ICP Test Report Certification Packet

Company name: Littelfuse, Inc.

Product Series: TE5

Product #: 392xxxxxxx Series

Issue Date: January 24, 2014

It is hereby certified by Littelfuse, Inc. that there is neither RoHS (EU Directive 2011/65/EU, recasting 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: JORDANUFF H. CABILAN

[Global EHS Engineer]

(1) Parts, sub-materials and unit parts

This document covers the TE5 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)
ICP-074	DRAG***	Element – Silver Plated wire	3-8
ICP-055	DRCU***	Element – Tinned Wire	9-14
ICP-0275	692213	Solder	15-18
ICP-0283	910-017	Plastic Cap	19-27
ICP-0281	867-002 (867-00x)	Socket with Pin	28-38
ICP-0280	GLZZxxx/ 6481xx	Yarn-Glass Fibre	39-48
ICP-0278	009116	Kepa001 Ceramic Paper	49-56

Test Report **Number: 140100488SHA-001**

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

Date: Jan. 21, 2014

Sample Description:
One (1) submitted sample said to be:

Item Name	:	Wires with plating
Item No.	:	101.014-.---- silver plated copper wire Cu, Ag--%
Country of Origin	:	GERMANY

****

Tests conducted:
As requested by the applicant, for details refer to attached page(s).

****

Conclusion:

Tested sample	Standard	Result
Tested components of submitted sample	Restriction of the use of certain hazardous substance in electrical and electronic equipment (RoHS Directive 2011/65/EU)	See Test Conducted

****

To be continued

Prepared and check by:
For Intertek Testing Services Ltd., Shanghai

Joy Zhou

Authorized by:
For Intertek testing services Ltd., Shanghai

Jonny Jing
Manager

Intertek Testing Services Ltd., Shanghai 上海天祥质量技术服务有限公司 检测报告专用章

Block B, Jinling Business Square, No.801 YiShan Road, Shanghai, China. 200233
上海天祥質量技術服務有限公司
上海市宜山路801 號金陵商務廣場B 座 200233
Telephone: +86 21 6120 6060 Facsimile: +86 21 6127 9740
www.intertek.com www.intertek.com.cn

Tests Conducted

(A) Test result of RoHS Directive:

Testing item	**Result**
	(1)
Cadmium (Cd) content (mg/kg) /plating	ND
Lead (Pb) content (mg/kg) /plating	ND
Mercury (Hg) content (mg/kg) /plating	ND
Chromium (VI)(Cr^{6+}) result (by boiling water extraction on metal) (mg/kg with $50cm^2$) /plating	ND

Testing item	**Result**
	(2)
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

Remark： mg/kg with $50cm^2$ = milligram per kilogram with 50 square centimeter

ND = not detected

Tested components:
(1) Silver color metal wire plating
(2) Silver color metal wire substrate

(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.

****

To be continued

Block B, Jinling Business Square, No.801 YiShan Road, Shanghai, China. 200233
上海天祥質量技術服務有限公司
上海市宜山路801 號金陵商務廣場B 座 200233
Telephone: +86 21 6120 6060 Facsimile: +86 21 6127 9740
www.intertek.com www.intertek.com.cn

Tests Conducted

(C) Test method:

Testing item	Testing method	Reporting limit
Cadmium (Cd) content	With reference to IEC 62321-5 Edition 1.0: 2013, 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 62321-5 Edition 1.0: 2013, 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 62321-4 Edition 1.0: 2013, 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.	Positive/Negative (Threshold of 0.02mg/kg with $50cm^2$)

Date sample received: Jan. 13, 2014
Testing period: Jan. 13, 2014 To Jan. 16, 2014

****

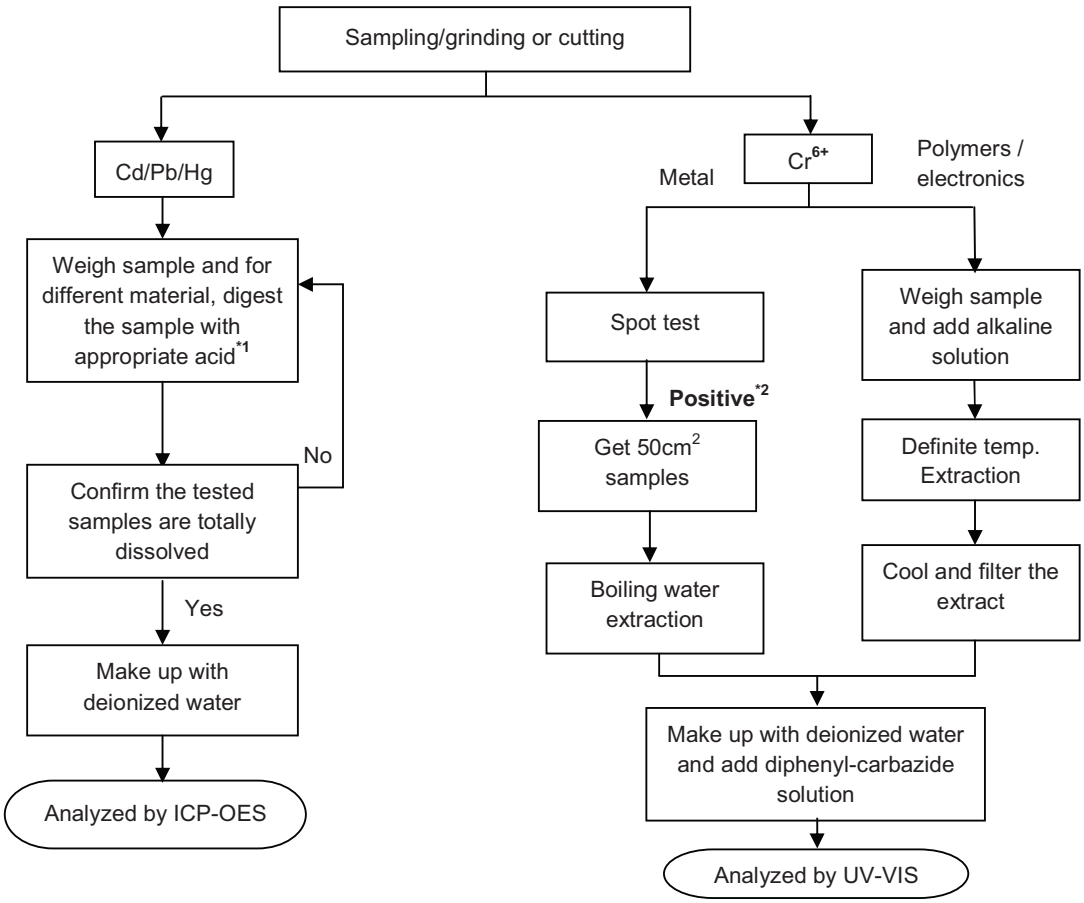
To be continued

Intertek Testing Services Ltd., Shanghai
Block B, Jinling Business Square, No.801 YiShan Road, Shanghai, China. 200233
上海天祥質量技術服務有限公司
上海市宜山路801 號金陵商務廣場B 座 200233
Telephone: +86 21 6120 6060 Facsimile: +86 21 6127 9740
www.intertek.com www.intertek.com.cn

Tests Conducted

(D) Measurement flowchart：

Test for Cd/Pb/Hg/Cr (VI) contents
Reference standard：IEC 62321 Edition 1.0：2008&2013



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

Tests Conducted

****

To be continued

Intertek Testing Services Ltd., Shanghai
Block B, Jinling Business Square, No.801 YiShan Road, Shanghai, China. 200233
上海天祥質量技術服務有限公司
上海市宜山路801 號金陵商務廣場B 座 200233
Telephone: +86 21 6120 6060 Facsimile: +86 21 6127 9740
www.intertek.com www.intertek.com.cn

Tests Conducted

****

End of report

Test Report **Number: 140100488SHA-007**

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

Date: Jan. 21, 2014

Sample Description:
One (1) submitted sample said to be:

Item Name	:	Wires with plating
Item No.	:	101--271.0--- tin plated, copper wire – Cu, Sn--%
Country of Origin	:	GERMANY

****

Tests conducted:
As requested by the applicant, for details refer to attached page(s).

****

Conclusion:

Tested sample	Standard	Result
Tested components of submitted sample	Restriction of the use of certain hazardous substance in electrical and electronic equipment (RoHS Directive 2011/65/EU)	See Test Conducted

****

To be continued

Prepared and check by:
For Intertek Testing Services Ltd., Shanghai

Joy Zhou

Authorized by:
For Intertek testing services Ltd., Shanghai

Jonny Jing
Manager

Intertek Testing Services Ltd., Shanghai 上海天祥质量技术服务有限公司 检测报告专用章

Tests Conducted

(A) Test result of RoHS Directive:

Testing item	Result
	(1)
Cadmium (Cd) content (mg/kg) /plating	ND
Lead (Pb) content (mg/kg) /plating	57
Mercury (Hg) content (mg/kg) /plating	ND
Chromium (VI)(Cr^{6+}) result (by boiling water extraction on metal) (mg/kg with $50cm^2$) /plating	ND

Testing item	Result
	(2)
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

Remark： mg/kg with $50cm^2$ = milligram per kilogram with 50 square centimeter

ND = not detected

Tested components:
(1) Silver color metal wire plating
(2) Silver color metal wire substrate

(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.

****

To be continued

Block B, Jinling Business Square, No.801 YiShan Road, Shanghai, China. 200233
上海天祥質量技術服務有限公司
上海市宜山路801 號金陵商務廣場B 座 200233
Telephone: +86 21 6120 6060 Facsimile: +86 21 6127 9740
www.intertek.com www.intertek.com.cn

Tests Conducted

(C) Test method:

Testing item	Testing method	Reporting limit
Cadmium (Cd) content	With reference to IEC 62321-5 Edition 1.0: 2013, 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 62321-5 Edition 1.0: 2013, 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 62321-4 Edition 1.0: 2013, 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.	Positive/Negative (Threshold of 0.02mg/kg with $50cm^2$)

Date sample received: Jan. 13, 2014
Testing period: Jan. 13, 2014 To Jan. 16, 2014

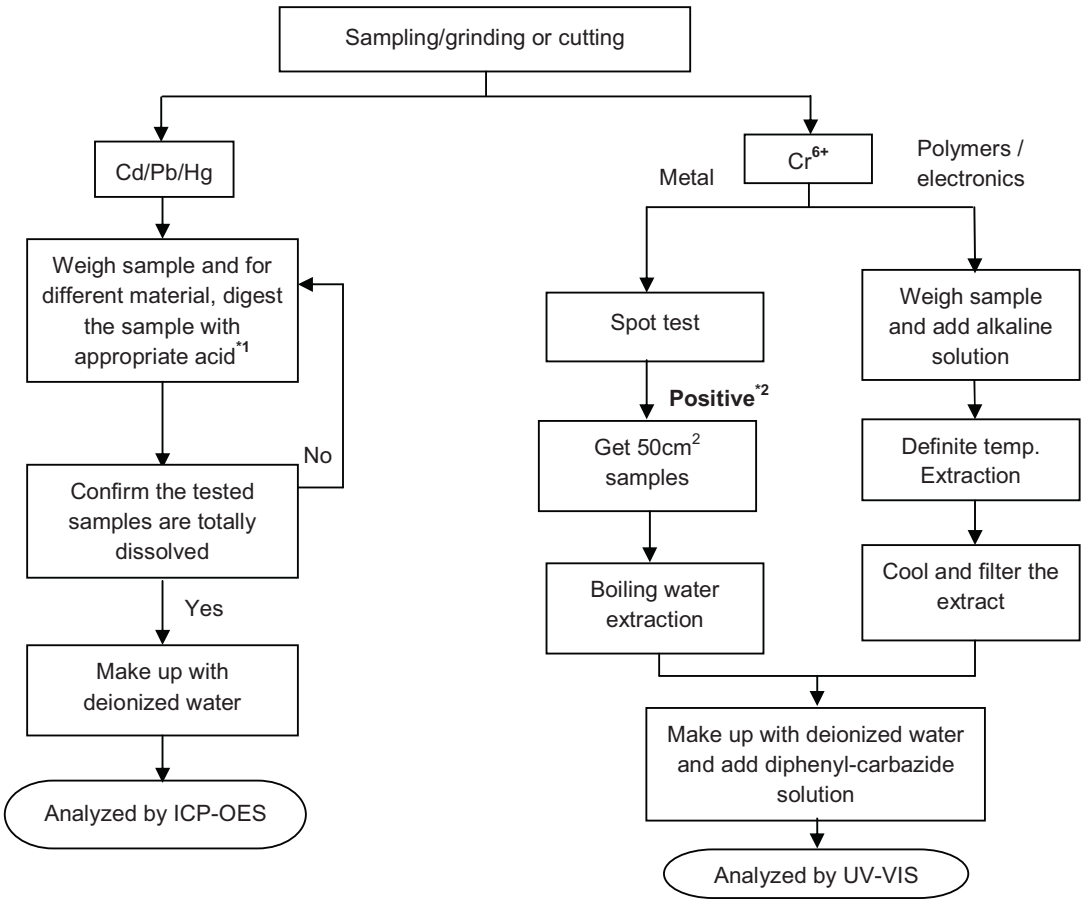
****

To be continued

Tests Conducted

(D) Measurement flowchart：

Test for Cd/Pb/Hg/Cr (VI) contents
Reference standard：IEC 62321 Edition 1.0：2008&2013



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

Tests Conducted

****

To be continued

Intertek Testing Services Ltd., Shanghai
Block B, Jinling Business Square, No.801 YiShan Road, Shanghai, China. 200233
上海天祥質量技術服務有限公司
上海市宜山路801 號金陵商務廣場B 座 200233
Telephone: +86 21 6120 6060 Facsimile: +86 21 6127 9740
www.intertek.com www.intertek.com.cn

Tests Conducted

****

End of report

Test Report

Number : TWNC00330781
Date : Sep 12, 2013

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

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

Part Description	:	Solder wire
Part Number	:	692213
Date Sample Received	:	Sep 06, 2013
Date Test Started	:	Sep 09, 2013

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 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

Intertek

Test Report

Number: TWNC00330781

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: 2008, by microwave digestion and determined by ICP-OES.	ND	2
Lead (Pb) content	ppm	With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.	192	2
Mercury (Hg) content	ppm	With reference to IEC 62321: 2008, by microwave 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.

Responsibility of Chemist: Kevin Liu/ Irene Chiou

Date Sample Received : Sep 06, 2013
Test Period : Sep 09, 2013 to Sep 11, 2013

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.

Intertek Testing Services Taiwan Ltd.
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

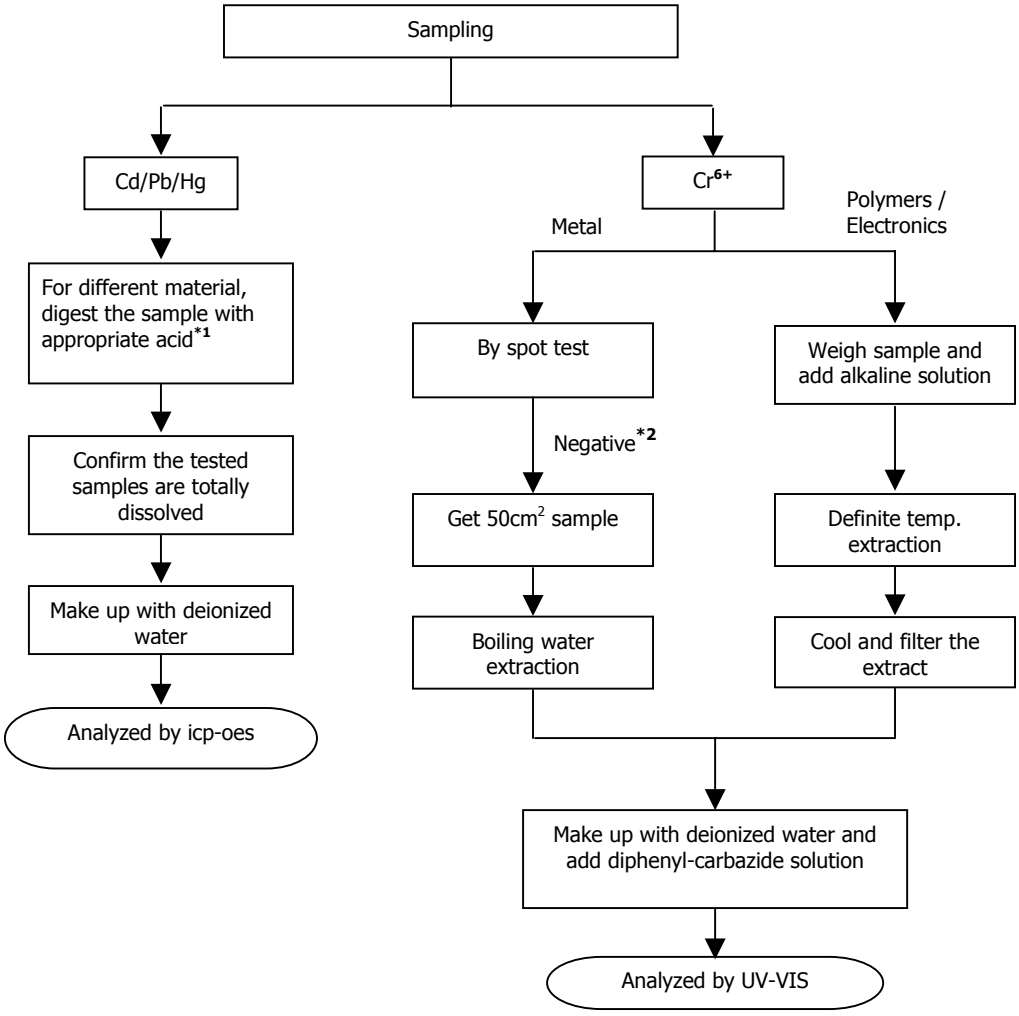
Test Report

Number: TWNC00330781

Test Conducted

Measurement Flowchart:

Test for Cd/Pb/Hg/Chromium (VI)
Reference Method: 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.

Intertek Testing Services Taiwan Ltd.
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

Test Report

Number: TWNC00330781

End of Report

Intertek Testing Services Taiwan Ltd.
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

Test Report

Number : TWNC00316620

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

Date : Jun 18, 2013

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

Part Description	:	TE
Part Number	:	910017
Date Sample Received	:	Jun 05, 2013
Date Test Started	:	Jun 06, 2013

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 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

Intertek

Test Report

Number : TWNC00316620

Test Conducted
Test Result Summary:

Test Item	Unit	Test Method	Result	RL
			Brown plastic	
Heavy Metal				
Cadmium (Cd) content	ppm	With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.	ND	2
Lead (Pb) content	ppm	With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.	7	2
Mercury (Hg) content	ppm	With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.	ND	2
Chromium VI (Cr^{6+}) content	ppm	With reference to IEC 62321: 2008, by alkaline digestion and determined by UV-Vis Spectrophotometer.	ND	1
Polybrominated Biphenyls (PBBs)				
Monobrominated Biphenyls (MonoBB)	ppm	With reference to IEC 62321: 2008, by solvent extraction and determined by GC-MS and further HPLC-DAD confirmation when necessary.	ND	5
Dibrominated Biphenyls (DiBB)	ppm		ND	5
Tribrominated Biphenyls (TriBB)	ppm		ND	5
Tetrabrominated Biphenyls (TetraBB)	ppm		ND	5
Pentabrominated Biphenyls (PentaBB)	ppm		ND	5
Hexabrominated Biphenyls (HexaBB)	ppm		ND	5
Heptabrominated Biphenyls (HeptaBB)	ppm		ND	5
Octabrominated Biphenyls (OctaBB)	ppm		ND	5
Nonabrominated Biphenyls (NonaBB)	ppm		ND	5
Decabrominated Biphenyl (DecaBB)	ppm		ND	5

Intertek Testing Services Taiwan Ltd.
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

Intertek

Test Report

Number : TWNC00316620

Test Conducted

Test Item	Unit	Test Method	Result Brown plastic	RL
Polybrominated Diphenyl Ethers (PBDEs)				
Monobrominated Diphenyl Ethers (MonoBDE)	ppm	With reference to IEC 62321: 2008, by solvent extraction and determined by GC-MS and further HPLC-DAD confirmation when necessary.	ND	5
Dibrominated Diphenyl Ethers (DiBDE)	ppm		ND	5
Tribrominated Diphenyl Ethers (TriBDE)	ppm		ND	5
Tetrabrominated Diphenyl Ethers (TetraBDE)	ppm		ND	5
Pentabrominated Diphenyl Ethers (PentaBDE)	ppm		ND	5
Hexabrominated Diphenyl Ethers (HexaBDE)	ppm		ND	5
Heptabrominated Diphenyl Ethers (HeptaBDE)	ppm		ND	5
Octabrominated Diphenyl Ethers (OctaBDE)	ppm		ND	5
Nonabrominated Diphenyl Ethers (NonaBDE)	ppm		ND	5
Decabrominated Diphenyl Ether (DecaBDE)	ppm		ND	5
Halogen Content				
Fluorine (F)	ppm	With reference to EN 14582:2007 by calorimetric bomb with oxygen and determined by Ion Chromatograph.	ND	50
Chlorine (Cl)	ppm		ND	50
Bromine (Br)	ppm		ND	50
Iodine (I)	ppm		ND	50
Phthalates				
Di(2-ethylhexyl) Phthalate (DEHP)	ppm	With reference to EN 14372: 2004, by solvent extraction and determined by GC-MS.	ND	50
Dibutyl Phthalate (DBP)	ppm		ND	50
Benzyl Butyl Phthalate (BBP)	ppm		ND	50
Diisobutyl phthalate (DIBP)	ppm		ND	50
Others				
Hexabromocyclododecane (HBCDD)	ppm	With reference to USEPA 3540C, by solvent extraction and determined by GC-MS.	ND	10

Intertek Testing Services Taiwan Ltd.
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

Intertek

Test Report

Number : TWNC00316620

Test Conducted

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

Responsibility of Chemist: Kevin Liu/ Irene Chiou/ Vico Lin

Date Sample Received : Jun 05, 2013
Test Period : Jun 06, 2013 to Jun 10, 2013

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

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

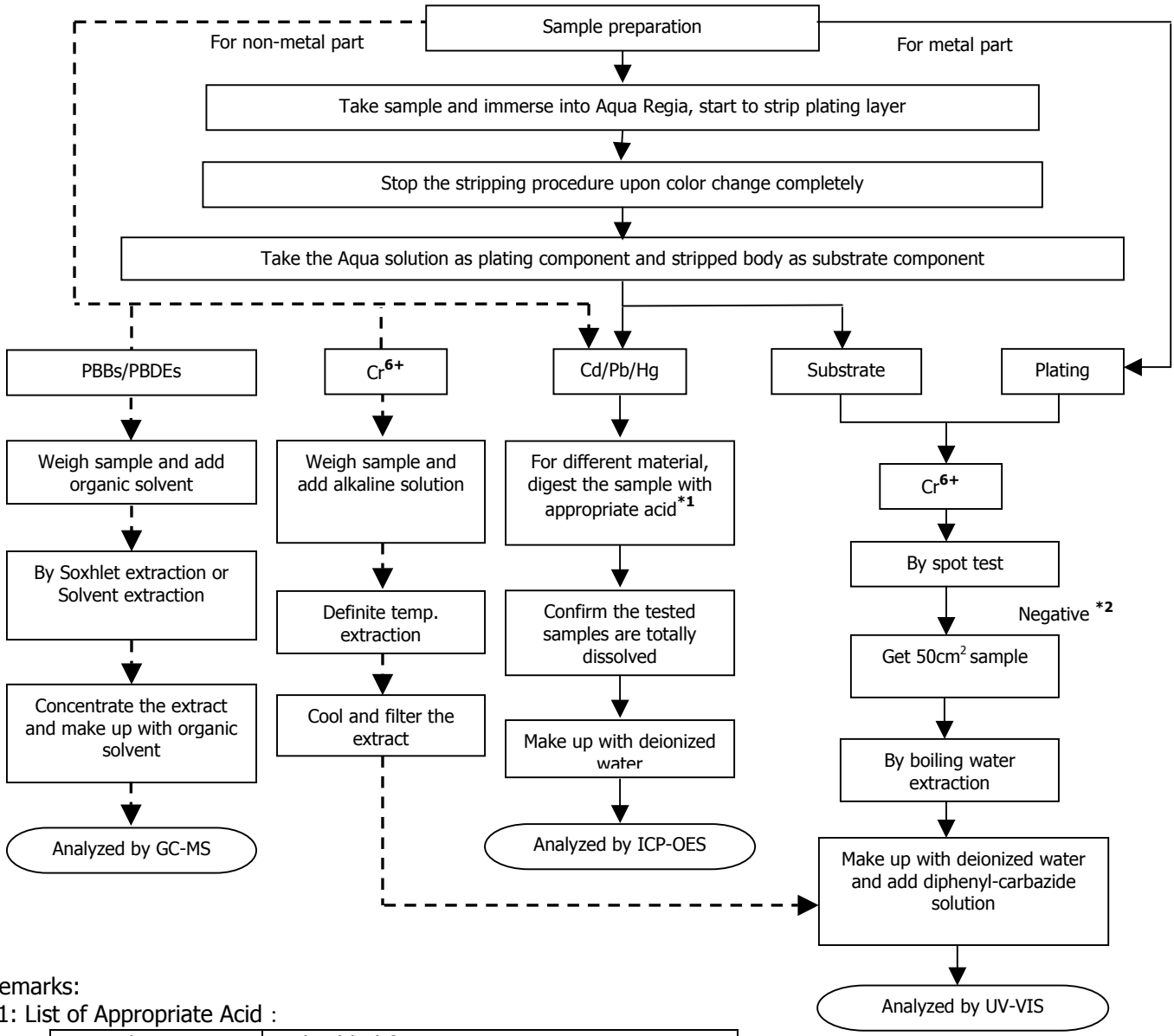
Intertek Testing Services Taiwan Ltd.
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

Test Report

Number : TWNC00316620

Test Conducted
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,$H2O_2$,$H3BO_3$
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.

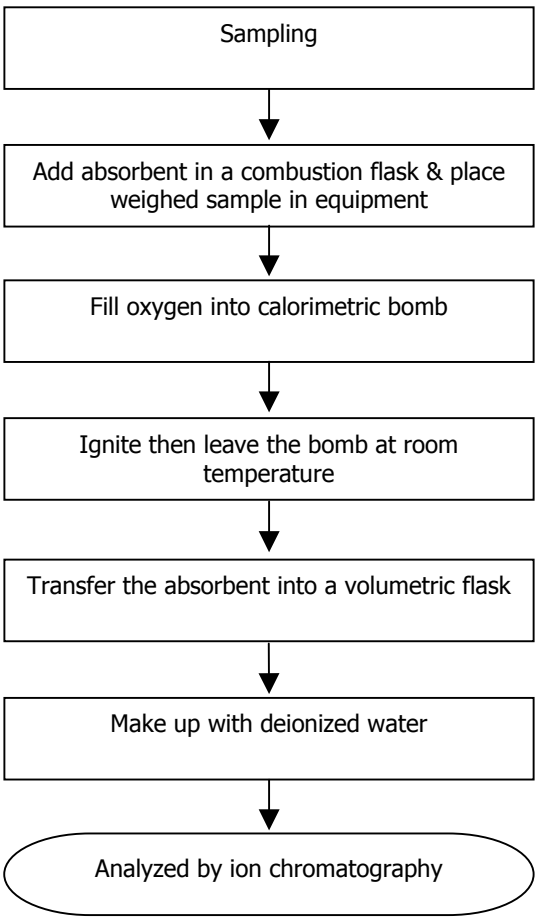
Intertek Testing Services Taiwan Ltd.
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

Test Report

Number : TWNC00316620

Test Conducted

Test for Halogen Content
Reference Method：EN 14582



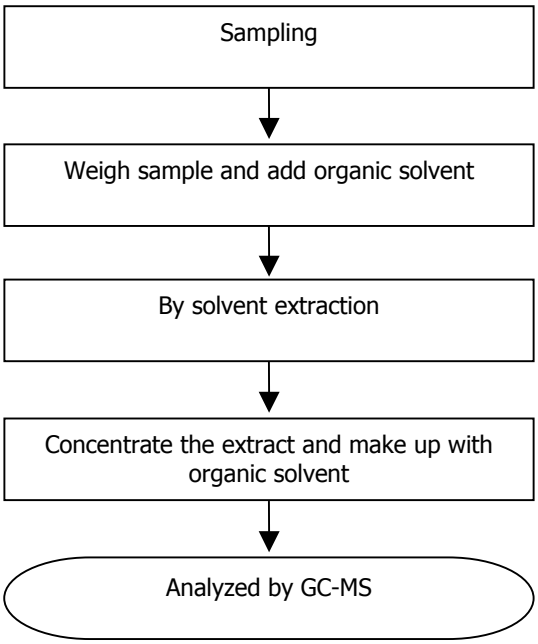
Intertek Testing Services Taiwan Ltd.
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

Test Report

Number : TWNC00316620

Test Conducted

Test for Phthalates Contents
Reference Method: EN 14372: 2004



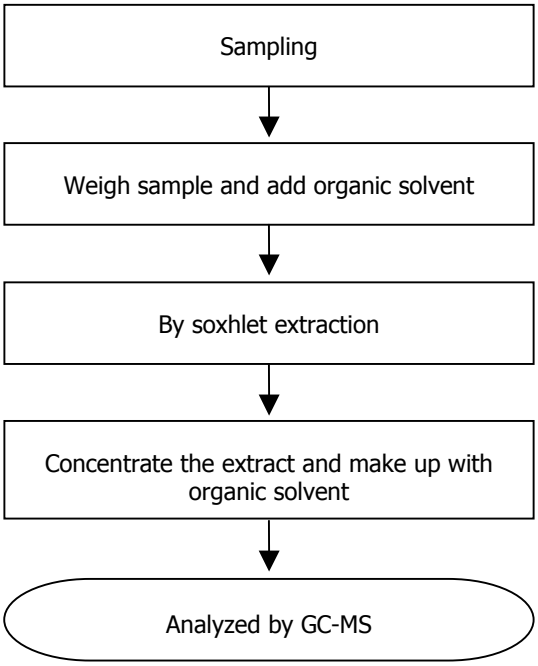
Intertek Testing Services Taiwan Ltd.
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

Test Report

Number : TWNC00316620

Test Conducted

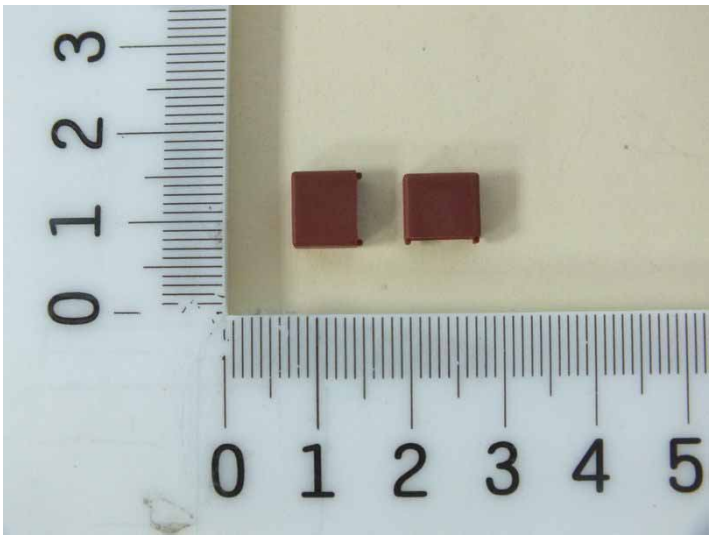
Test for Hexabromocyclododecane (HBCDD)
Reference Method：USEPA 3540C



Intertek Testing Services Taiwan Ltd.
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

Test Report

Number : TWNC00316620



End of Report

Intertek Testing Services Taiwan Ltd.
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

Test Report

Number : TWNC00316621

Date : Jun 13, 2013

Applicant: Littelfuse Philippines Inc.
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	:	867-002
Date Sample Received	:	Jun 05, 2013
Date Test Started	:	Jun 06, 2013

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

Tested Components
(1) Black plastic body
(2) Coppery metal substrate of pin
(3) Silvery plating layer of pin

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 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

Intertek

Test Report

Number : TWNC00316621

Test Conducted

Test Result Summary:

Test Item	Unit	Test Method	Result			RL
			(1)	(2)	(3)	
Heavy Metal						
Cadmium (Cd) content	ppm	With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.	ND	ND	ND	2
Lead (Pb) content	ppm	With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.	ND	ND	ND	2
Mercury (Hg) content	ppm	With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.	ND	ND	ND	2
Antimony (Sb) Content	ppm	With reference to USEPA 3052, by microwave digestion and determined by ICP-OES.	ND	--	--	2
Chromium VI (Cr^{6+}) content	ppm	With reference to IEC 62321: 2008, by alkaline digestion and determined by UV-Vis Spectrophotometer.	ND	--	--	1
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	Negative	0.02

Intertek Testing Services Taiwan Ltd.
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

Intertek

Test Report

Number : TWNC00316621

Test Conducted

Test Item	Unit	Test Method	Result			RL
			(1)	(2)	(3)	
Polybrominated Biphenyls (PBBs)						
Monobrominated Biphenyls (MonoBB)	ppm	With reference to IEC 62321: 2008, by solvent extraction and determined by GC-MS and further HPLC-DAD confirmation when necessary.	ND	--	--	5
Dibrominated Biphenyls (DiBB)	ppm		ND	--	--	5
Tribrominated Biphenyls (TriBB)	ppm		ND	--	--	5
Tetrabrominated Biphenyls (TetraBB)	ppm		ND	--	--	5
Pentabrominated Biphenyls (PentaBB)	ppm		ND	--	--	5
Hexabrominated Biphenyls (HexaBB)	ppm		ND	--	--	5
Heptabrominated Biphenyls (HeptaBB)	ppm		ND	--	--	5
Octabrominated Biphenyls (OctaBB)	ppm		ND	--	--	5
Nonabrominated Biphenyls (NonaBB)	ppm		ND	--	--	5
Decabrominated Biphenyl (DecaBB)	ppm		ND	--	--	5

Intertek Testing Services Taiwan Ltd.
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

Intertek

Test Report

Number : TWNC00316621

Test Conducted

Test Item	Unit	Test Method	Result			RL
			(1)	(2)	(3)	
Polybrominated Diphenyl Ethers (PBDEs)						
Monobrominated Diphenyl Ethers (MonoBDE)	ppm	With reference to IEC 62321: 2008, by solvent extraction and determined by GC-MS and further HPLC-DAD confirmation when necessary.	ND	--	--	5
Dibrominated Diphenyl Ethers (DiBDE)	ppm		ND	--	--	5
Tribrominated Diphenyl Ethers (TriBDE)	ppm		ND	--	--	5
Tetrabrominated Diphenyl Ethers (TetraBDE)	ppm		ND	--	--	5
Pentabrominated Diphenyl Ethers (PentaBDE)	ppm		ND	--	--	5
Hexabrominated Diphenyl Ethers (HexaBDE)	ppm		ND	--	--	5
Heptabrominated Diphenyl Ethers (HeptaBDE)	ppm		ND	--	--	5
Octabrominated Diphenyl Ethers (OctaBDE)	ppm		ND	--	--	5
Nonabrominated Diphenyl Ethers (NonaBDE)	ppm		ND	--	--	5
Decabrominated Diphenyl Ether (DecaBDE)	ppm		ND	--	--	5
Halogen Content						
Fluorine (F)	ppm	With reference to EN 14582:2007 by calorimetric bomb with oxygen and determined by Ion Chromatograph.	ND	--	--	50
Chlorine (Cl)	ppm		ND	--	--	50
Bromine (Br)	ppm		ND	--	--	50
Iodine (I)	ppm		ND	--	--	50
Phthalates						
Di(2-ethylhexyl) Phthalate (DEHP)	ppm	With reference to EN 14372: 2004, by solvent extraction and determined by GC-MS.	ND	--	--	50
Dibutyl Phthalate (DBP)	ppm		ND	--	--	50
Benzyl Butyl Phthalate (BBP)	ppm		ND	--	--	50
Diisobutyl phthalate (DIBP)	ppm		ND	--	--	50
Others						
Hexabromocyclododecane (HBCDD)	ppm	With reference to USEPA 3540C, by solvent extraction and determined by GC-MS.	ND	--	--	10

Intertek Testing Services Taiwan Ltd.
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

Intertek

Test Report

Number : TWNC00316621

Test Conducted

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.

Responsibility of Chemist: Kevin Liu/ Irene Chiou/ Vico Lin

Date Sample Received : Jun 05, 2013
Test Period : Jun 06, 2013 to Jun 13, 2013

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

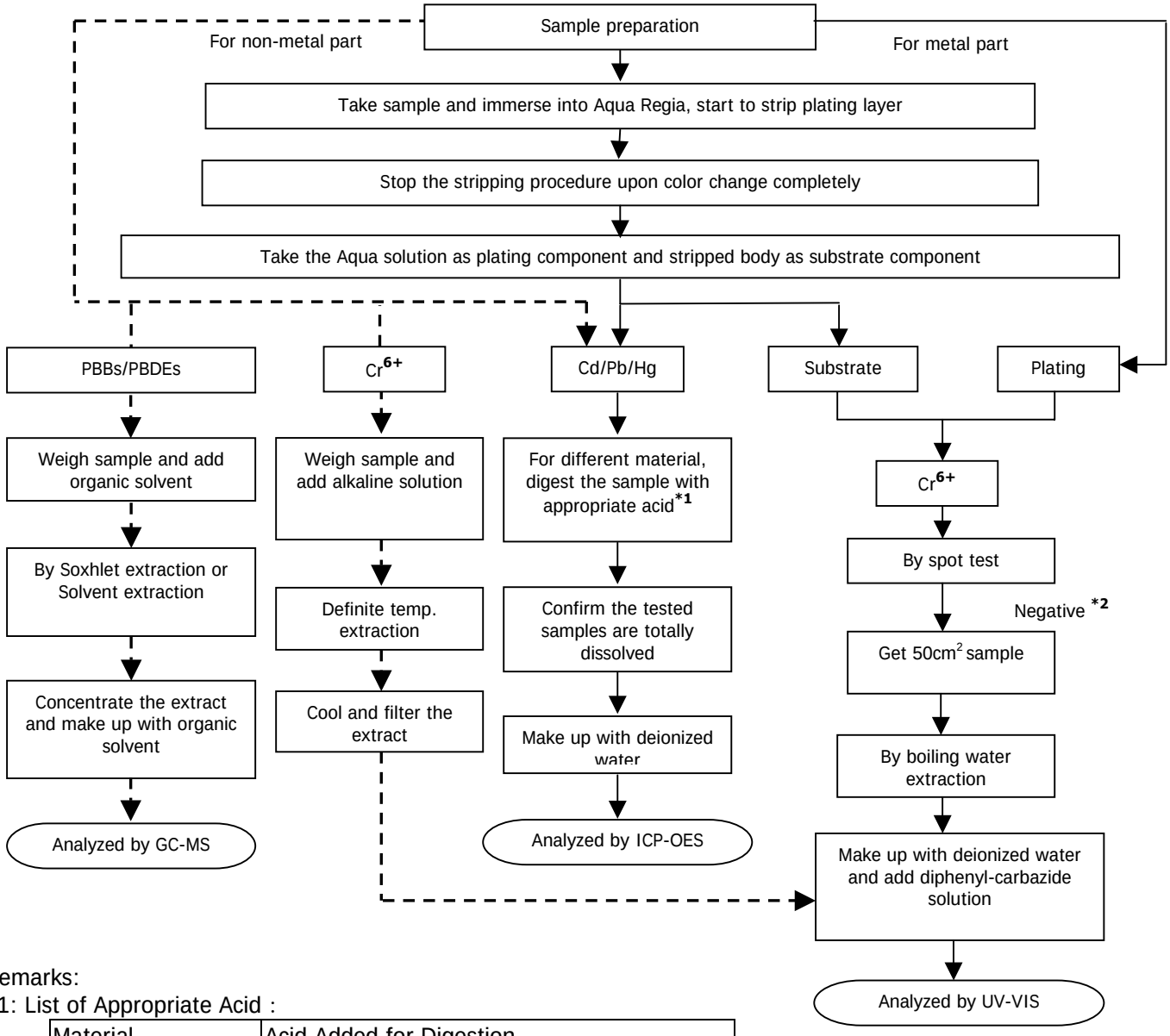
The above limits were quoted from Annex II of 2011/65/EU for homogeneous material.

Intertek Testing Services Taiwan Ltd.
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

Test Report

Number : TWNC00316621

Test Conducted
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,$H2O_2$,$H3BO_3$
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.

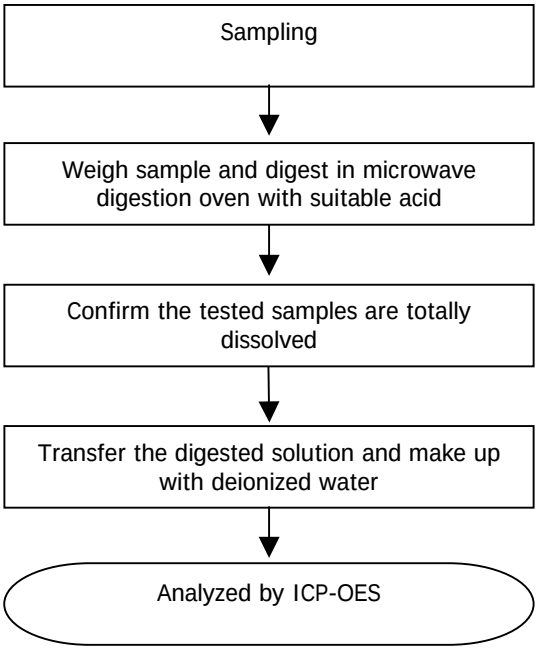
Intertek Testing Services Taiwan Ltd.
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

Test Report

Number : TWNC00316621

Test Conducted
Measurement Flowchart:

Test for Heavy Metal (Sb) Contents
Reference Method：USEPA 3052



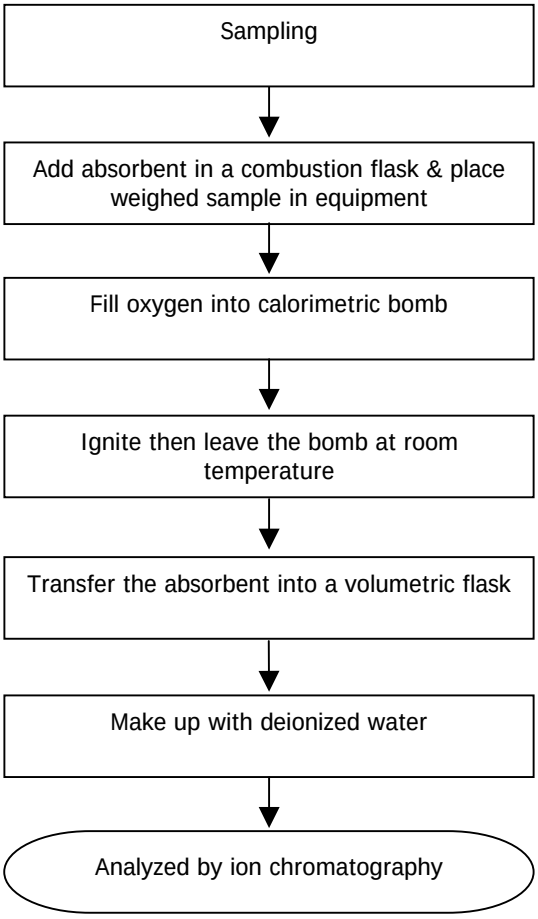
Intertek Testing Services Taiwan Ltd.
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

Test Report

Number : TWNC00316621

Test Conducted
Measurement Flowchart:

Test for Halogen Content
Reference Method：EN 14582



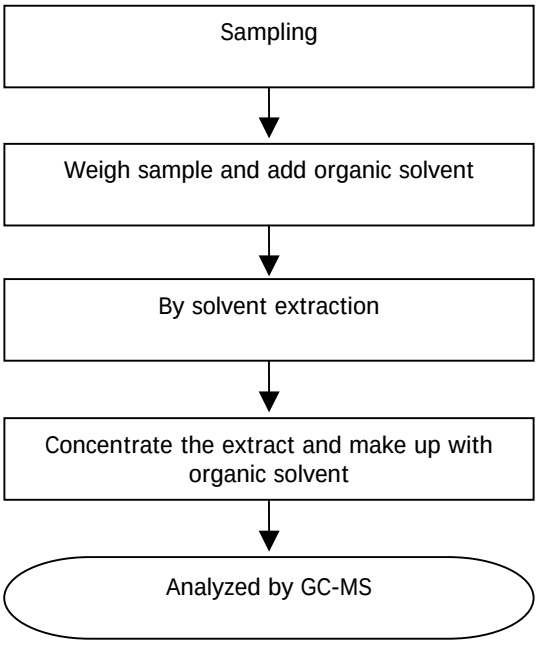
Intertek Testing Services Taiwan Ltd.
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888，2797-8885 Fax: (+886-2) 6602-2410

Test Report

Number : TWNC00316621

Test Conducted
Measurement Flowchart:

Test for Phthalates Contents
Reference Method: EN 14372: 2004



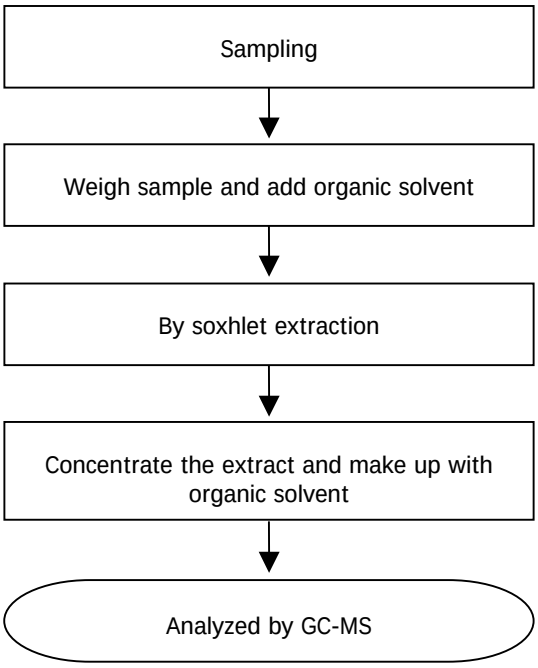
Intertek Testing Services Taiwan Ltd.
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

Test Report

Number : TWNC00316621

Test Conducted
Measurement Flowchart:

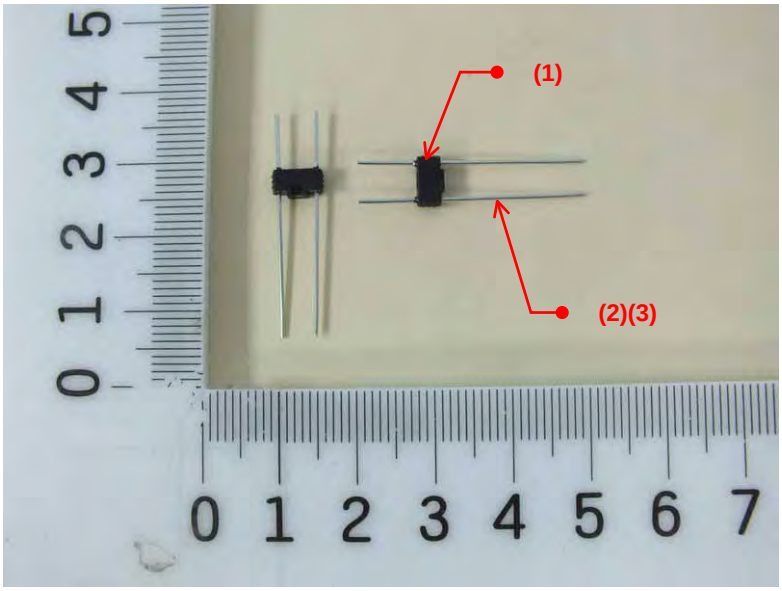
Test for Hexabromocyclododecane (HBCDD)
Reference Method：USEPA 3540C



Intertek Testing Services Taiwan Ltd.
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888，2797-8885 Fax: (+886-2) 6602-2410

Test Report

Number : TWNC00316621



End of Report

Intertek Testing Services Taiwan Ltd.
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

Test Report

Number : TWNC00330777
Date : Sep 12, 2013

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

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

Part Description	:	Yarn
Part Number	:	648118_648119_648120(6481xxx_GLZZxxx)
Date Sample Received	:	Sep 06, 2013
Date Test Started	:	Sep 06, 2013

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 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

Intertek

Test Report

Number: TWNC00330777

Test Conducted

Test Result Summary:

Test Item	Unit	Test Method	Result	RL
			White yarn	
Heavy Metal				
Cadmium (Cd) content	ppm	With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.	ND	2
Lead (Pb) content	ppm	With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.	ND	2
Mercury (Hg) content	ppm	With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.	ND	2
Antimony (Sb) Content	ppm	With reference to USEPA 3052, by microwave digestion and determined by ICP-OES.	ND	2
Chromium VI (Cr^{6+}) content	ppm	With reference to IEC 62321: 2008, by alkaline digestion and determined by UV-Vis Spectrophotometer.	ND	1
Polybrominated Biphenyls (PBBs)				
Monobrominated Biphenyls (MonoBB)	ppm	With reference to IEC 62321: 2008, by solvent extraction and determined by GC-MS and further HPLC-DAD confirmation when necessary.	ND	5
Dibrominated Biphenyls (DiBB)	ppm		ND	5
Tribrominated Biphenyls (TriBB)	ppm		ND	5
Tetrabrominated Biphenyls (TetraBB)	ppm		ND	5
Pentabrominated Biphenyls (PentaBB)	ppm		ND	5
Hexabrominated Biphenyls (HexaBB)	ppm		ND	5
Heptabrominated Biphenyls (HeptaBB)	ppm		ND	5
Octabrominated Biphenyls (OctaBB)	ppm		ND	5
Nonabrominated Biphenyls (NonaBB)	ppm		ND	5
Decabrominated Biphenyl (DecaBB)	ppm		ND	5

Intertek Testing Services Taiwan Ltd.
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

Intertek

Test Report

Number: TWNC00330777

Test Conducted

Test Item	Unit	Test Method	Result	RL
			White yarn	
Polybrominated Diphenyl Ethers (PBDEs)				
Monobrominated Diphenyl Ethers (MonoBDE)	ppm	With reference to IEC 62321: 2008, by solvent extraction and determined by GC-MS and further HPLC-DAD confirmation when necessary.	ND	5
Dibrominated Diphenyl Ethers (DiBDE)	ppm		ND	5
Tribrominated Diphenyl Ethers (TriBDE)	ppm		ND	5
Tetrabrominated Diphenyl Ethers (TetraBDE)	ppm		ND	5
Pentabrominated Diphenyl Ethers (PentaBDE)	ppm		ND	5
Hexabrominated Diphenyl Ethers (HexaBDE)	ppm		ND	5
Heptabrominated Diphenyl Ethers (HeptaBDE)	ppm		ND	5
Octabrominated Diphenyl Ethers (OctaBDE)	ppm		ND	5
Nonabrominated Diphenyl Ethers (NonaBDE)	ppm		ND	5
Decabrominated Diphenyl Ether (DecaBDE)	ppm		ND	5
Halogen Content				
Fluorine (F)	ppm	With reference to EN 14582:2007 by combustion bomb with oxygen and determined by Ion Chromatography.	ND	50
Chlorine (Cl)	ppm		ND	50
Bromine (Br)	ppm		ND	50
Iodine (I)	ppm		ND	50
Phthalates				
Di(2-ethylhexyl) Phthalate (DEHP)	ppm	With reference to EN 14372: 2004, by solvent extraction and determined by GC-MS.	ND	10
Dibutyl Phthalate (DBP)	ppm		ND	10
Benzyl Butyl Phthalate (BBP)	ppm		ND	10
Diisobutyl phthalate (DIBP)	ppm		ND	10
Others				
Hexabromocyclododecane (HBCDD)	ppm	With reference to USEPA 3540C, by solvent extraction and determined by GC-MS.	ND	10

Intertek Testing Services Taiwan Ltd.
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

Intertek

Test Report

Number: TWNC00330777

Test Conducted

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

Responsibility of Chemist: Kevin Liu/ Irene Chiou/ Vico Lin

Date Sample Received : Sep 06, 2013
Test Period : Sep 06, 2013 to Sep 10, 2013

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

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

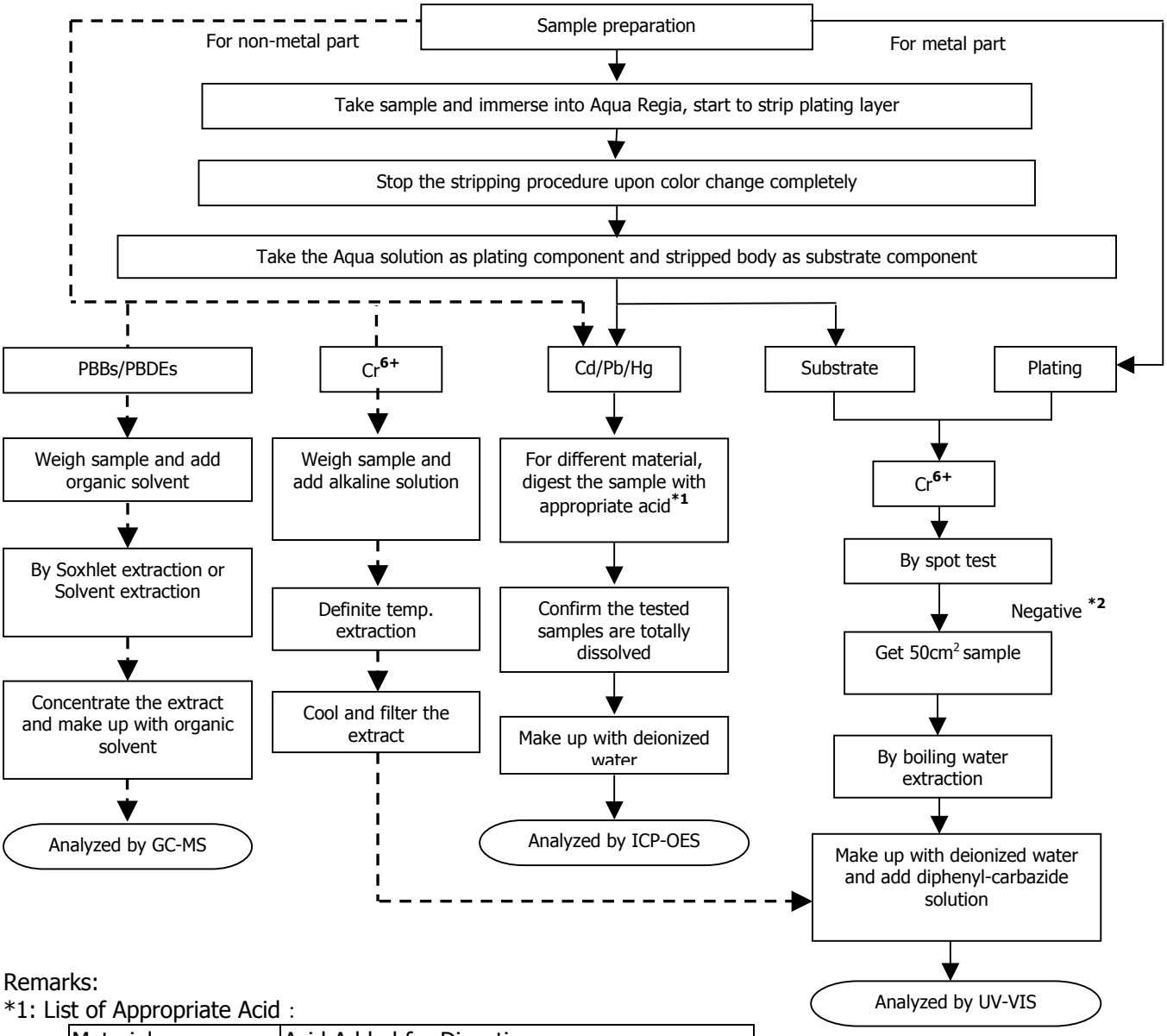
Intertek Testing Services Taiwan Ltd.
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

Test Report

Number: TWNC00330777

Test Conducted
Measurement Flowchart:

Test for Cd/Pb/Hg/Chromium (VI)/PBBs/PBDEs Contents
Reference Method: 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.

Intertek Testing Services Taiwan Ltd.
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

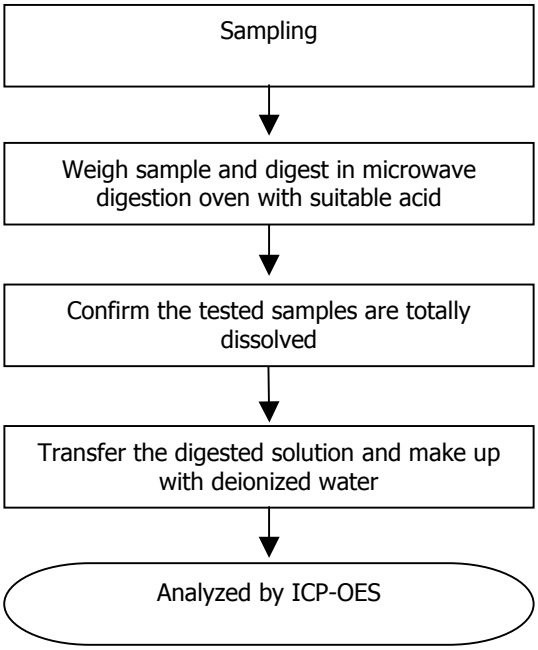
Test Report

Number: TWNC00330777

Test Conducted

Measurement Flowchart:

Test for Heavy Metal (Sb) Contents
Reference Method：USEPA 3052



Intertek Testing Services Taiwan Ltd.
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

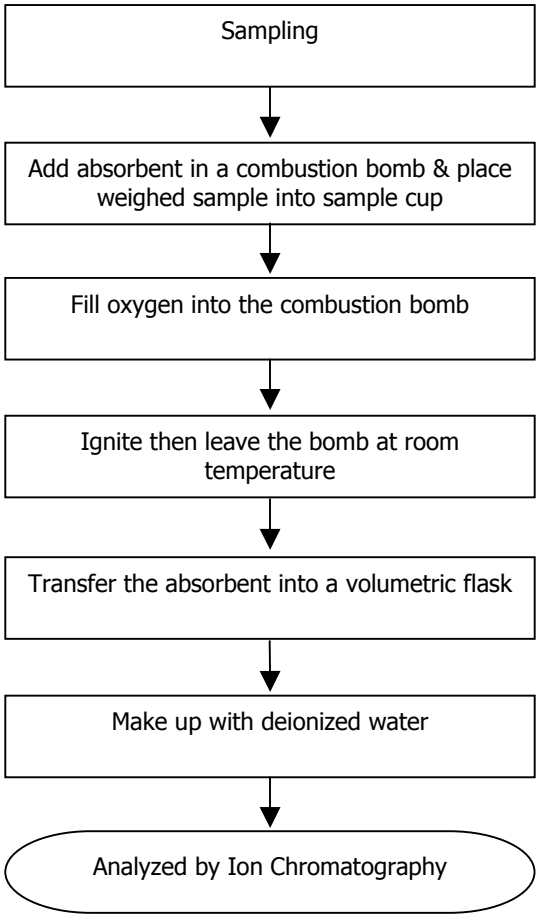
Test Report

Number: TWNC00330777

Test Conducted

Measurement Flowchart:

Test for Halogen Contents
Reference Method：EN 14582



Intertek Testing Services Taiwan Ltd.
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

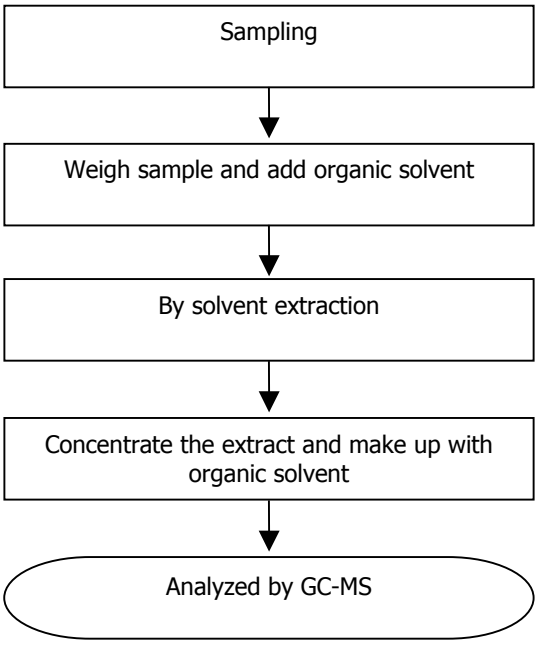
Test Report

Number: TWNC00330777

Test Conducted

Measurement Flowchart:

Test for Phthalates Contents
Reference Method: EN 14372: 2004



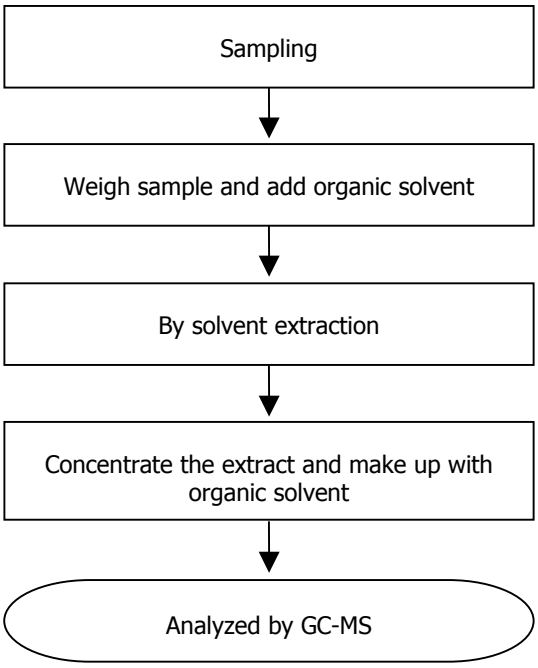
Intertek Testing Services Taiwan Ltd.
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

Test Report

Number: TWNC00330777

Test Conducted
Measurement Flowchart:

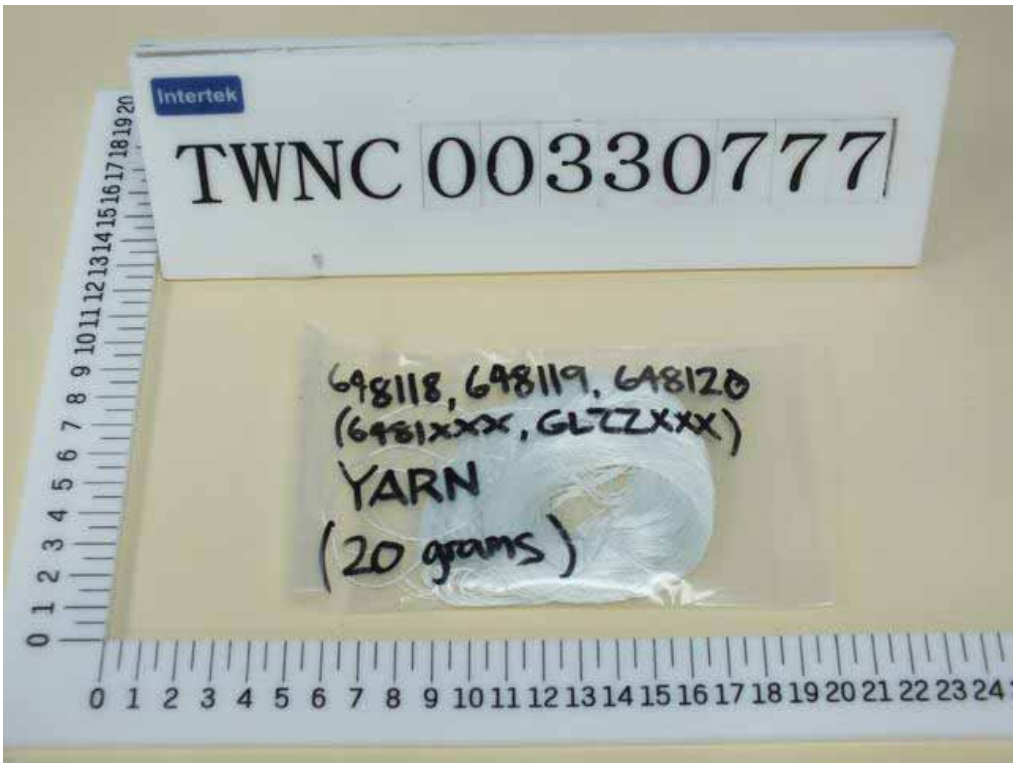
Test for Hexabromocyclododecane (HBCDD) Content
Reference Method：USEPA 3540C



Intertek Testing Services Taiwan Ltd.
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

Test Report

Number: TWNC00330777



End of Report

Intertek Testing Services Taiwan Ltd.
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

Test Report

Number : TWNC00330791
Date : Sep 12, 2013

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

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

Part Description	:	Ceramic Paper
Part Number	:	009116
Date Sample Received	:	Sep 06, 2013
Date Test Started	:	Sep 09, 2013

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 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

Intertek

Test Report

Number: TWNC00330791

Test Conducted

Test Result Summary:

Test Item	Unit	Test Method	Result	RL
			White ceramic	
Heavy Metal				
Cadmium (Cd) content	ppm	With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.	ND	2
Lead (Pb) content	ppm	With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.	ND	2
Mercury (Hg) content	ppm	With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.	ND	2
Chromium VI (Cr^{6+}) content	ppm	With reference to IEC 62321: 2008, by alkaline digestion and determined by UV-Vis Spectrophotometer.	ND	1
Polybrominated Biphenyls (PBBs)				
Monobrominated Biphenyls (MonoBB)	ppm	With reference to IEC 62321: 2008, by solvent extraction and determined by GC-MS and further HPLC-DAD confirmation when necessary.	ND	5
Dibrominated Biphenyls (DiBB)	ppm		ND	5
Tribrominated Biphenyls (TriBB)	ppm		ND	5
Tetrabrominated Biphenyls (TetraBB)	ppm		ND	5
Pentabrominated Biphenyls (PentaBB)	ppm		ND	5
Hexabrominated Biphenyls (HexaBB)	ppm		ND	5
Heptabrominated Biphenyls (HeptaBB)	ppm		ND	5
Octabrominated Biphenyls (OctaBB)	ppm		ND	5
Nonabrominated Biphenyls (NonaBB)	ppm		ND	5
Decabrominated Biphenyl (DecaBB)	ppm		ND	5

Intertek Testing Services Taiwan Ltd.
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

Intertek

Test Report

Number: TWNC00330791

Test Conducted

Test Item	Unit	Test Method	Result	RL
			White ceramic	
Polybrominated Diphenyl Ethers (PBDEs)				
Monobrominated Diphenyl Ethers (MonoBDE)	ppm	With reference to IEC 62321: 2008, by solvent extraction and determined by GC-MS and further HPLC-DAD confirmation when necessary.	ND	5
Dibrominated Diphenyl Ethers (DiBDE)	ppm		ND	5
Tribrominated Diphenyl Ethers (TriBDE)	ppm		ND	5
Tetrabrominated Diphenyl Ethers (TetraBDE)	ppm		ND	5
Pentabrominated Diphenyl Ethers (PentaBDE)	ppm		ND	5
Hexabrominated Diphenyl Ethers (HexaBDE)	ppm		ND	5
Heptabrominated Diphenyl Ethers (HeptaBDE)	ppm		ND	5
Octabrominated Diphenyl Ethers (OctaBDE)	ppm		ND	5
Nonabrominated Diphenyl Ethers (NonaBDE)	ppm		ND	5
Decabrominated Diphenyl Ether (DecaBDE)	ppm		ND	5
Halogen Content				
Fluorine (F)	ppm	With reference to EN 14582:2007 by calorimetric bomb with oxygen and determined by Ion Chromatograph.	ND	50
Chlorine (Cl)	ppm		90	50
Bromine (Br)	ppm		ND	50
Iodine (I)	ppm		ND	50

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

Responsibility of Chemist: Kevin Liu/ Irene Chiou/ Vico Lin

Date Sample Received : Sep 06,2013
Test Period : Sep 09,2013 to Sep 12,2013

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

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

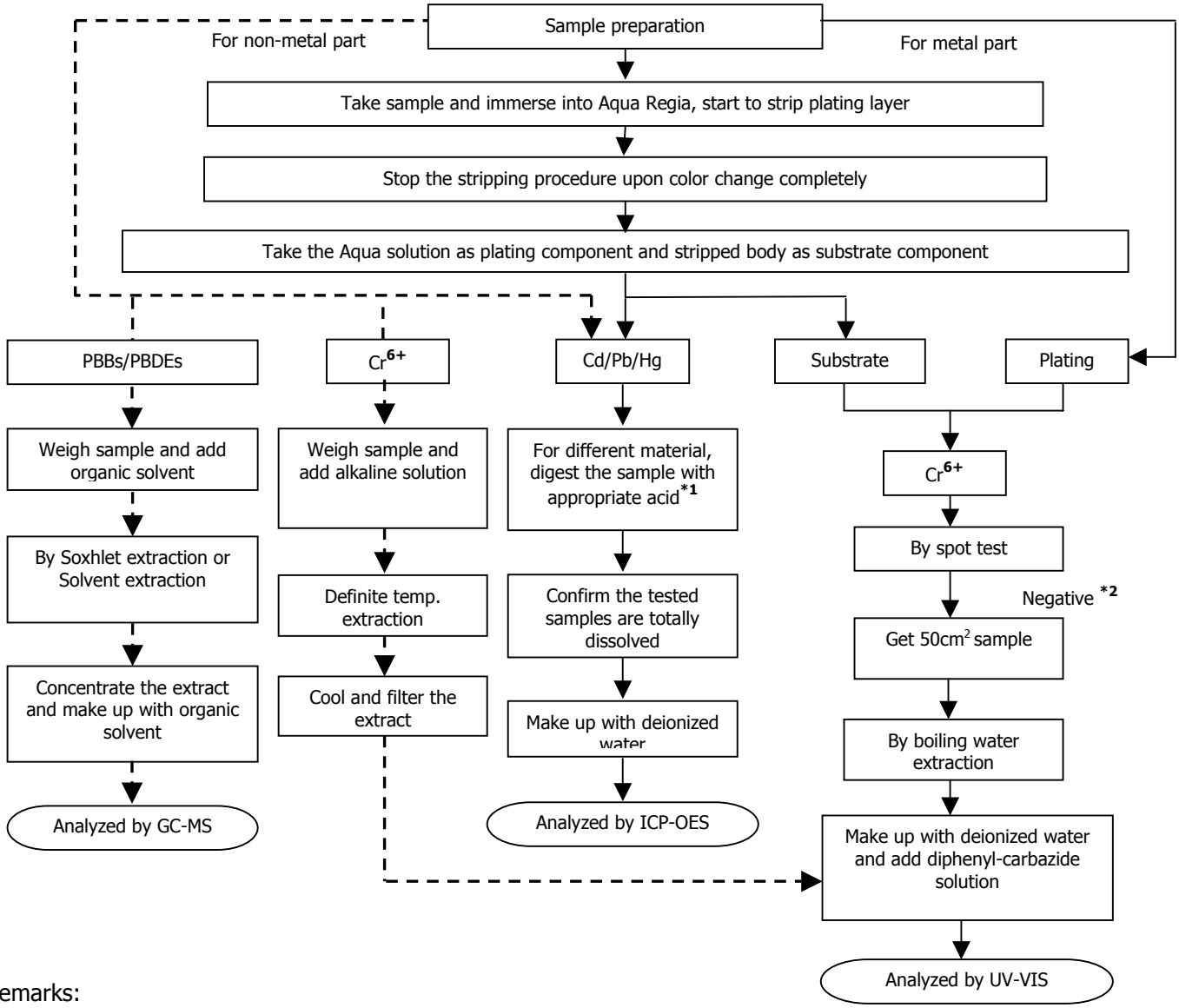
Intertek Testing Services Taiwan Ltd.
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

Test Report

Number: TWNC00330791

Test Conducted

Measurement Flowchart:
Test for Cd/Pb/Hg/Chromium (VI)/PBBs/PBDEs Contents
Reference Method: 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.

Intertek Testing Services Taiwan Ltd.
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

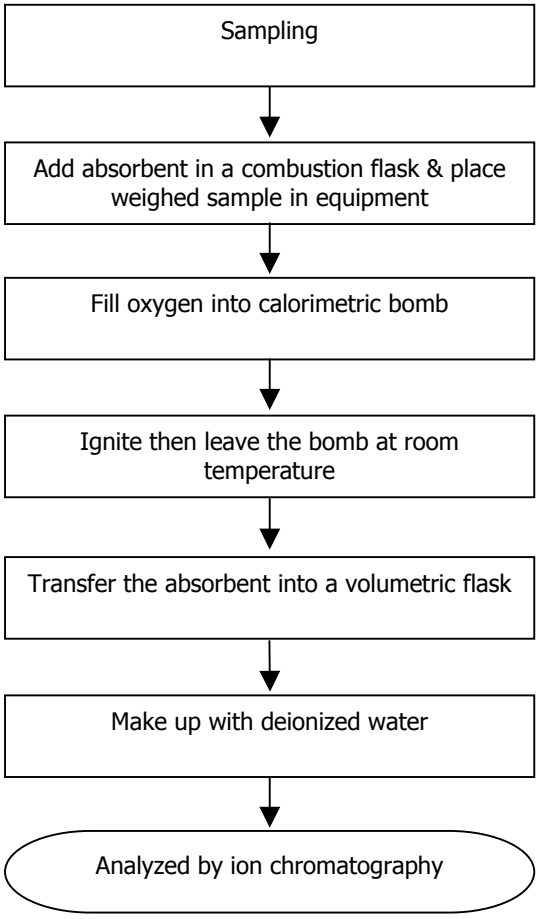
Test Report

Number: TWNC00330791

Test Conducted

Measurement Flowchart:

Test for Halogen Contents
Reference Method：EN 14582



Intertek Testing Services Taiwan Ltd.
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

Test Report

Number: TWNC00330791

End of Report

Intertek Testing Services Taiwan Ltd.
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

Intertek

Number: TWNC00330791

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;

Intertek Testing Services Taiwan Ltd.
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

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.

Intertek Testing Services Taiwan Ltd.
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410