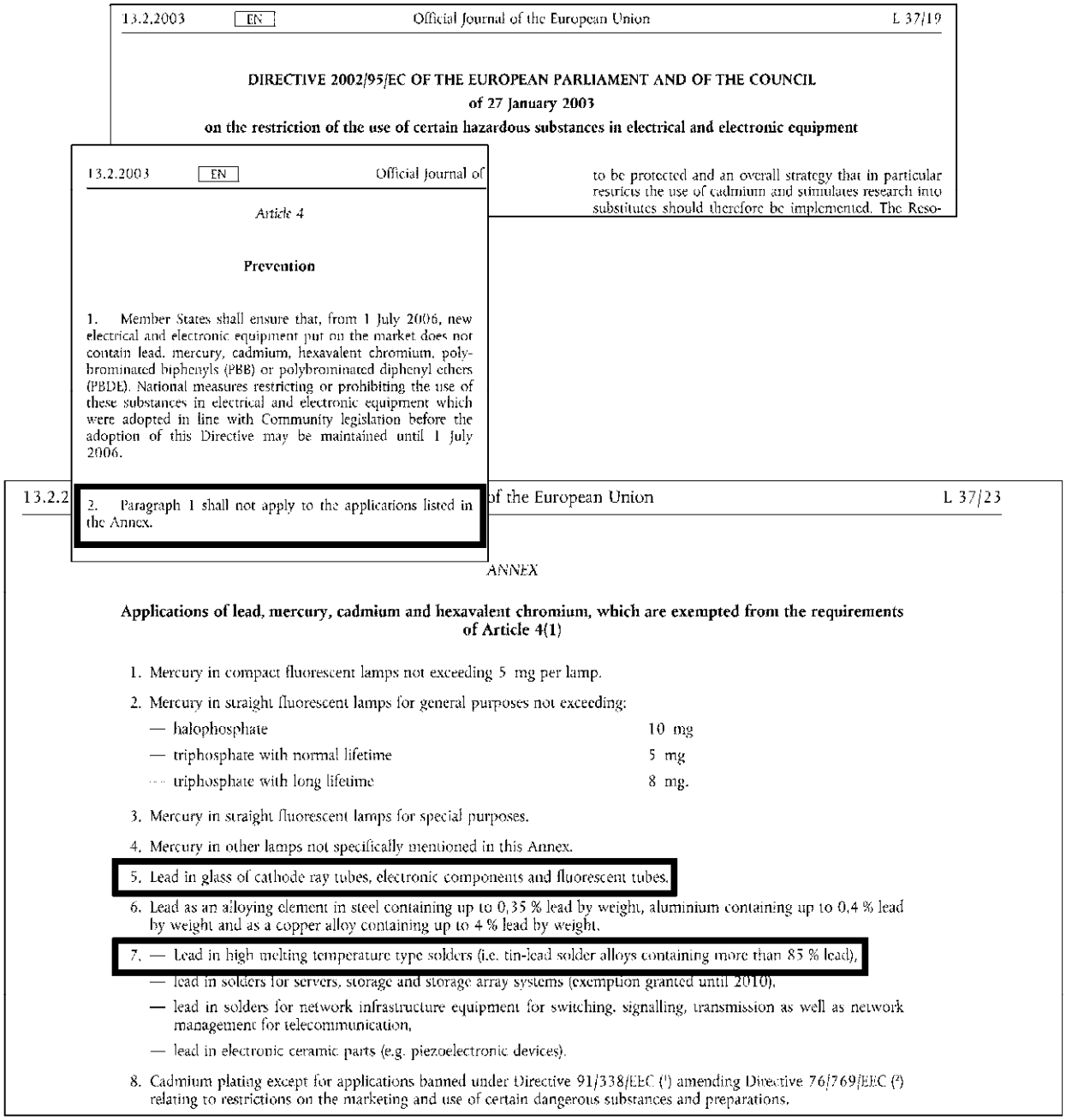
Sample photo:

CAN10-017751.001

SGS authenticate the photo on original report only

*** End of Report ***

Annex 7: Applicable RoHS exemptions



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

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

13.2.2003 EN Official Journal of

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

Article 4

Prevention

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

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

13.2.2 of the European Union L 37/23

ANNEX

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

1. Mercury in compact fluorescent lamps not exceeding 5 mg per lamp.
2. Mercury in straight fluorescent lamps for general purposes not exceeding:
   - halophosphate 10 mg
   - triphosphate with normal lifetime 5 mg
   - triphosphate with long lifetime 8 mg.
3. Mercury in straight fluorescent lamps for special purposes.
4. Mercury in other lamps not specifically mentioned in this Annex.
5. Lead in glass of cathode ray tubes, electronic components and fluorescent tubes.
6. Lead as an alloying element in steel containing up to 0,35 % lead by weight, aluminium containing up to 0,4 % lead by weight and as a copper alloy containing up to 4 % lead by weight.
7. — Lead in high melting temperature type solders (i.e. tin-lead solder alloys containing more than 85 % lead),
   - lead in solders for servers, storage and storage array systems (exemption granted until 2010),
   - lead in solders for network infrastructure equipment for switching, signalling, transmission as well as network management for telecommunication,
   - lead in electronic ceramic parts (e.g. piezoelectronic devices).
8. Cadmium plating except for applications banned under Directive 91/338/EEC (1) amending Directive 76/769/EEC (2) relating to restrictions on the marketing and use of certain dangerous substances and preparations.