ICP Test Report Certification Packet

Company name: Littelfuse, Inc.

Product Series: TR5

Product #: 382xxxxxxx, and 383xxxxxx Series

Issue Date: June 11, 2012

It is hereby certified by Littelfuse, Inc. that there is neither RoHS (2011/65/EU – recast of 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. 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: KRISTEEN BACILA

<Global EHS Engineer>

(1) Parts, sub-materials and unit parts

This document covers the TR5 RoHS-Compliant series products manufactured by Littelfuse, Inc.

＜ Raw Materials Used

Please see Table 1

(2) The ICP data on all measurable substances

Please see appropriate pages as identifed in Table 1

Remarks :

Table 1: List of Raw Materials covered by this report

Total Parts	Raw Material Part Number	Raw Material Description	Page(s)
1	DRCUxxx	Element – Tinned Copper wires	3-8
2	DRAGxxx	Element – Silver Plated Wires	9-14
3	LOZZ194(692213)	Solder Wire	15-19
4	910-016	Plastic Cap	20-28
5	867-00x	Socket with Pin	29-38
6	GLZZ013 (GLZZxxx)	Yarn-Glass Fibre	39-44
7	FUSA006 (090125)	Filler Sand	45-50

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China Toll-Free: 800 999 1338

TEST REPORT NUMBER: SHAH00320484

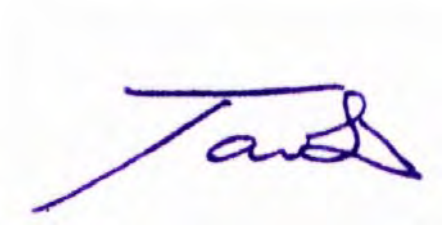
APPLICANT: LITTELFUSE,INC. DATE: JUN 06, 2012
800 E. NORTHWEST HWY
ATTN: A. CESISTA/ K. BACILA

SAMPLE DESCRIPTION:
ONE(1) SUBMITTED SAMPLE SAID TO BE **WIRE WITH PLATING.**
PART DESCRIPTION : SN PLATED CU WIRE.
PART NUMBER : 082417-001.
DATE SAMPLE RECEIVED : MAY.30, 2012.
DATE TEST STARTED : MAY.30, 2012.
****

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

TO BE CONTINUED

AUTHORIZED BY:
FOR INTERTEK TESTING SERVICES
LTD., SHANGHAI



JACOB LIN
GENERAL MANAGER

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TEST REPORT NUMBER: SHAH00320484

TESTS CONDUCTED

(I) TEST RESULT SUMMARY :

TESTING ITEM	RESULT (PPM)
HEAVY METAL	(1)
CADMIUM (Cd) CONTENT	ND
LEAD (Pb) CONTENT	53
MERCURY (Hg) CONTENT	ND
CHROMIUM VI (Cr^{6+}) CONTENT (mg/kg WITH $50cm^2$)	NEGATIVE (< 0.02)(#)

TESTING ITEM	RESULT (PPM)
HEAVY METAL	(2)
CADMIUM (Cd) CONTENT / PLATING	ND
LEAD (Pb) CONTENT / PLATING	ND
MERCURY (Hg) CONTENT / PLATING	ND
CHROMIUM VI (Cr^{6+}) CONTENT (mg/kg WITH $50cm^2$) / PLATING	NEGATIVE (< 0.02)(#)

REMARKS: ppm = PARTS PER MILLION = mg/kg
ND = NOT DETECTED
# = DUE TO THE INSUFFICIENT SAMPLE AREA, REDUCED TOTAL SAMPLE SURFACE OF 10 cm^2 WAS USED AND THE DILUTION FACTOR WAS ADJUSTED ACCORDINGLY.
mg/kg WITH $50cm^2$ = MILLIGRAM PER KILOGRAM WITH 50 SQUARE CENTIMETRE
NEGATIVE = A NEGATIVE TEST RESULT INDICATED POSITIVE OBSERVATION WAS NOT FOUND AT THE TIME OF TESTING.

TESTED COMPONENTS:

(1) SUBSTRATE.
(2) PLATING.

****

TO BE CONTINUED

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TEST REPORT NUMBER: SHAH00320484

TESTS CONDUCTED

(II) RoHS REQUIREMENT:

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)
POLYBROMINATED BIPHENYLS (PBBs)	0.1% (1000ppm)
POLYBROMINATED DIPHENYL EHTERS (PBDEs)	0.1% (1000ppm)

THE ABOVE LIMITS WERE QUOTED FROM 2002/95/EC AND AMENDMENT 2005/618/EC FOR HOMOGENEOUS MATERIAL.

(III) TEST METHOD:

TESTING ITEM	TESTING METHOD	REPORTING LIMIT
CADMIUM (Cd) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0:2008 IN CLAUSE 8/9/10, BY MICROWAVE DIGESTION UNTIL THE TESTED SAMPLES ARE TOTALLY DISSOLVED AND DETERMINED BY ICP-OES.	2 ppm
LEAD (Pb) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0:2008 IN CLAUSE 8/9/10, BY MICROWAVE DIGESTION UNTIL THE TESTED SAMPLES ARE TOTALLY DISSOLVED AND DETERMINED BY ICP-OES.	2 ppm
MERCURY (Hg) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0:2008 IN CLAUSE 7, BY MICROWAVE DIGESTION UNTIL THE TESTED SAMPLES ARE TOTALLY DISSOLVED AND DETERMINED BY ICP-OES.	2 ppm
CHROMIUM VI (Cr^{6+}) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0:2008 IN ANNEX B, BY BOILING WATER EXTRACTION AND DETERMINED BY UV-VIS SPECTROPHOTOMETER.	0.02 mg/kg WITH $50cm^2$

REMARK: REPORTING LIMIT = QUANTITATION LIMIT OF ANALYTE IN SAMPLE

DATE SAMPLE RECEIVED : MAY 30, 2012
TESTING PERIOD : MAY 30, 2012 TO JUN.4, 2012

****

TO BE CONTINUED

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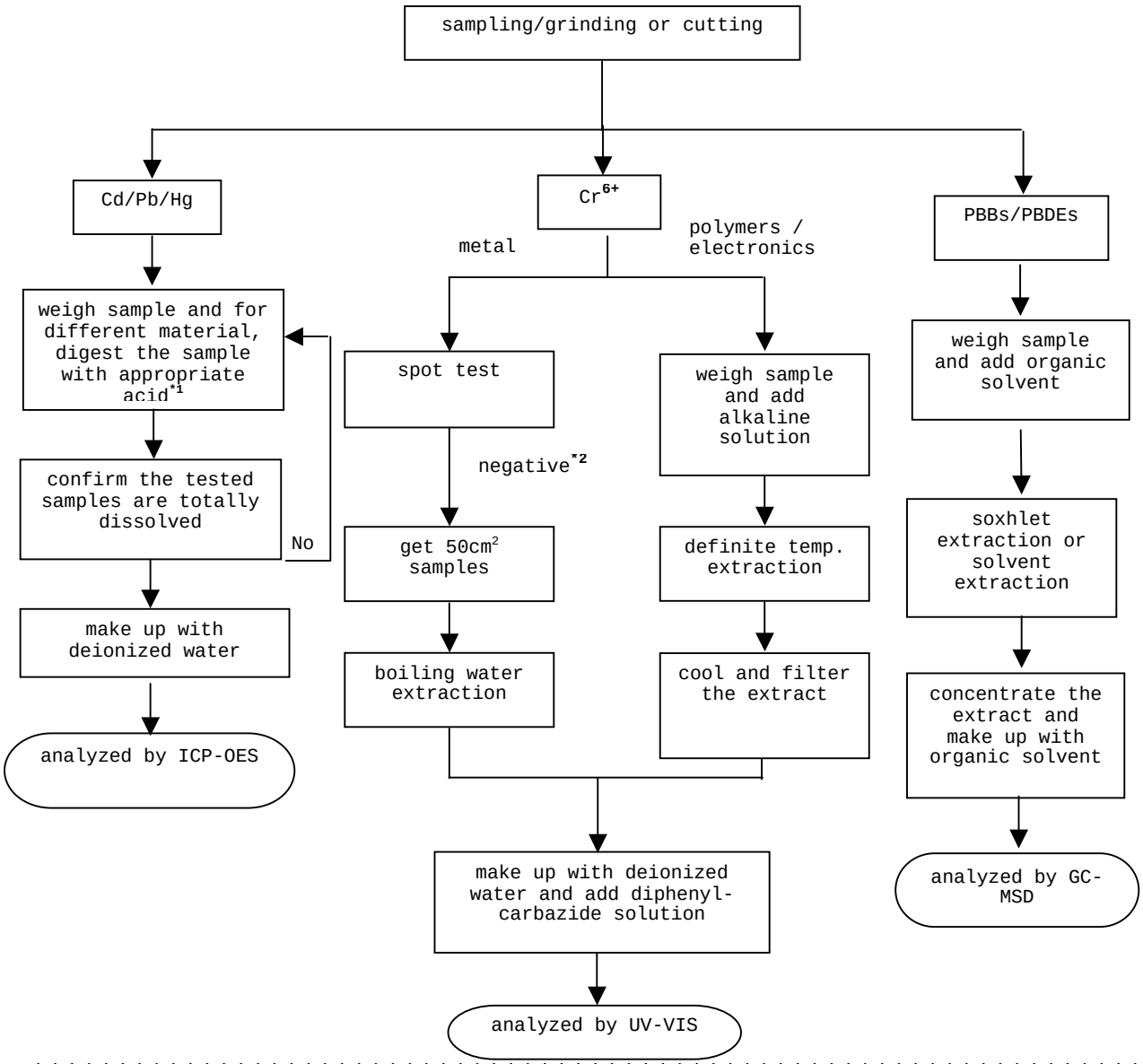
TEST REPORT NUMBER: SHAH00320484

TESTS CONDUCTED
(IV) MEASUREMENT FLOWCHART:

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



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TO BE CONTINUED

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TEST REPORT NUMBER: SHAH00320484

TESTS CONDUCTED
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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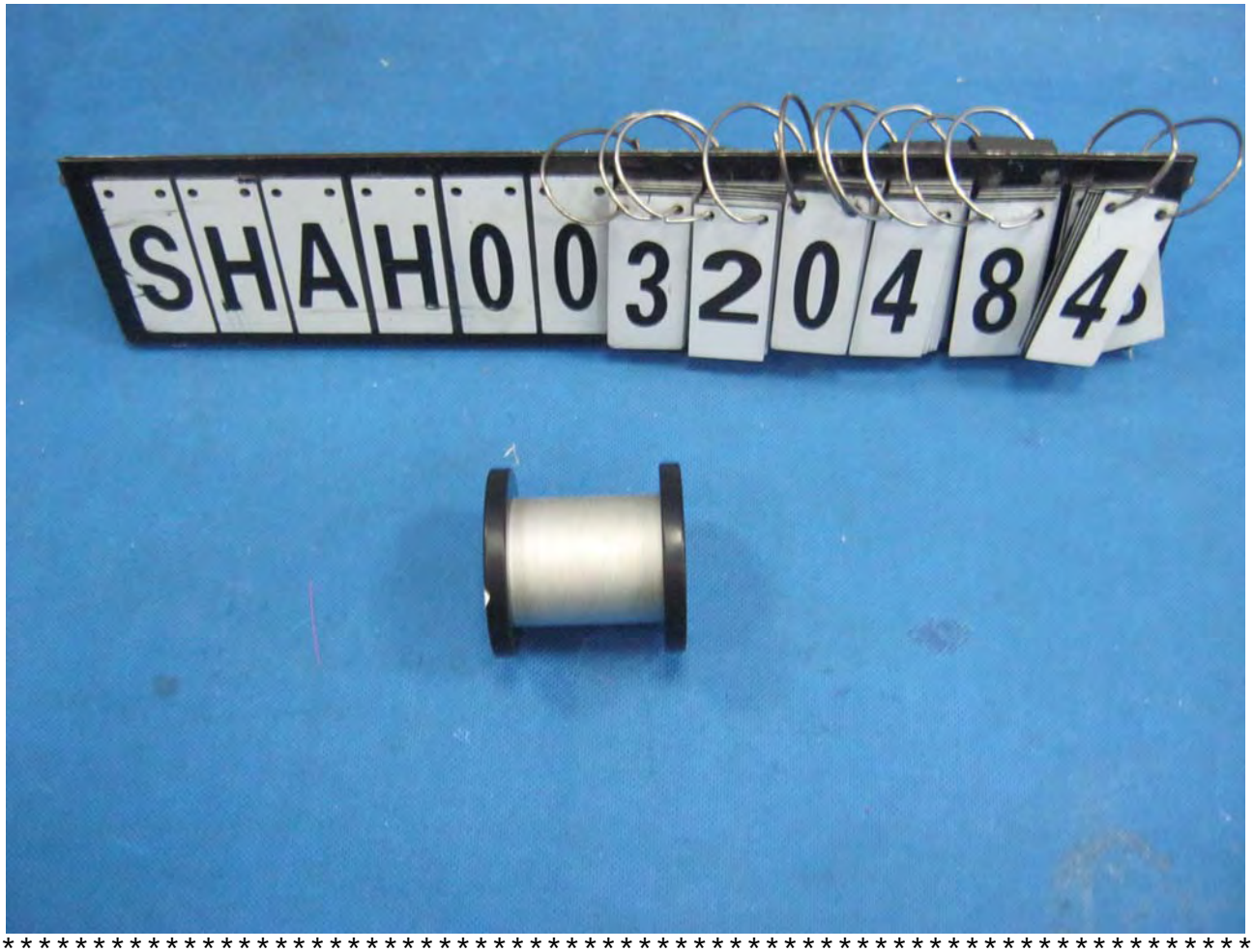
TESTS CONDUCTED



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END OF REPORT

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TEST REPORT NUMBER: SHAH00320463

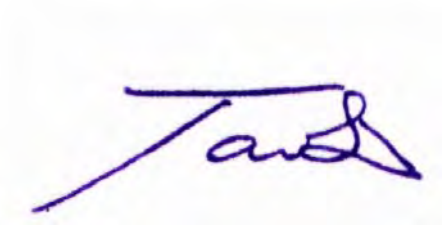
APPLICANT: LITTELFUSE,INC. DATE: JUN 06, 2012
800 E. NORTHWEST HWY
ATTN: A. CESISTA/ K. BACILA

SAMPLE DESCRIPTION:
ONE(1) SUBMITTED SAMPLE SAID TO BE **WIRE WITH PLATING.**
PART DESCRIPTION : AG PLATED CU WIRE.
PART NUMBER : 082555.
DATE SAMPLE RECEIVED : MAY.30, 2012.
DATE TEST STARTED : MAY.30, 2012.
****

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

TO BE CONTINUED

AUTHORIZED BY:
FOR INTERTEK TESTING SERVICES
LTD., SHANGHAI



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TEST REPORT NUMBER: SHAH00320463

TESTS CONDUCTED

(I) TEST RESULT SUMMARY:

TESTING ITEM	RESULT (PPM)
HEAVY METAL	(1)
CADMIUM (Cd) CONTENT	ND
LEAD (Pb) CONTENT	ND
MERCURY (Hg) CONTENT	ND
CHROMIUM VI (Cr^{6+}) CONTENT (mg/kg WITH $50cm^2$)	NEGATIVE (< 0.02)

TESTING ITEM	RESULT (PPM)
HEAVY METAL	(2)
CADMIUM (Cd) CONTENT / PLATING	ND
LEAD (Pb) CONTENT / PLATING	ND
MERCURY (Hg) CONTENT / PLATING	ND
CHROMIUM VI (Cr^{6+}) CONTENT (mg/kg WITH $50cm^2$) / PLATING	NEGATIVE (< 0.02)

REMARKS: ppm = PARTS PER MILLION = mg/kg
ND = NOT DETECTED
mg/kg WITH $50cm^2$ = MILLIGRAM PER KILOGRAM WITH 50 SQUARE CENTIMETRE
NEGATIVE = A NEGATIVE TEST RESULT INDICATED POSITIVE OBSERVATION WAS NOT FOUND AT THE TIME OF TESTING.

TESTED COMPONENTS:

(1) SUBSTRATE.
(2) PLATING.

****

TO BE CONTINUED

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TEST REPORT NUMBER: SHAH00320463

TESTS CONDUCTED
(II) RoHS REQUIREMENT:

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)
POLYBROMINATED BIPHENYLS (PBBs)	0.1% (1000ppm)
POLYBROMINATED DIPHENYL EHTERS (PBDEs)	0.1% (1000ppm)

THE ABOVE LIMITS WERE QUOTED FROM 2002/95/EC AND AMENDMENT 2005/618/EC FOR HOMOGENEOUS MATERIAL.

(III) TEST METHOD:

TESTING ITEM	TESTING METHOD	REPORTING LIMIT
CADMIUM (Cd) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0:2008 IN CLAUSE 8/9/10, BY MICROWAVE DIGESTION UNTIL THE TESTED SAMPLES ARE TOTALLY DISSOLVED AND DETERMINED BY ICP-OES.	2 ppm
LEAD (Pb) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0:2008 IN CLAUSE 8/9/10, BY MICROWAVE DIGESTION UNTIL THE TESTED SAMPLES ARE TOTALLY DISSOLVED AND DETERMINED BY ICP-OES.	2 ppm
MERCURY (Hg) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0:2008 IN CLAUSE 7, BY MICROWAVE DIGESTION UNTIL THE TESTED SAMPLES ARE TOTALLY DISSOLVED AND DETERMINED BY ICP-OES.	2 ppm
CHROMIUM VI (Cr^{6+}) CONTENT	WITH REFERENCE TO IEC 62321 EDITION 1.0:2008 IN ANNEX B, BY BOILING WATER EXTRACTION AND DETERMINED BY UV-VIS SPECTROPHOTOMETER.	0.02 mg/kg WITH $50cm^2$

REMARK: REPORTING LIMIT = QUANTITATION LIMIT OF ANALYTE IN SAMPLE

DATE SAMPLE RECEIVED : JUN.1, 2012
TESTING PERIOD : JUN.1, 2012 TO JUN.4, 2012
****

TO BE CONTINUED

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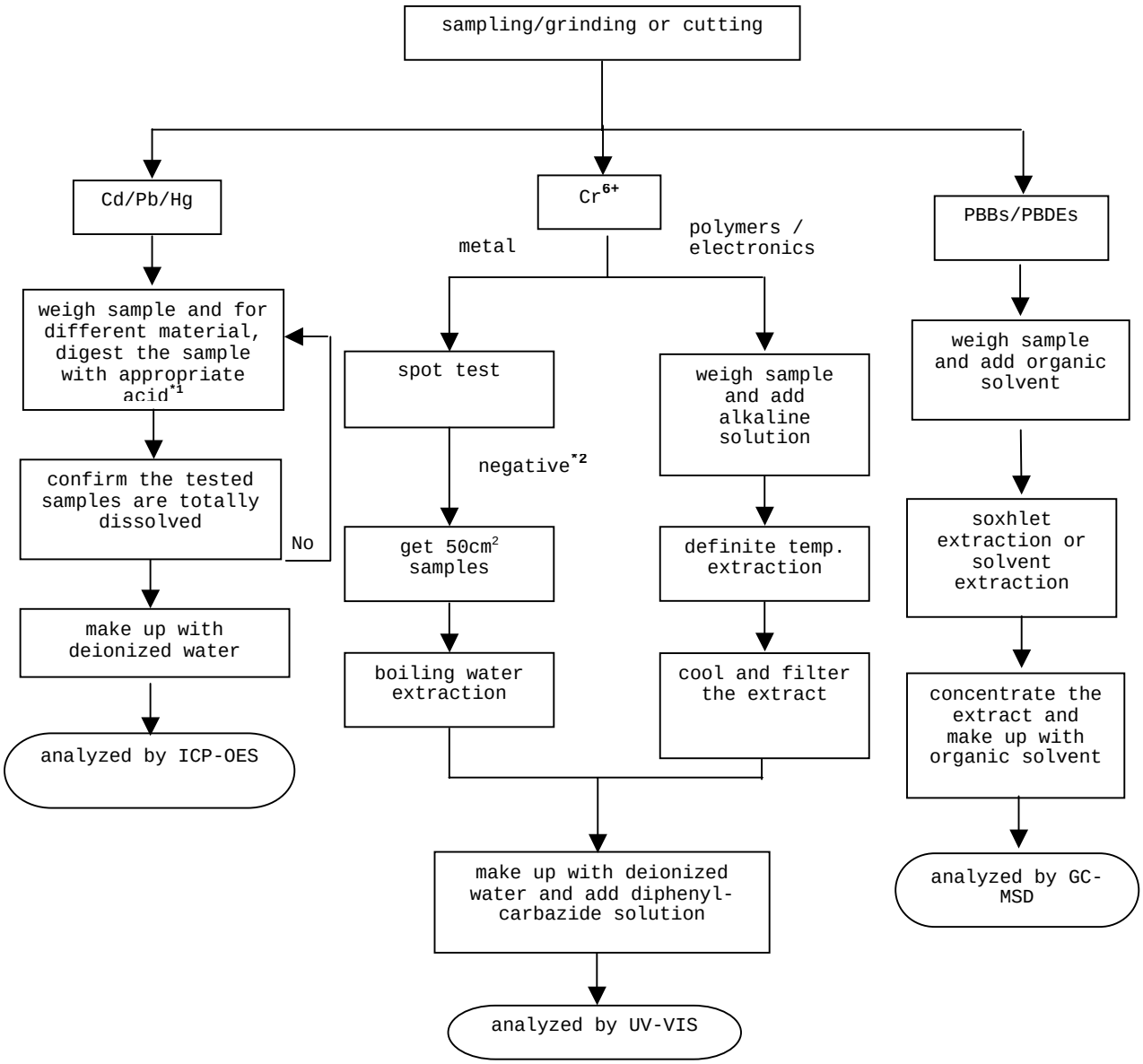
TEST REPORT NUMBER: SHAH00320463

TESTS CONDUCTED
(IV) MEASUREMENT FLOWCHART:

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



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TO BE CONTINUED

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TEST REPORT NUMBER: SHAH00320463

TESTS CONDUCTED
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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TEST REPORT NUMBER: SHAH00320463

TESTS CONDUCTED

****

END OF REPORT

Test Report Number : TWNC00232330

Applicant: Littelfuse Philippines Inc. Date : Nov 18, 2011
LIMA Technology Center, Lipa City,
Malvar, Batangas

Sample Description:
One (1) group of submitted samples said to be :
Part Description : Solder
Part Number : 692213
Date Sample Received : Nov 11, 2011
Date Test Started : Nov 14, 2011

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.
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 114, Taiwan, R.O.C.
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Number : TWNC00232330

Test Conducted

(Ⅰ) Test Result Summary :

Test Item	Result (ppm)
	Silvery Metal
Heavy Metal	
Cadmium (Cd) content	ND
Lead (Pb) content	92
Mercury (Hg) content	ND
Chromium VI (Cr^{6+}) content (mg/kg with $50cm^2$)	Negative (< 0.02)

Remarks: ppm = Parts per million based on weight of tested sample = mg/kg
ND = Not detected
< = Less than
mg/kg with $50cm^2$ = milligram per kilogram with 50 square centimetre
Negative = A negative test result indicated positive observation was not found at the time of Test.

Responsibility of Chemist : Irene Chiou / Kevin Liu / Cathy Chen

Date Sample Received : Nov 11, 2011
Test Period : Nov 14, 2011 To Nov 17, 2011

(Ⅱ) RoHS Requirement:

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 2002/95/EC and amendment 2005/618/EC for homogeneous material.

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Test Conducted

(Ⅲ) Test Method:

Test Item	Test Method	Reporting Limit
Cadmium (Cd) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Lead (Pb) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Mercury (Hg) content	With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Chromium VI (Cr^{6+}) content	With reference to IEC 62321 edition 1.0:2008 in annex B, by boiling water extraction and determined by UV-Vis spectrophotometer.	0.02 mg/kg with $50cm^2$

Remark: Reporting limit = Quantitation limit of analyte in sample

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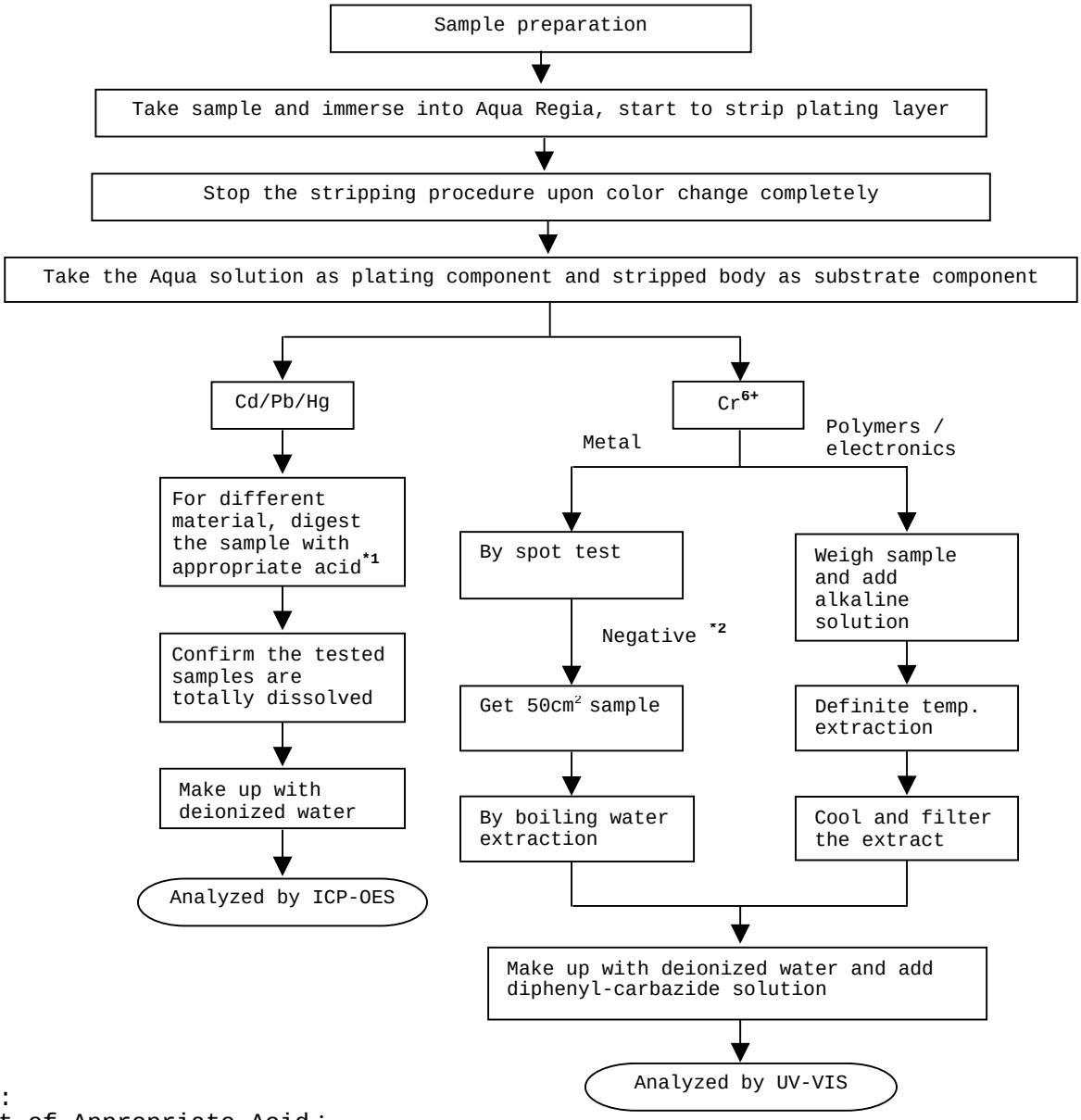
Test Conducted

(Ⅳ) Measurement Flowchart:

Test for Cd/Pb/Hg/Chromium (VI)

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

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

End of Report

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Number : TWNC00232330

Test Conducted

Photo

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Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2400 · 6602-2401

Test Report Number : TWNC00232331

Applicant: Littelfuse Philippines Inc. Date : Nov 18, 2011
LIMA Technology Center, Lipa City,
Malvar, Batangas

Sample Description:
One (1) group of submitted samples said to be :
Part Description : TE Caps (same with 910-016 TR Caps)
Part Number : 910-017
Date Sample Received : Nov 11, 2011
Date Test Started : Nov 14, 2011

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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Number : TWNC00232331

Test Conducted
(Ⅰ) Test Result Summary :

Test Item	Result (ppm)
	Brown Plastic
Heavy Metal	
Cadmium (Cd) content	ND
Lead (Pb) content	ND
Mercury (Hg) content	ND
Chromium VI (Cr^{6+}) content	ND
Polybrominated Biphenyls (PBBs)	
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
Polybrominated Diphenyl Ethers (PBDEs)	
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
Halogen Content	
Fluorine (F)	ND
Chlorine (Cl)	ND
Bromine (Br)	ND
Iodine (I)	ND
Phthalates	
Di(2-ethylhexyl) Phthalate (DEHP)	ND
Dibutyl Phthalate (DBP)	ND
Benzyl Butyl Phthalate (BBP)	ND
Others	
Hexabromocyclododecane (HBCDD)	ND

Remarks: ppm = Parts per million based on weight of tested sample = mg/kg
ND = Not detected

Responsibility of Chemist : Irene Chiou / Kevin Liu / Cathy Chen

Date Sample Received : Nov 11, 2011
Test Period : Nov 14, 2011 To Nov 16, 2011

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Test Conducted

(Ⅱ) RoHS Requirement:

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)
Polybrominated Biphenyls (PBBs)	0.1% (1000ppm)
Polybrominated Diphenyl Ehters (PBDEs)	0.1% (1000ppm)

The above limits were quoted from 2002/95/EC and amendment 2005/618/EC for homogeneous material.

(Ⅲ) Test Method:

Test Item	Test Method	Reporting Limit
Cadmium (Cd) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Lead (Pb) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Mercury (Hg) content	With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Chromium VI (Cr^{6+}) content	With reference to IEC 62321 edition 1.0:2008 in annex C, by alkaline digestion and determined by UV-Vis spectrophotometer.	1 ppm

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Test Conducted

(Ⅲ) Test Method:

Test Item	Test Method	Reporting Limit
Polybrominated Biphenyls (PBBs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm
Polybrominated Diphenyl Ethers (PBDEs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm
Halogen Content	With reference to EN 14582:2007 by calorimetric bomb with oxygen and determined by ion chromatography	50 ppm
Phthalates	With reference to EN 14372: 2004, by solvent extraction and determined by GC-MSD	50 ppm
Hexabromocyclododecane (HBCDD)	With reference to USEPA 3540C, by solvent extraction and determined by GC-MSD	10 ppm

Remark: Reporting limit = Quantitation limit of analyte in sample

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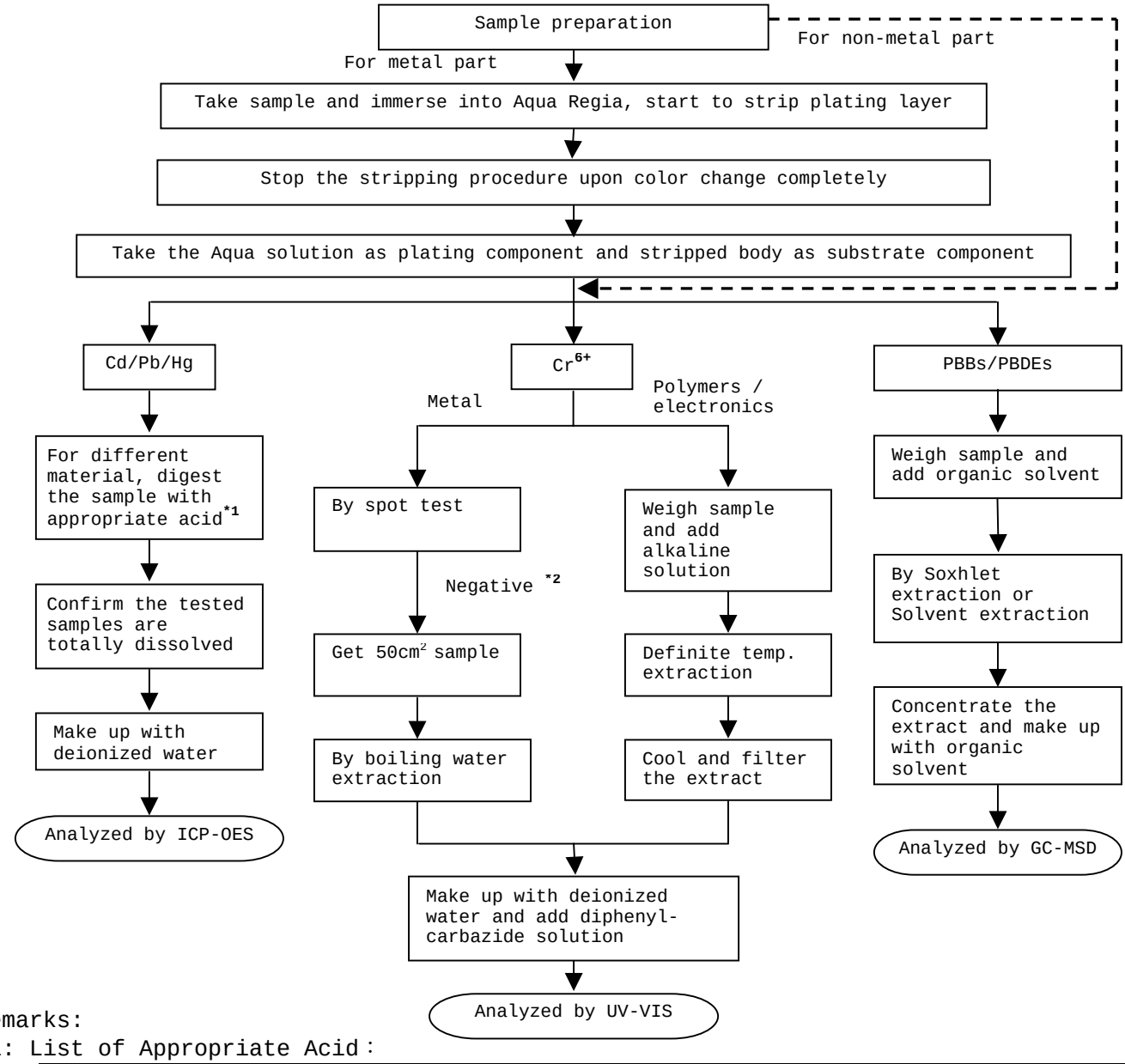
Number : TWNC00232331

Test Conducted

(Ⅳ) Measurement Flowchart:

Test for Cd/Pb/Hg/Chromium (VI)/PBBS/PBDES Contents

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

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

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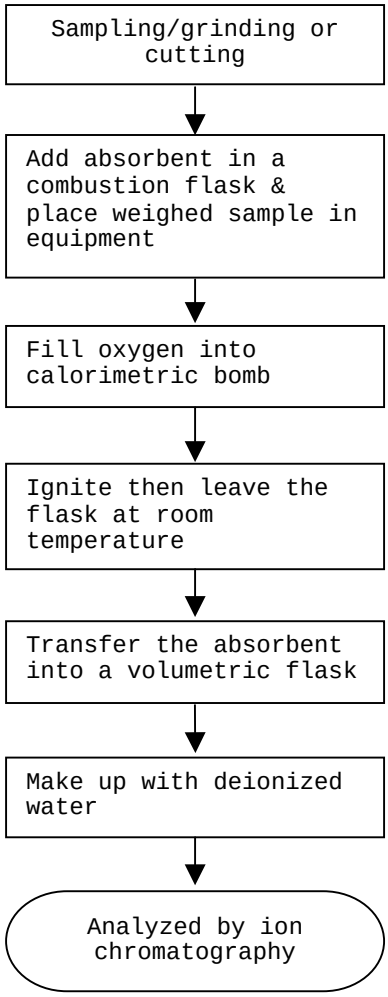
Test Conducted

(Ⅳ) Measurement Flowchart:

Test for Halogen Content

Reference Standard：EN 14582



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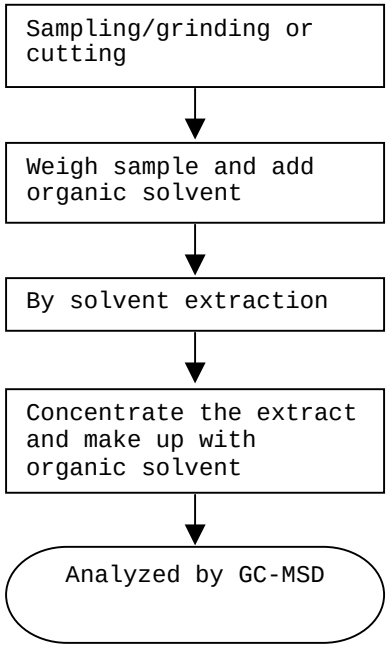
Test Conducted

(Ⅳ) Measurement Flowchart:

Test For Phthalates Contents
Reference Method: EN 14372: 2004



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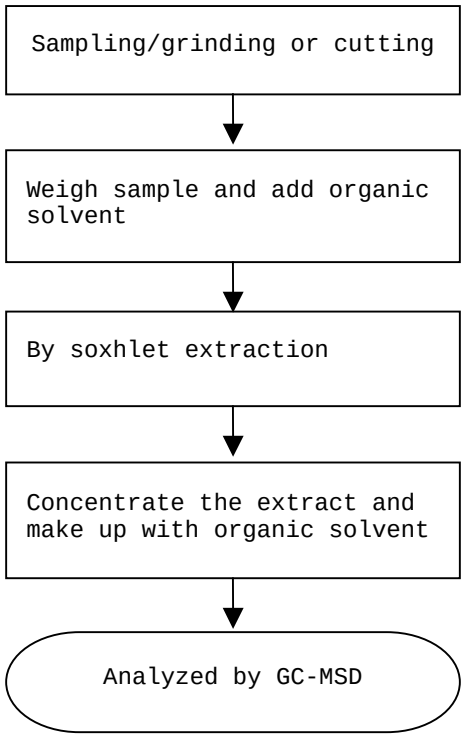
Test Conducted

(Ⅳ) Measurement Flowchart:

Test For Hexabromocyclododecane (HBCDD)

Reference Standard：USEPA 3540C



End of Report

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Number : TWNC00232331

Test Conducted

Photo

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Test Report Number : TWNC00256914

Applicant: Littelfuse Philippines Inc. Date : May 15, 2012
LIMA Technology Center, Lipa City,
Malvar, Batangas

Sample Description:
One (1) group of submitted samples said to be :
Part Description : Socket with Pin
Part Number : 867-003
Date Sample Received : May 10, 2012
Date Test Started : May 10, 2012

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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Number: TWNC00256914

Test Conducted

(Ⅰ) Test Result Summary :

Test Item	Result (ppm)		
	(1)	(2)	(3)
Heavy Metal			
Cadmium (Cd) content	ND	ND	ND
Lead (Pb) content	ND	ND	ND
Mercury (Hg) content	ND	ND	ND
Chromium VI (Cr^{6+}) content (For Non-Metal Material)	ND	--	--
Chromium VI (Cr^{6+}) content (By Boiling Water Extraction On Metal) (mg/kg with $50cm^2$)	ND	Negative (< 0.02)(#)	Negative (< 0.02)(#)
Polybrominated Biphenyls (PBBs)			
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	--	--
Polybrominated Diphenyl Ethers (PBDEs)			
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	--	--
Halogen Content			
Fluorine (F)	ND	--	--
Chlorine (Cl)	ND	--	--
Bromine (Br)	ND	--	--
Iodine (I)	ND	--	--

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Number: TWNC00256914

Test Conducted

(Ⅰ) Test Result Summary :

Test Item	Result (ppm)		
	(1)	(2)	(3)
Phthalates			
Di(2-ethylhexyl) Phthalate (DEHP)	ND	--	--
Dibutyl Phthalate (DBP)	ND	--	--
Benzyl Butyl Phthalate (BBP)	ND	--	--
Others			
Hexabromocyclododecane (HBCDD)	ND	--	--

Remarks: ppm = Parts per million based on weight of tested sample = mg/kg
ND = Not detected
< = Less than
mg/kg with 50cm^2 = milligram per kilogram with 50 square centimetre
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 25 cm^2 was used and the dilution factor was adjusted accordingly.

Tested Components:

(1) Black Body Part
(2) Coppery Metal Substrate
(3) Silvery Plating On Metal Pin

Responsibility of Chemist : Irene Chiou / Kevin Liu / Cathy Chen

Date Sample Received : May 10, 2012
Test Period : May 10, 2012 To May 14, 2012

(Ⅱ) RoHS Requirement:

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)
Polybrominated Biphenyls (PBBs)	0.1% (1000ppm)
Polybrominated Diphenyl Ehters (PBDEs)	0.1% (1000ppm)

The above limits were quoted from 2002/95/EC and amendment 2005/618/EC for homogeneous material.

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Test Conducted
(Ⅲ) Test Method:

Test Item	Test Method	Reporting Limit
Cadmium (Cd) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Lead (Pb) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Mercury (Hg) content	With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Chromium VI (Cr^{6+}) content (For Non-Metal Extraction On Metal)	With reference to IEC 62321 edition 1.0:2008 in annex C, by alkaline digestion and determined by UV-Vis spectrophotometer.	1 ppm
Chromium VI (Cr^{6+}) content (By Boiling Water Extraction On Metal)	With reference to IEC 62321 edition 1.0:2008 in annex B, by boiling water extraction and determined by UV-Vis Spectrophotometer.	0.02 mg/kg with $50cm^2$
Polybrominated Biphenyls (PBBs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MS and further HPLC-DAD confirmation when necessary.	5 ppm
Polybrominated Diphenyl Ethers (PBDEs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MS and further HPLC-DAD confirmation when necessary.	5 ppm
Halogen Content	With reference to EN 14582:2007 by calorimetric bomb with oxygen and determined by Ion Chromatograph.	50 ppm
Phthalates	With reference to EN 14372: 2004, by solvent extraction and determined by GC-MS.	50 ppm
Hexabromocyclododecane (HBCDD)	With reference to USEPA 3540C, by solvent extraction and determined by GC-MSD.	10 ppm

Remark: Reporting limit = Quantitation limit of analyte in sample

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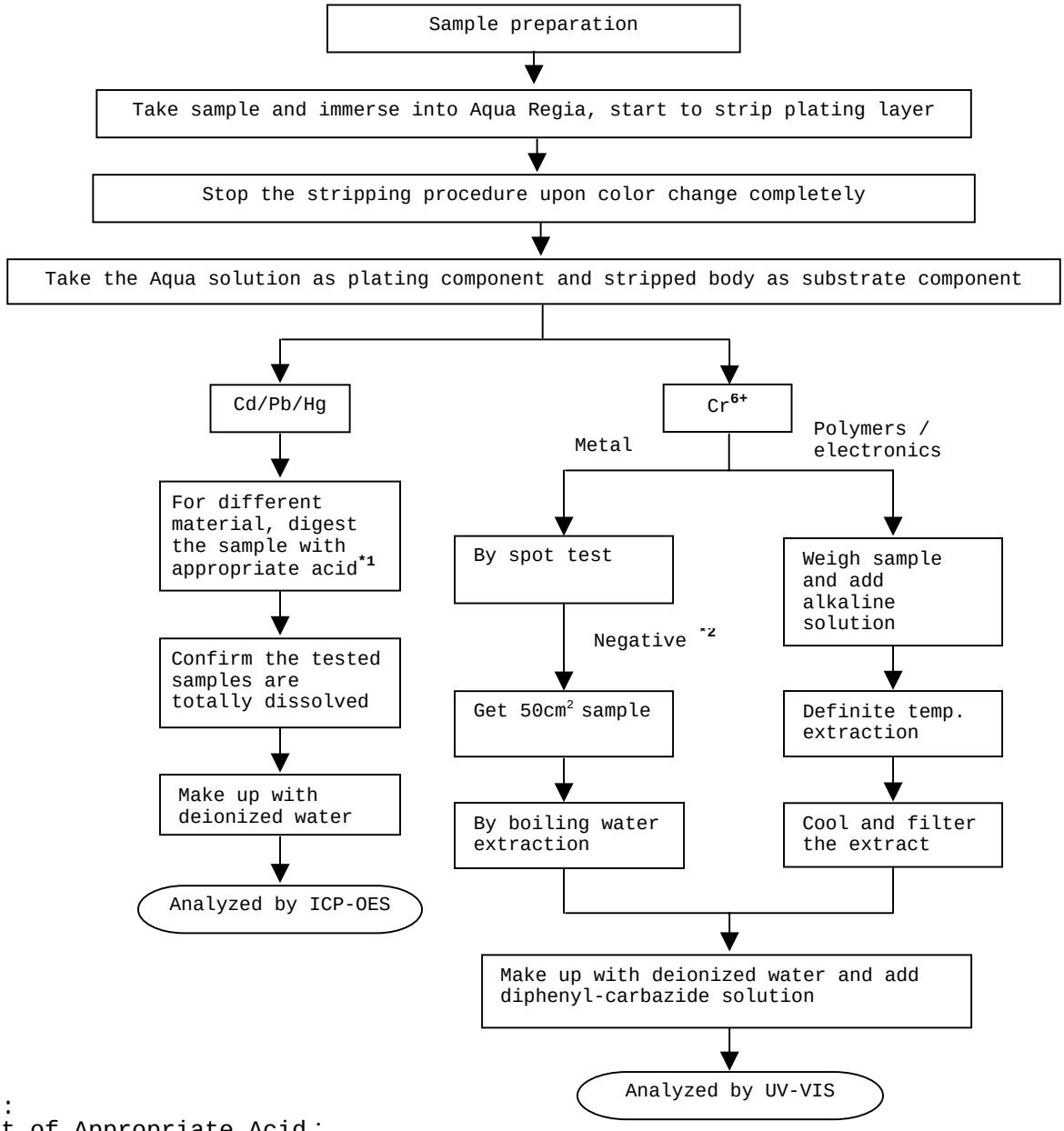
Test Conducted

(Ⅳ) Measurement Flowchart:

Test for Cd/Pb/Hg/Chromium (VI)

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

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

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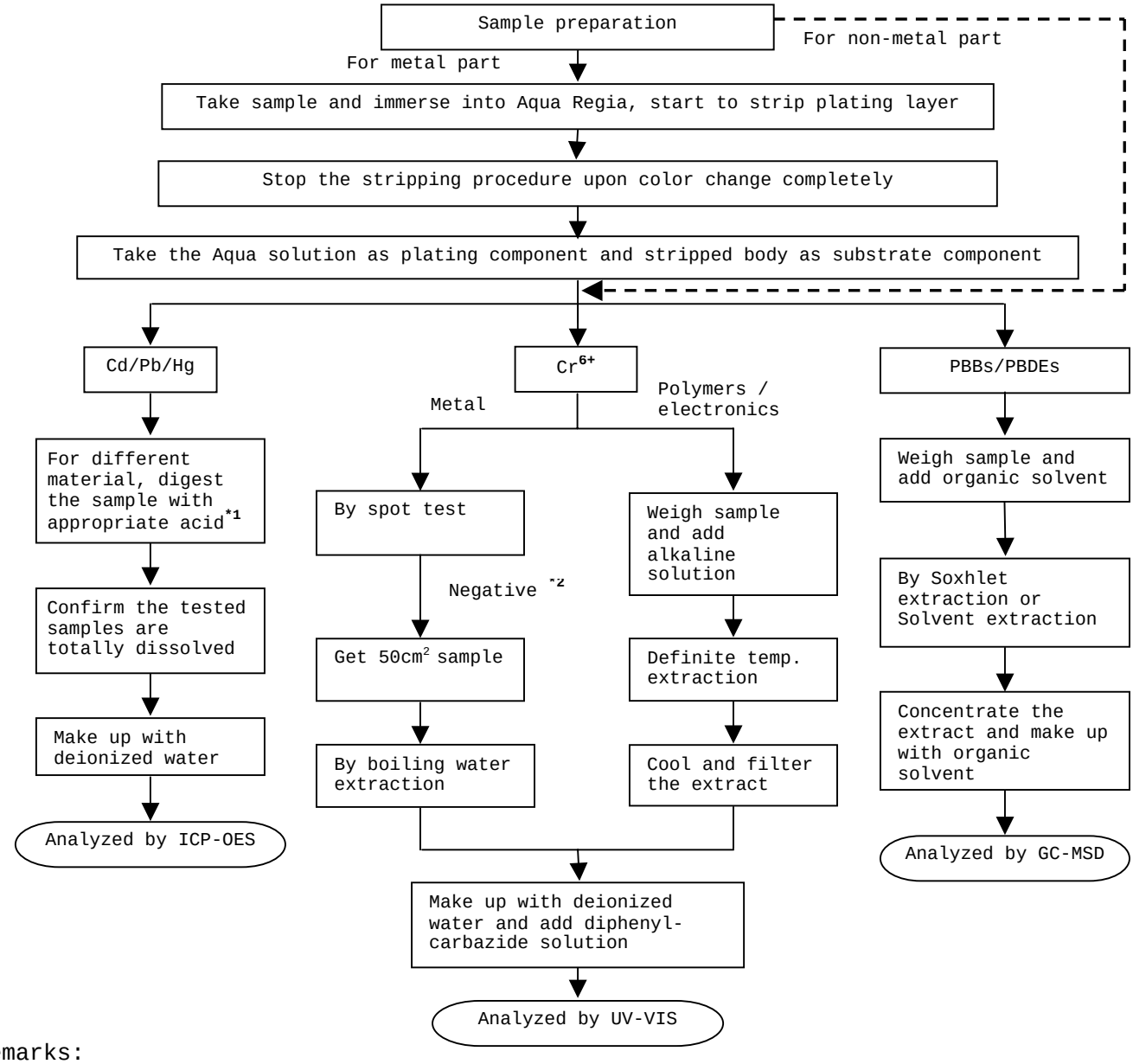
Number: TWNC00256914

Test Conducted

(Ⅳ) Measurement Flowchart:

Test for Cd/Pb/Hg/Chromium (VI)/PBBS/PBDES Contents

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	$HNO_3, HCl, H_2O_2, HBF_4$

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

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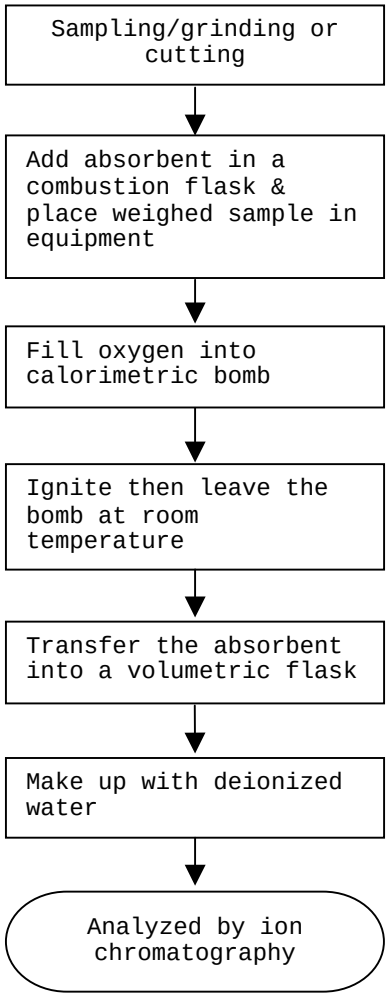
Test Conducted
(Ⅳ) Measurement Flowchart:

Test for Halogen Content
Reference Standard：EN 14582



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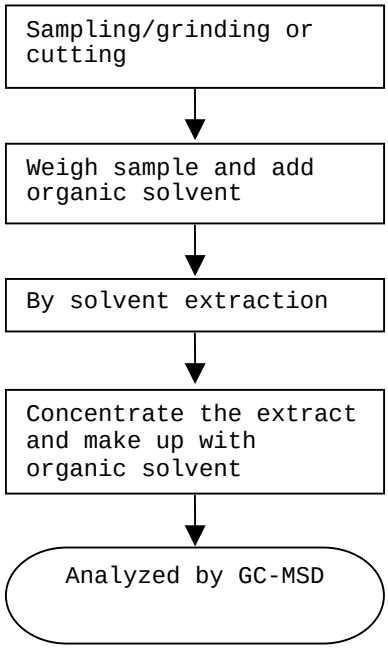
Test Conducted
(Ⅳ) Measurement Flowchart:

Test For Phthalates Contents
Reference Method: EN 14372: 2004



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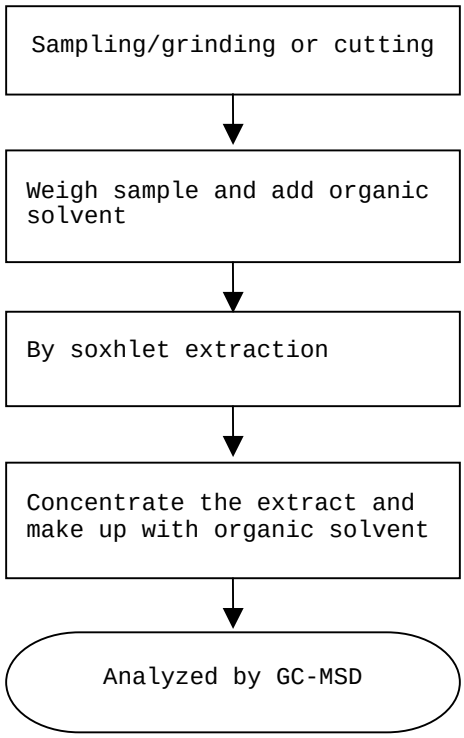
Test Conducted
(Ⅳ) Measurement Flowchart:

Test For Hexabromocyclododecane (HBCDD)
Reference Standard：USEPA 3540C



End of Report

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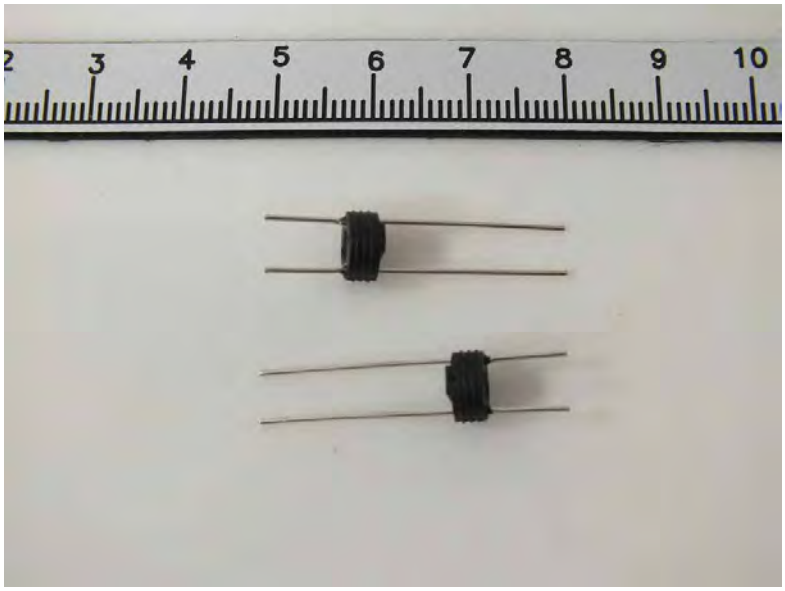
Number: TWNC00256914

Test Conducted

Photo



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Test Report Number : TWNC00232329

Applicant: Littelfuse Philippines Inc. Date : Nov 18, 2011
LIMA Technology Center, Lipa City,
Malvar, Batangas

Sample Description:
One (1) group of submitted samples said to be :
Part Description : Yarn(GLZZXXX-6481XX)
Part Number : 648118
Date Sample Received : Nov 11, 2011
Date Test Started : Nov 14, 2011

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

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Number : TWNC00232329

Test Conducted

(Ⅰ) Test Result Summary :

Test Item	Result (ppm)
	White Yarn
Heavy Metal	
Cadmium (Cd) content	ND
Lead (Pb) content	7
Mercury (Hg) content	ND
Chromium VI (Cr^{6+}) content	ND
Polybrominated Biphenyls (PBBs)	
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
Polybrominated Diphenyl Ethers (PBDEs)	
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
Halogen Content	
Fluorine (F)	ND
Chlorine (Cl)	ND
Bromine (Br)	ND
Iodine (I)	ND

Remarks: ppm = Parts per million based on weight of tested sample = mg/kg
ND = Not detected

Responsibility of Chemist : Irene Chiou / Kevin Liu / Cathy Chen

Date Sample Received : Nov 11, 2011
Test Period : Nov 14, 2011 To Nov 17, 2011

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Test Conducted

(Ⅱ) RoHS Requirement:

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)
Polybrominated Biphenyls (PBBs)	0.1% (1000ppm)
Polybrominated Diphenyl Ehters (PBDEs)	0.1% (1000ppm)

The above limits were quoted from 2002/95/EC and amendment 2005/618/EC for homogeneous material.

(Ⅲ) Test Method:

Test Item	Test Method	Reporting Limit
Cadmium (Cd) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Lead (Pb) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Mercury (Hg) content	With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Chromium VI (Cr^{6+}) content	With reference to IEC 62321 edition 1.0:2008 in annex C, by alkaline digestion and determined by UV-Vis spectrophotometer.	1 ppm
Polybrominated Biphenyls (PBBs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm
Polybrominated Diphenyl Ethers (PBDEs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm
Halogen Content	With reference to EN 14582:2007 by calorimetric bomb with oxygen and determined by ion chromatography	50 ppm

Remark: Reporting limit = Quantitation limit of analyte in sample

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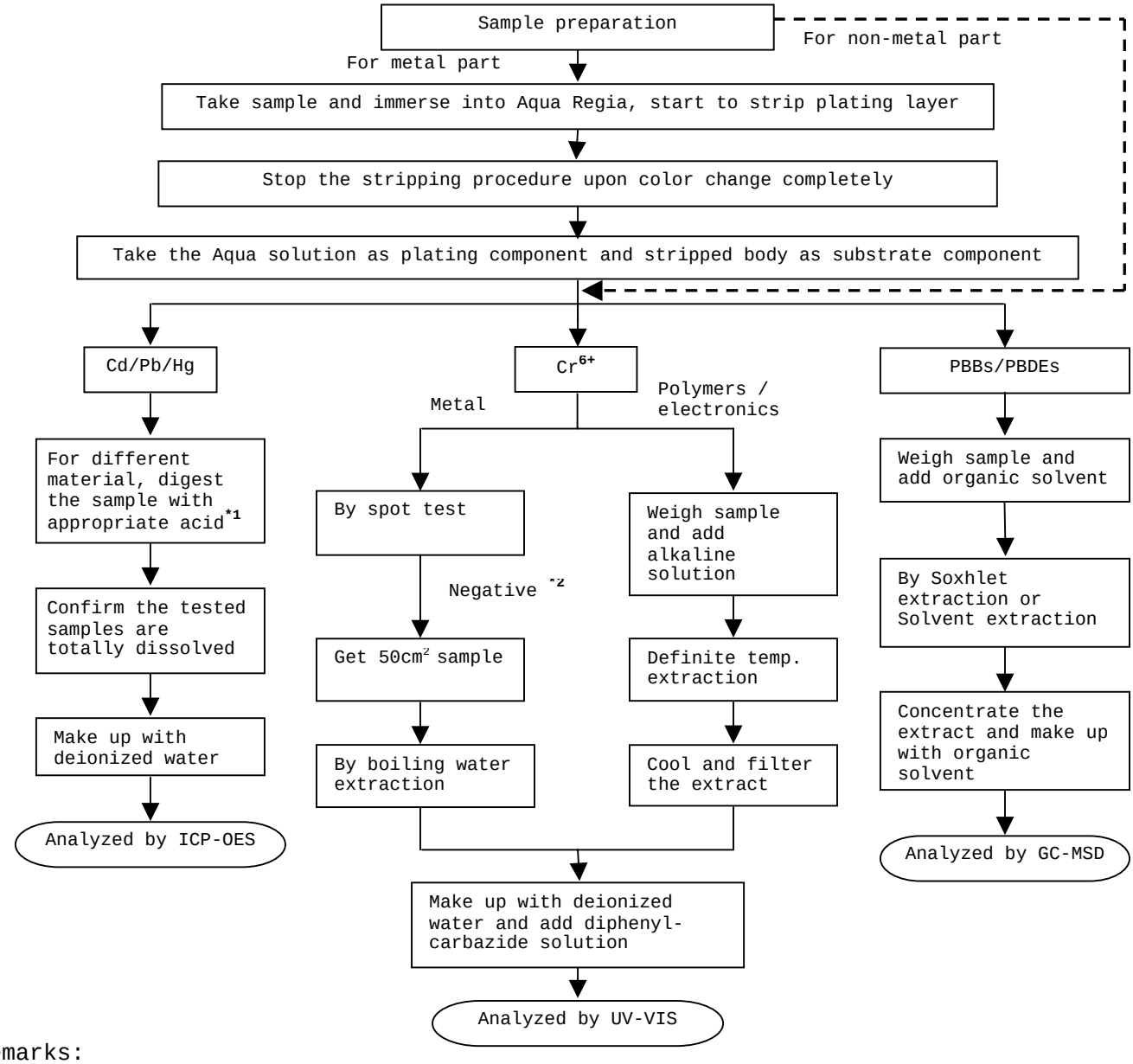
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2400 · 6602-2401

Test Conducted

(Ⅳ) Measurement Flowchart:

Test for Cd/Pb/Hg/Chromium (VI)/PBBS/PBDES Contents

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

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

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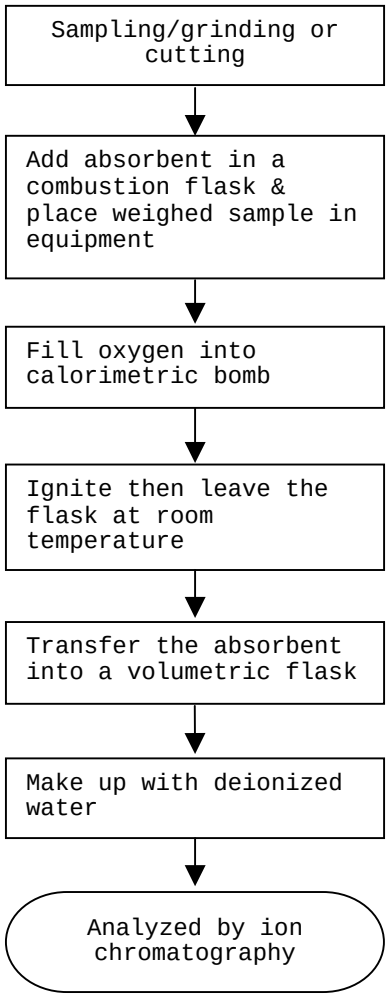
Test Conducted

(Ⅳ) Measurement Flowchart:

Test for Halogen Content
Reference Standard：EN 14582



End of Report

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Number : TWNC00232329

Test Conducted

Photo

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Test Report Number : TWNC00232332

Applicant: Littelfuse Philippines Inc. Date : Nov 18, 2011
LIMA Technology Center, Lipa City,
Malvar, Batangas

Sample Description:
One (1) group of submitted samples said to be :
Part Description : Sand Filler
Part Number : 090125
Date Sample Received : Nov 11, 2011
Date Test Started : Nov 14, 2011

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

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Number : TWNC00232332

Test Conducted

(Ⅰ) Test Result Summary :

Test Item	Result (ppm)
	White/Beige Crystal
Heavy Metal	
Cadmium (Cd) content	ND
Lead (Pb) content	ND
Mercury (Hg) content	ND
Chromium VI (Cr^{6+}) content	ND
Polybrominated Biphenyls (PBBs)	
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
Polybrominated Diphenyl Ethers (PBDEs)	
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
Halogen Content	
Fluorine (F)	ND
Chlorine (Cl)	ND
Bromine (Br)	ND
Iodine (I)	ND

Remarks: ppm = Parts per million based on weight of tested sample = mg/kg
ND = Not detected

Responsibility of Chemist : Irene Chiou / Kevin Liu / Cathy Chen

Date Sample Received : Nov 11, 2011
Test Period : Nov 14, 2011 To Nov 16, 2011

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Test Conducted

(Ⅱ) RoHS Requirement:

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)
Polybrominated Biphenyls (PBBs)	0.1% (1000ppm)
Polybrominated Diphenyl Ehters (PBDEs)	0.1% (1000ppm)

The above limits were quoted from 2002/95/EC and amendment 2005/618/EC for homogeneous material.

(Ⅲ) Test Method:

Test Item	Test Method	Reporting Limit
Cadmium (Cd) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Lead (Pb) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Mercury (Hg) content	With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Chromium VI (Cr^{6+}) content	With reference to IEC 62321 edition 1.0:2008 in annex C, by alkaline digestion and determined by UV-Vis spectrophotometer.	1 ppm
Polybrominated Biphenyls (PBBs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm
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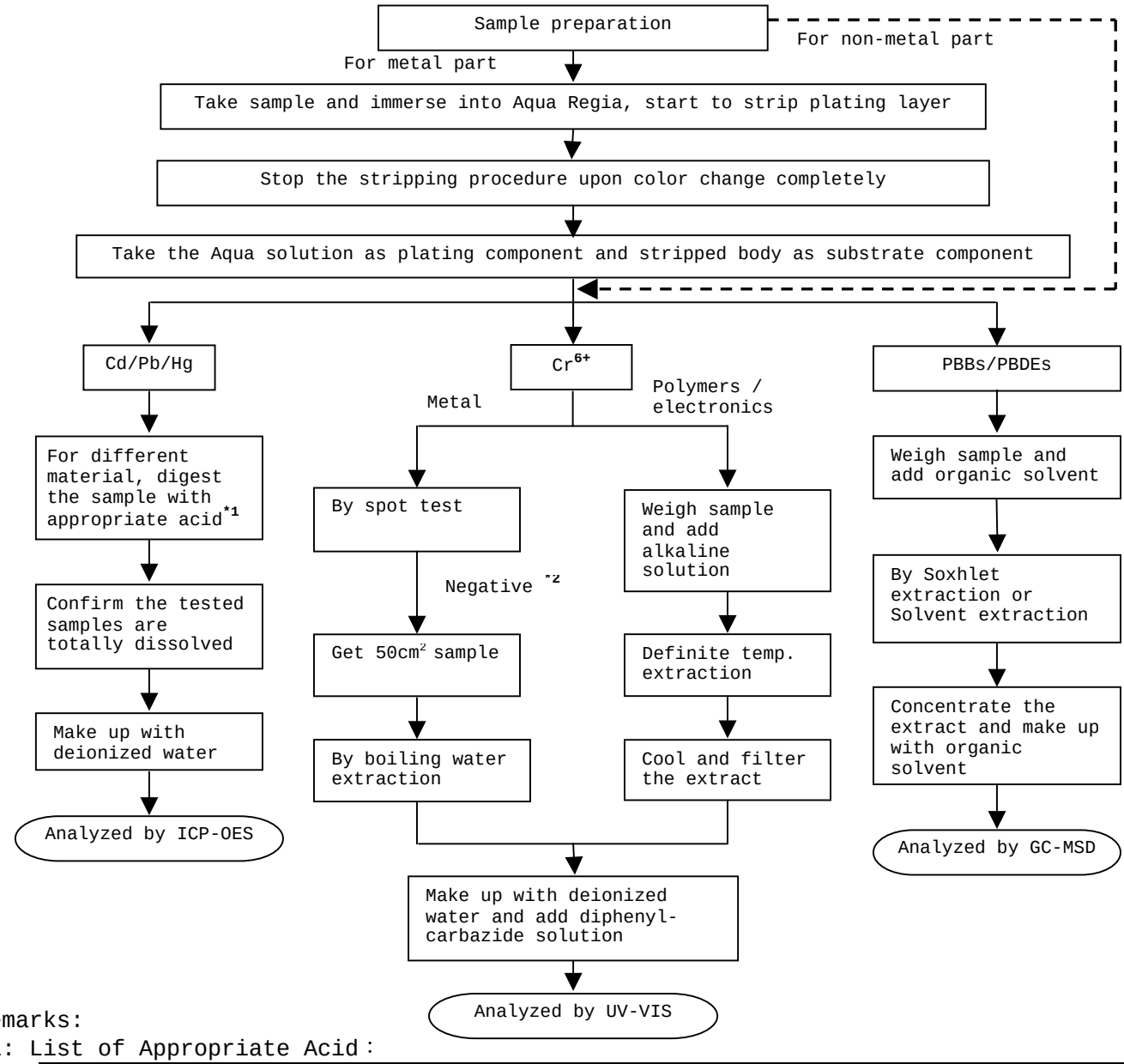

Remarks:

*1: List of Appropriate Acid：

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

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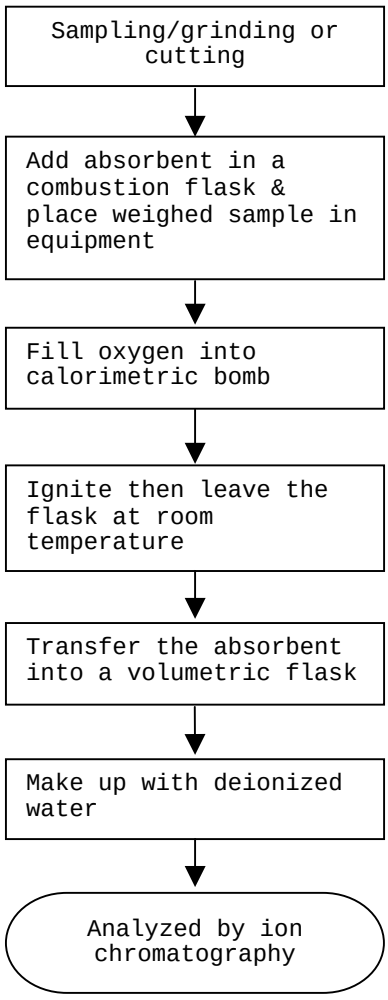
(Ⅳ) Measurement Flowchart:

Test for Halogen Content

Reference Standard：EN 14582



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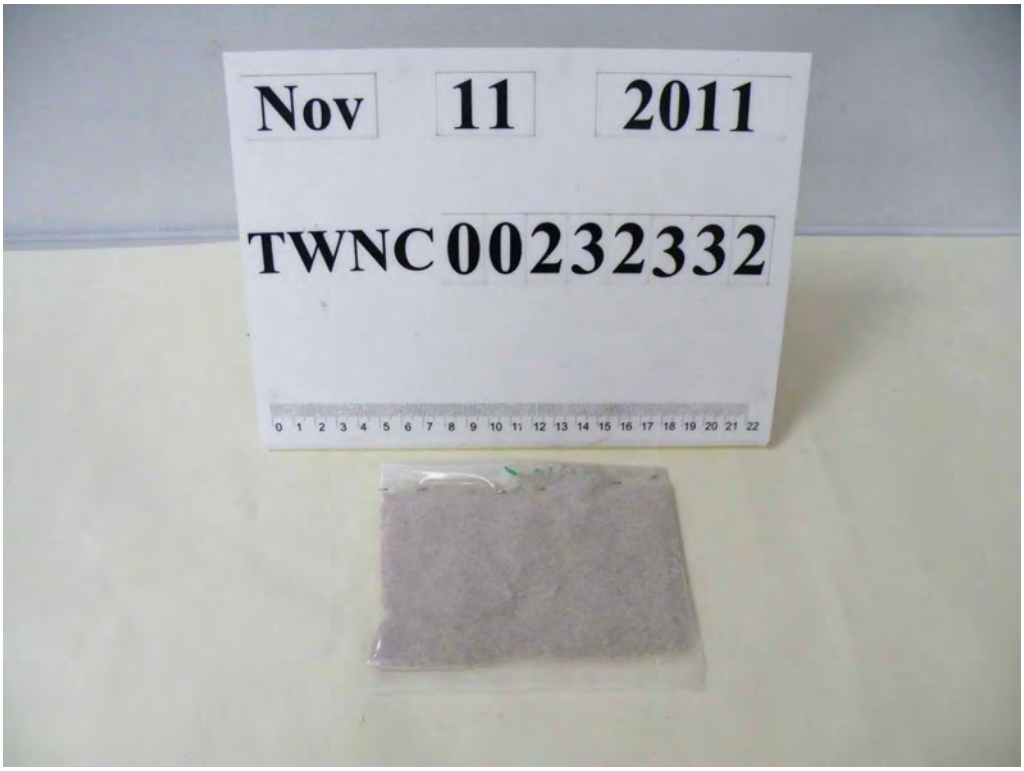
Number : TWNC00232332

Test Conducted

Photo



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