



ICP Test Report Certification Packet

Company name: Littelfuse, Inc.

Product Series: H400, R 400, J 400A

Product #: LFH25400, LFH60400, LFJ60400, LFR25400, LFR60400, LFJ10400

Issue Date: January 25, 2012

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

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 H,R, J 400A 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 identified 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	N/A	Base – Phenolic FR4	3-11
2	N/A	Aluminum – Lug/ Block	12-16
3	N/A	Aluminum – Connection Screw	12-16
4	N/A	65 Mn – Spring Washer	17-21
5	N/A	T3 Copper Alloy – Clip	22-26
6	N/A	Brass – Wiring Pin	27-30
7	N/A	Steel – Installation Screw base/ Reinforcing Clip	31-35
8	N/A	Epoxy resin	36-43
9	N/A	Tin plating	44-47
10	N/A	Zinc plating	48-51



Test Report

Number : TWNC00231763

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

Date : Nov 14, 2011

Sample Description:

One (1) group of submitted samples said to be :
Part Description : Phenolic Board FR-4
Date Sample Received : Nov 08, 2011
Date Test Started : Nov 08, 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 : TWNC00231763

Test Conducted

(I) Test Result Summary :

Test Item	Result (ppm)
	Black/Gray Material
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)	700
Chlorine (Cl)	302
Bromine (Br)	42321
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 08, 2011

Test Period : Nov 08, 2011 To Nov 11, 2011

Test Conducted

(II) RoHS Requirement:

<u>Restricted Substances</u>	<u>Limits</u>
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:

<u>Test Item</u>	<u>Test Method</u>	<u>Reporting Limit</u>
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



Number : TWNC00231763

Test Conducted

(III) Test Method:

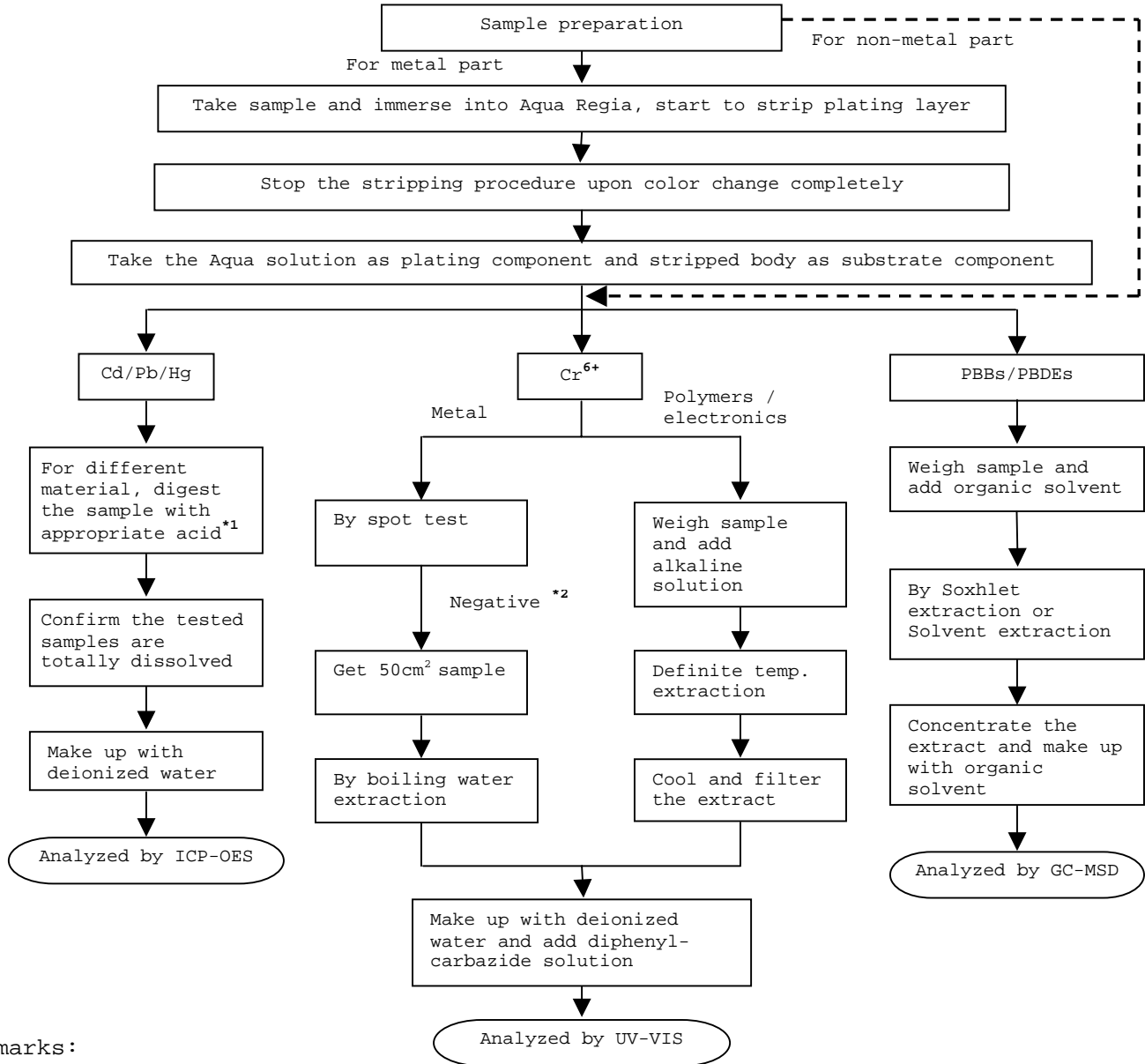
<u>Test Item</u>	<u>Test Method</u>	<u>Reporting Limit</u>
Polybrominated Diphenyl Ethers (PBDEs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm
Halogen Content	With reference to EN 14582:2007 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

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:

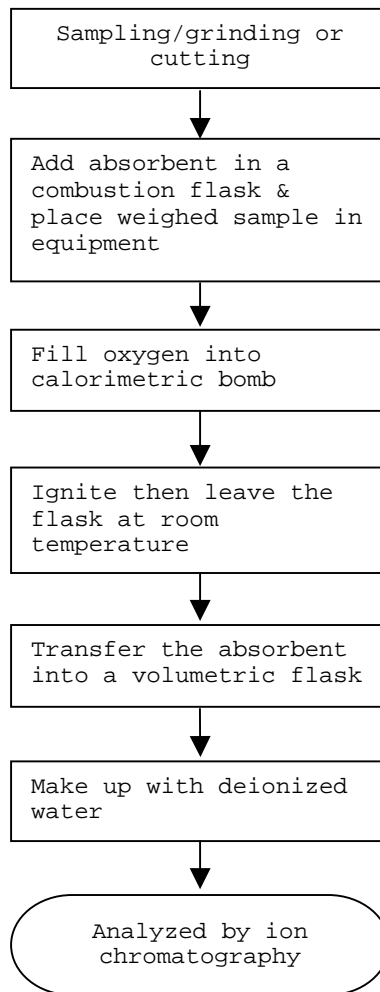
Material	Acid Added for Digestion
Polymers	HNO ₃ , HCl, HF, H ₂ O ₂ , H ₃ BO ₃
Metals	HNO ₃ , HCl, HF
Electronics	HNO ₃ , HCl, H ₂ O ₂ , HBF ₄

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

Test Conducted

(IV) Measurement Flowchart:

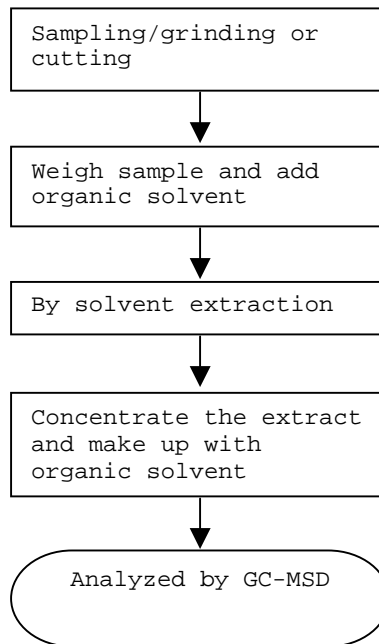
Test for Halogen Content
Reference Standard: EN 14582



Test Conducted

(IV) Measurement Flowchart:

Test For Phthalates Contents
Reference Method: EN 14372: 2004

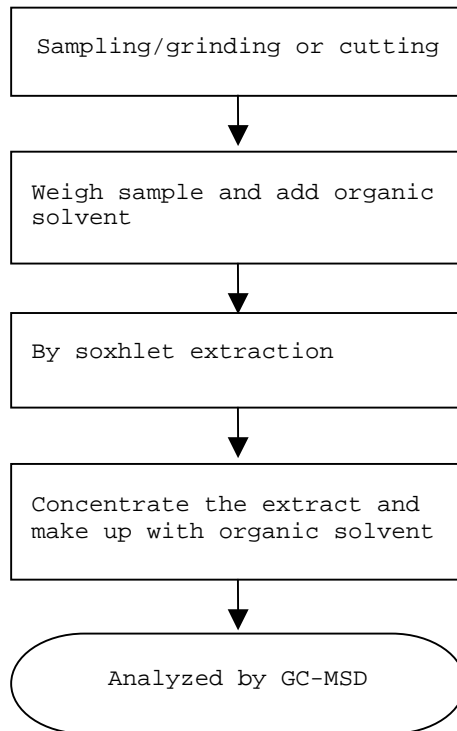


Test Conducted

(IV) Measurement Flowchart:

Test For Hexabromocyclododecane (HBCDD)

Reference Standard : USEPA 3540C



End of Report

Test Conducted

Photo





Test Report

Number : TWNC00216857

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

Date : Jul 25, 2011

Sample Description:

One (1) group of submitted samples said to be :
Part Description : Aluminum Material
Date Sample Received : Jul 19, 2011
Date Test Started : Jul 19, 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 : TWNC00216857

Test Conducted

(I) Test Result Summary :

<u>Test Item</u>	<u>Result (ppm)</u>
	<u>Silvery Metal</u>
Heavy Metal	
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)

Remarks: ppm = Parts per million based on weight of tested sample = mg/kg
ND = Not detected
< = Less than
mg/kg with 50cm² = 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 : Jul 19, 2011
Test Period : Jul 19, 2011 To Jul 25, 2011

(II) RoHS Requirement:

<u>Restricted Substances</u>	<u>Limits</u>
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.



Number : TWNC00216857

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

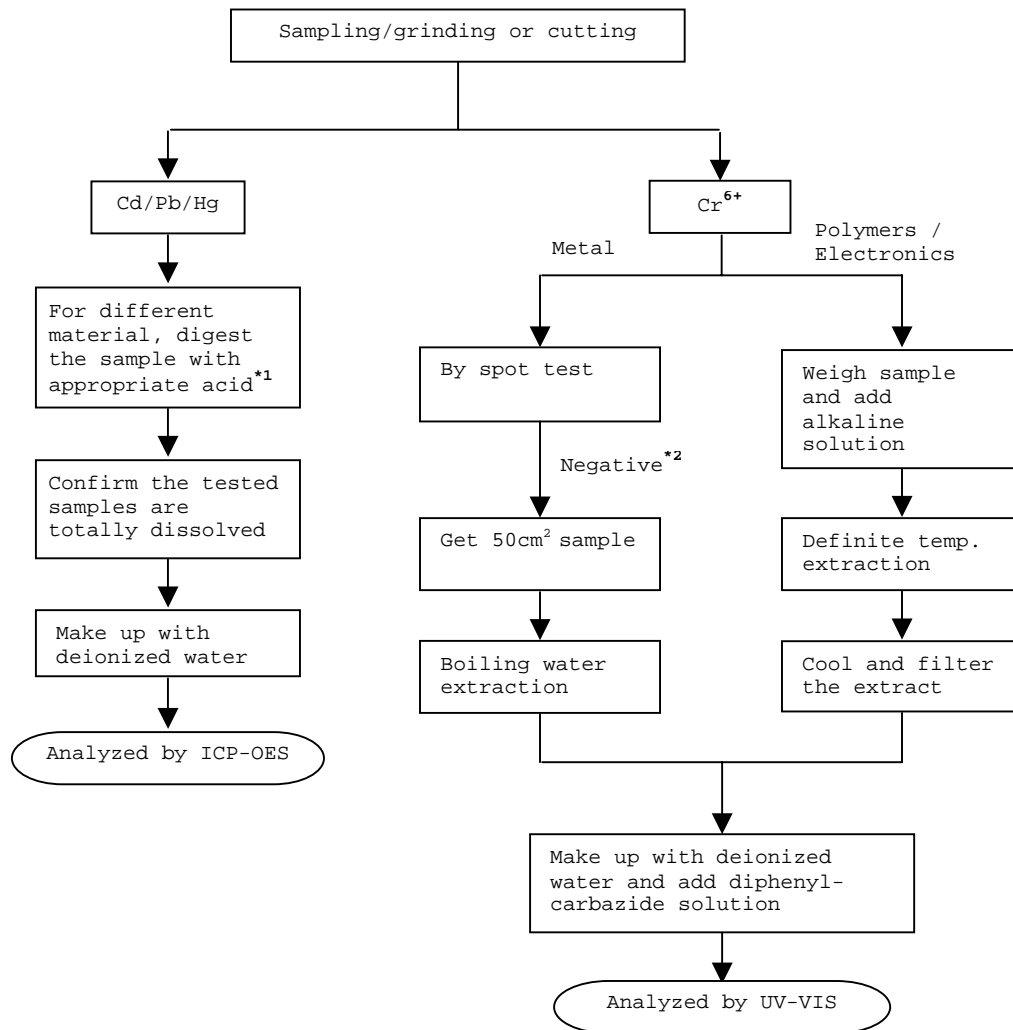
Remark: Reporting limit = Quantitation limit of analyte in sample

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 ₂ O ₂ , H ₃ BO ₃
Metals	HNO ₃ , HCl, HF
Electronics	HNO ₃ , HCl, H ₂ O ₂ , HBF ₄

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

End of Report

Test Conducted

Photo





Test Report

Number : TWNC00238069

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

Date : Dec 27, 2011

Sample Description:

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

Part Description : Metal
Part Number : 65Mn
Date Sample Received : Dec 22, 2011
Date Test Started : Dec 23, 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 : TWNC00238069

Test Conducted

(I) Test Result Summary :

<u>Test Item</u>	<u>Result (ppm)</u>	
	<u>(1)</u>	<u>(2)</u>
Heavy Metal		
Cadmium (Cd) content	ND	ND
Lead (Pb) content	ND	ND
Mercury (Hg) content	ND	ND
Chromium VI (Cr ⁶⁺) content (mg/kg with 50cm ²)	Negative (< 0.02)	Negative (< 0.02)

Remarks: ppm = Parts per million based on weight of tested sample = mg/kg
 ND = Not detected
 < = Less than
 mg/kg with 50cm² = milligram per kilogram with 50 square centimetre
 Negative = A negative test result indicated positive observation was not found at the time of Test.

Tested Components

- (1) Silvery Metal Base Material
- (2) Silvery Plating Layer

Responsibility of Chemist : Irene Chiou / Kevin Liu

Date Sample Received : Dec 22, 2011

Test Period : Dec 23, 2011 To Dec 26, 2011

(II) RoHS Requirement:

<u>Restricted Substances</u>	<u>Limits</u>
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.



Number : TWNC00238069

Test Conducted

(III) Test Method:

<u>Test Item</u>	<u>Test Method</u>	<u>Reporting Limit</u>
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

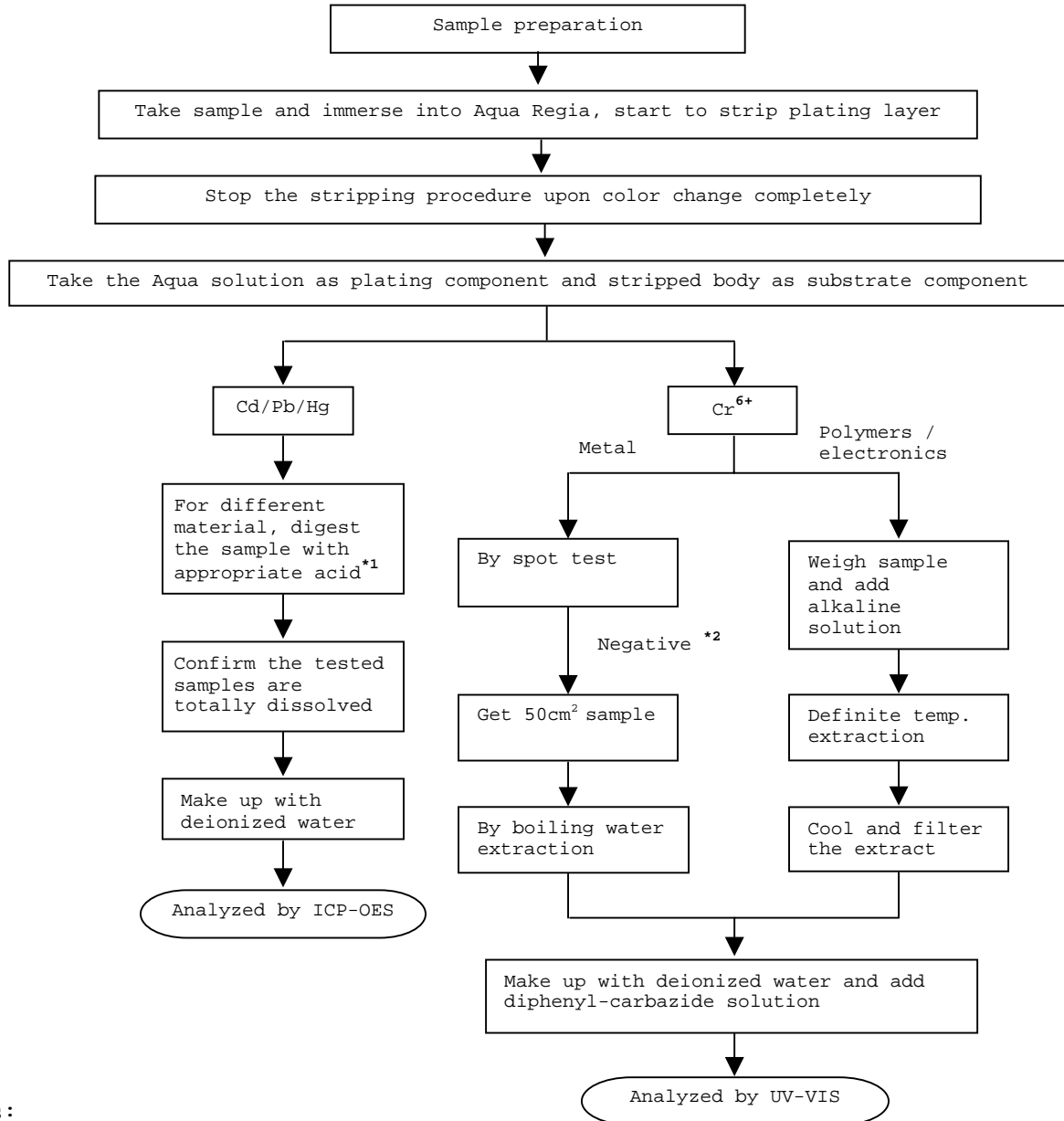
Remark: Reporting limit = Quantitation limit of analyte in sample

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 ₂ O ₂ , H ₃ BO ₃
Metals	HNO ₃ , HCl, HF
Electronics	HNO ₃ , HCl, H ₂ O ₂ , HBF ₄

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

End of Report

Test Conducted

Photo





Test Report

Number : TWNC00216856

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

Date : Jul 25, 2011

Sample Description:

One (1) group of submitted samples said to be :
Part Description : Copper Alloy
Date Sample Received : Jul 19, 2011
Date Test Started : Jul 20, 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 : TWNC00216856

Test Conducted

(I) Test Result Summary :

<u>Test Item</u>	<u>Result (ppm)</u>
	<u>Coppery Metal</u>
Heavy Metal	
Cadmium (Cd) content	ND
Lead (Pb) content	46
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 50cm² = 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 10 cm² was used and the dilution factor was adjusted accordingly.

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

Date Sample Received : Jul 19, 2011

Test Period : Jul 20, 2011 To Jul 25, 2011

(II) RoHS Requirement:

<u>Restricted Substances</u>	<u>Limits</u>
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.

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

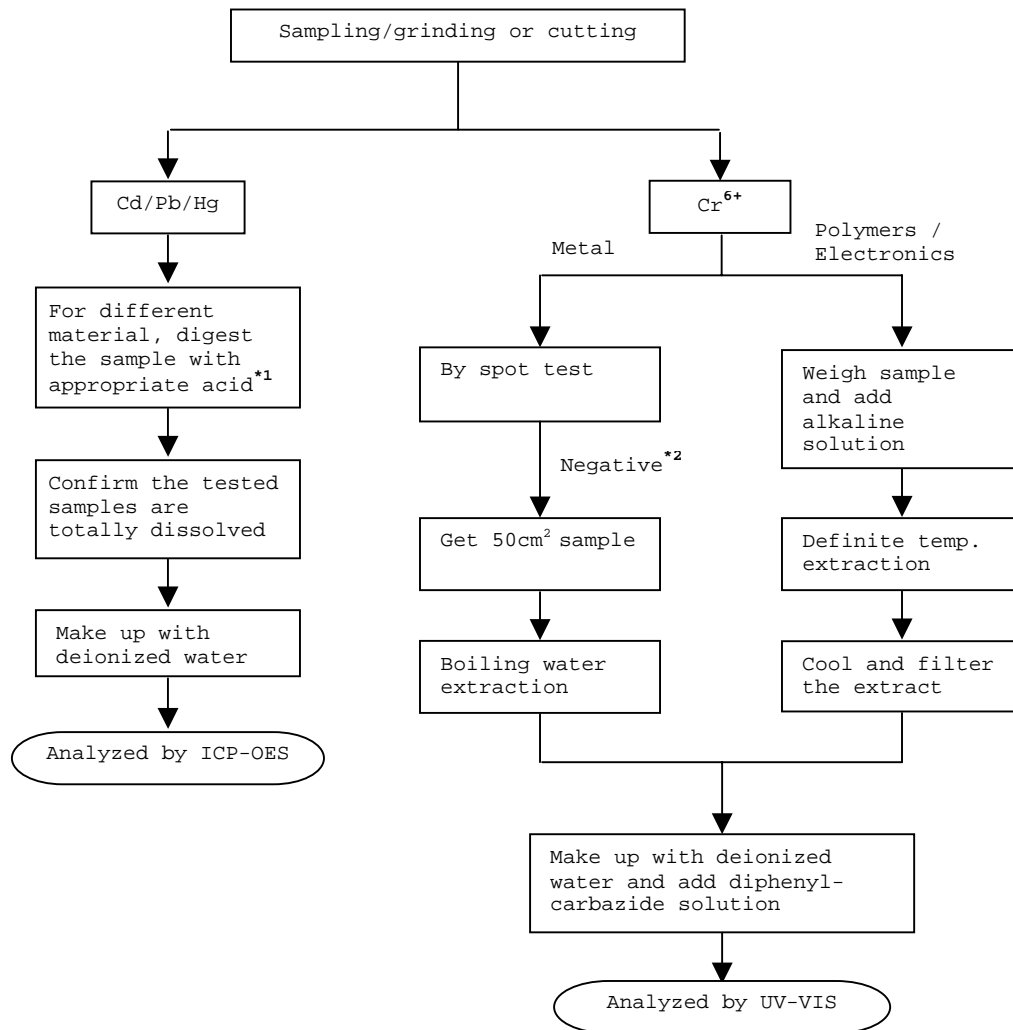
Remark: Reporting limit = Quantitation limit of analyte in sample

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 ₂ O ₂ , H ₃ BO ₃
Metals	HNO ₃ , HCl, HF
Electronics	HNO ₃ , HCl, H ₂ O ₂ , HBF ₄

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

End of Report

Test Conducted

Photo





测试报告

No. CANEC1100471604

日期: 2011年02月28日 第1页, 共4页

东莞市携辉电子有限公司
中国东莞市长安镇上沙华丽路43号

以下测试之样品是由申请者所提供及确认:

H65铜带

SGS工作编号 : 12976489 - GZ
客户参考信息 : 材料成分: 铜, 锌

SGS内部编号 : 2.2
样品接收日期 : 2011年02月22日
测试周期 : 2011年02月22日 - 2011年02月26日

测试要求 : 根据客户要求测试

测试方法 : 请参见下一页

测试结果 : 请参见下一页

结论 : 基于所送样品进行的测试, 测试结果与欧盟RoHS指令2002/95/EC以及后续修正指令的要求相符。

通标准技术服务有限公司
授权签名

Trophy Zhang张浩华
高级工程师

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测试报告

No. CANEC1100471604

日期: 2011年02月28日 第2页,共4页

测试结果:

样品1 ID : CAN11-004716.001
 样品1描述 : 黄铜色金属带

RoHS 指令 2002/95/EC

测试项目	单位	测试方法 (参考)	测试结果	MDL	限值
镉 (Cd)	mg/kg	IEC 62321:2008, ICP-OES	N.D.	2	100
铅 (Pb)	mg/kg	IEC 62321:2008, ICP-OES	31	2	1000
汞 (Hg)	mg/kg	IEC 62321:2008, ICP-OES	N.D.	2	1000
沸水萃取法测六价铬 (CrVI)	-	IEC 62321:2008, UV-Vis	Negative	0	#

注释:

1. mg/kg = ppm
2. N.D. = 未检出 (< MDL)
3. MDL = 方法检测限
4. 0 = 点测试:

Negative = 未检测到六价铬, Positive = 检测到;
 (如果点测试结果为Negative或不能确认, 测试样品需进一步由沸水萃取法进行测试。)

沸水萃取法:

Negative = 未检测到六价铬
 Positive = 检测到六价铬; 每50cm²表面积的被测试样品的沸水萃取液中六价铬的浓度等于或大于0.02mg/kg。

由于未获知样品的存储条件和生产日期, 样品的六价铬测试结果仅能代表测试时样品含六价铬的状态。

5. # = Positive = 阳性
 Negative = 阴性
6. "-" = 未规定

备注:本测试报告内容是参照报告编号为CANEC1100471603 的中文译本, 中英文版本如有歧异, 概以英文版为准。

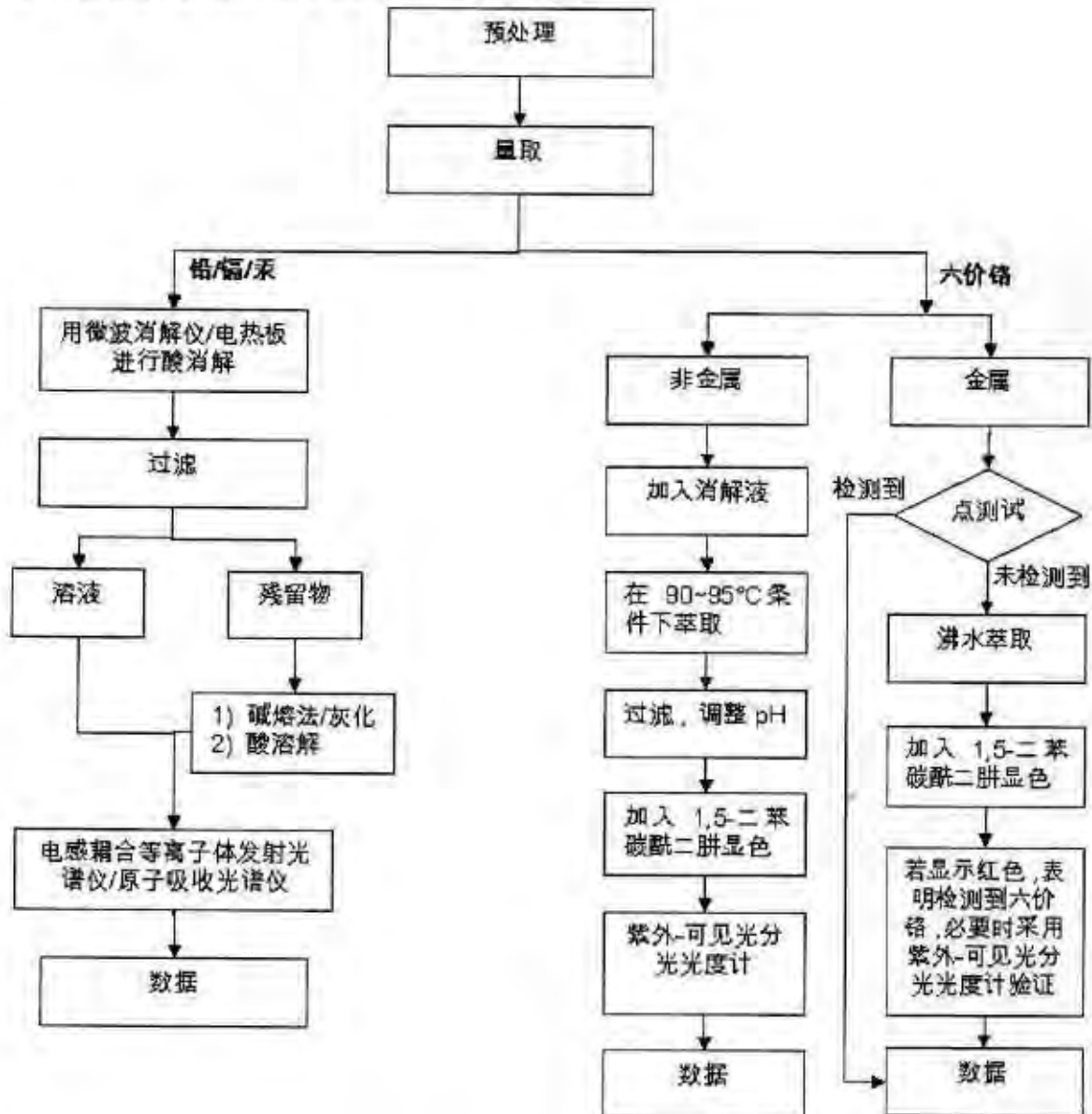
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 The test results shown in this test report refer only to the samples presented.



附件

RoHS 测试流程图

- 1) 分析人员 汪丹 / 詹达琦
- 2) 项目负责人: 余奕东
- 3) 样品按照下述流程被完全消解 (六价铬测试除外)



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*** 报告完 ***

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Test Report

Number : TWNC00216854

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

Date : Jul 27, 2011

Sample Description:

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

Part Description : Steel
Date Sample Received : Jul 19, 2011
Date Test Started : Jul 19, 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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approval of the laboratory.



Number : TWNC00216854

Test Conducted

(I) Test Result Summary :

<u>Test Item</u>	<u>Result (ppm)</u>	
	<u>(1)</u>	<u>(2)</u>
Heavy Metal		
Cadmium (Cd) content	ND	ND
Lead (Pb) content	ND	ND
Mercury (Hg) content	ND	ND
Chromium VI (Cr ⁶⁺) content (mg/kg with 50cm ²)	Negative (< 0.02)	Negative (< 0.02)

Remarks: ppm = Parts per million based on weight of tested sample = mg/kg
ND = Not detected
< = Less than
mg/kg with 50cm² = 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 10 cm² was used and the dilution factor was adjusted accordingly.

Tested Components

- (1) Black Plating Layer
- (2) Silvery Metal Base Material

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

Date Sample Received : Jul 19, 2011
Test Period : Jul 19, 2011 To Jul 27, 2011

(II) RoHS Requirement:

<u>Restricted Substances</u>	<u>Limits</u>
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.



Number : TWNC00216854

Test Conducted

(III) Test Method:

<u>Test Item</u>	<u>Test Method</u>	<u>Reporting Limit</u>
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

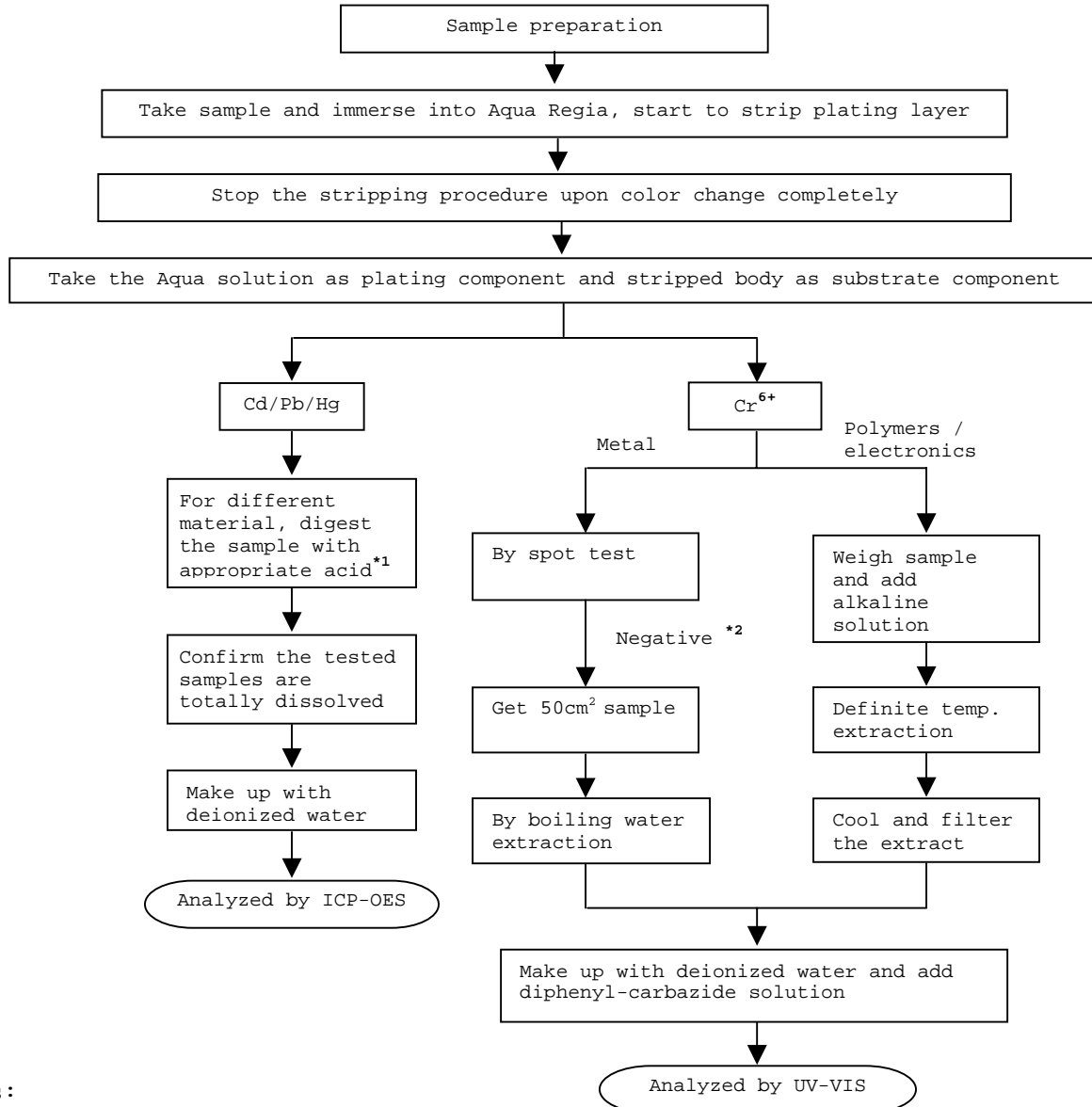
Remark: Reporting limit = Quantitation limit of analyte in sample

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 ₂ O ₂ , H ₃ BO ₃
Metals	HNO ₃ , HCl, HF
Electronics	HNO ₃ , HCl, H ₂ O ₂ , HBF ₄

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

End of Report

Test Conducted

Photo





Test Report

No. SHAEC1102692401

Date: 16 Mar 2011

Page 1 of 8

JIAGANG SYNTHETIC MATERIALS CO LTD OF JIAXING
SHITONG ROAD, XIUZHOU INDUSTRY GARDEN OF JIAXING

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

SGS Job No. : SP11-006182 - SH
Buyer : PANASONIC
Composition : EPOXY AND HARDENER
Supplier : JIAGANG SYNTHETIC MATERIALS CO LTD OF JIAXING
Model No. : 910(black)
Date of Sample Received : 10 Mar 2011
Testing Period : 10 Mar 2011 - 16 Mar 2011
Test Requested : Selected test(s) as requested by client.
Test Method : Please refer to next page(s).
Test Results : Please refer to next page(s).
Conclusion : Based on the performed tests on submitted samples, the results comply with the RoHS Directive 2002/95/EC and its subsequent amendments.

Signed for and on behalf of
SGS-CSTC Ltd.

Fan Jingjie, JJ
Approved Signatory

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Test Report

No. SHAEC1102692401

Date: 16 Mar 2011

Page 2 of 8

Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
1	SHA11-026924.001	Black solid

Remarks :

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

RoHS Directive 2002/95/EC

Test Method : With reference to IEC 62321:2008

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

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

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Test Report

No. SHAEC1102692401

Date: 16 Mar 2011

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

Notes :

- (1) The maximum permissible limit is quoted from the document 2005/618/EC amending RoHS directive 2002/95/EC

Polynuclear Aromatic Hydrocarbons (PAH)

Test Method : With reference to ZEK 01.2-08 of German ZLS and its amendments, analysis was performed by GC-MS.

<u>Test Item(s)</u>	<u>Unit</u>	<u>MDL</u>	<u>001</u>
Sum of 16 PAH	mg/kg	-	ND
Naphthalene(NAP)	mg/kg	0.2	ND
Acenaphthylene(ANY)	mg/kg	0.2	ND
Acenaphthene(ANA)	mg/kg	0.2	ND
Fluorene(FLU)	mg/kg	0.2	ND
Phenanthrene(PHE)	mg/kg	0.2	ND
Anthracene(ANT)	mg/kg	0.2	ND
Fluoranthene(FLT)	mg/kg	0.2	ND
Pyrene(PYR)	mg/kg	0.2	ND
Benzo(a)anthracene(BaA)	mg/kg	0.2	ND
Chrysene(CHR)	mg/kg	0.2	ND
Benzo(b)fluoranthene(BbF)	mg/kg	0.2	ND
Benzo(k)fluoranthene(BkF)	mg/kg	0.2	ND
Benzo(a)pyrene(BaP)	mg/kg	0.2	ND
Indeno(1,2,3-c,d)pyrene(IPY)	mg/kg	0.2	ND
Dibenzo(a,h)anthracene(DBA)	mg/kg	0.2	ND
Benzo(g,h,i)perylene(BPE)	mg/kg	0.2	ND

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ZEK 01.2-08: Restraining maximum values for products

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

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

PFOS (Perfluorooctane Sulfonates)

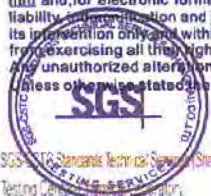
Test Method : With reference to US EPA 3550C: 2007, analysis was performed by HPLC-MS.

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

Notes :

- (1) PFOS Reference Information: Entry 53 of Regulation (EC) No 552/2009 amending Annex XVII of REACH Regulation (EC) No 1907/2006 (previously restricted under Directive 2006/122/EC)
 - (i) May not be placed on the market or used as a substance or constituent of preparations in a concentration equal to or higher than 0.005 % by mass.
 - (ii) May not be placed on the market in semi-finished products or articles, or parts thereof, if the concentration of PFOS is equal to or higher than 0.1 % by mass calculated with reference to the mass of structurally or microstructurally distinct parts that contain PFOS or, for textiles or other coated materials, if the amount of PFOS is equal to or higher than 1µg /m² of the coated material. Please refer to Regulation (EC) No 552/2009 to get more detail information

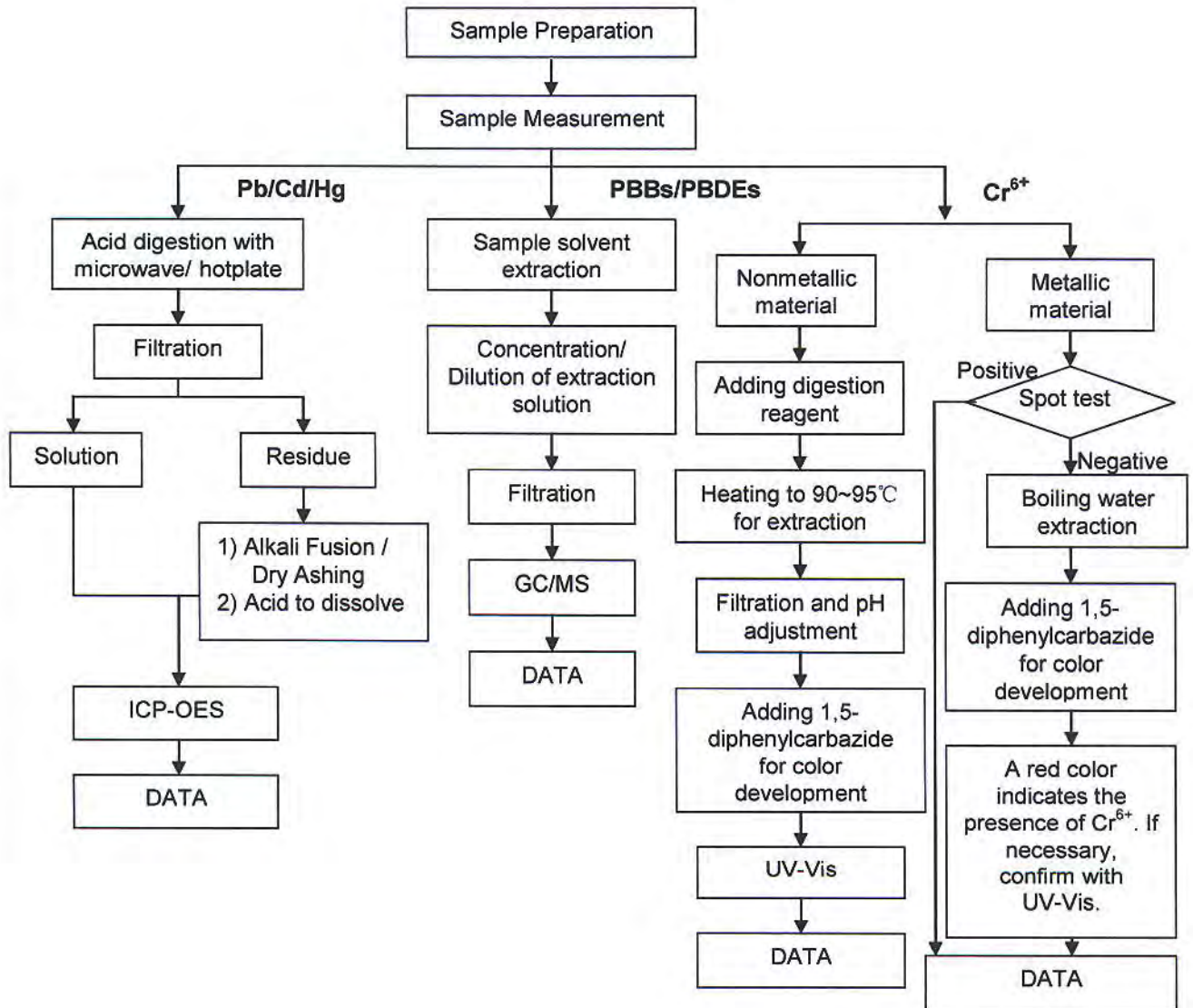
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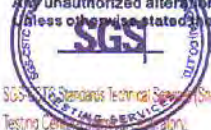
ATTACHMENTS

RoHS Testing Flow Chart

- 1) Name of the person who made testing: Allen Xiao/ Even Xu / Andy Zhao /Elim Lin
- 2) Name of the person in charge of testing: Jeff Zhang/George Xu/Tracy Yue
- 3) These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr⁶⁺ and PBBs/PBDEs test method excluded)

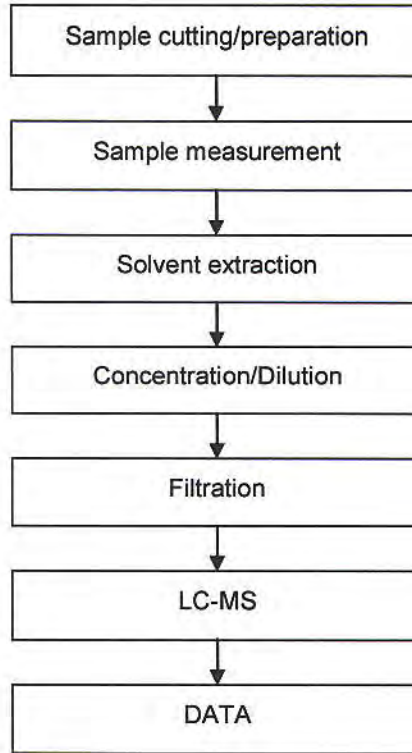


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PFOS Testing Flow Chart

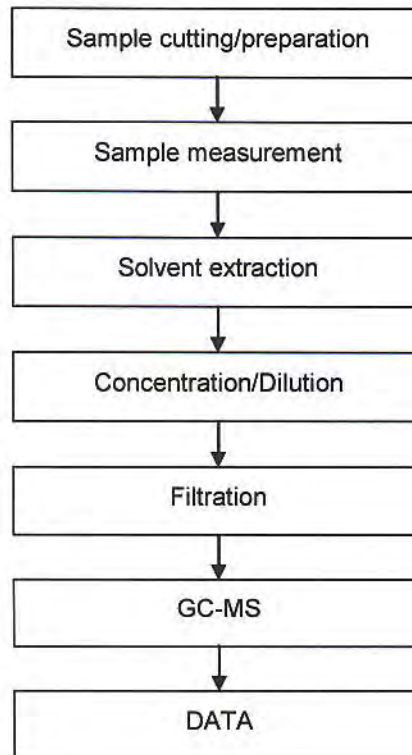
- 1) Name of the person who made testing: Judy Li
- 2) Name of the person in charge of testing: Nancy Du



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PAHs Testing Flow Chart

- 1) Name of the person who made testing: Jessy Huang
- 2) Name of the person in charge of testing: Tracy Yue



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Sample photo:



SGS authenticate the photo on original report only

*** End of Report ***

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测试报告

No. SHAEC1103841401 日期: 2011年03月31日 第1页,共4页

乐清市精饰电镀厂
浙江省乐清市北白象镇象塔南路42号

以下测试之样品是由申请者所提供及确认: 镀锡层

SGS工作编号: SP11-008489 - SH
 型号: 配件
 样品接收日期: 2011年03月28日
 测试周期: 2011年03月28日 - 2011年03月31日
 测试要求: 根据客户要求测试
 测试方法: 请参见下一页
 测试结果: 请参见下一页
 结论: 基于所送样品进行的测试, 测试结果与欧盟RoHS指令2002/95/EC以及后续修正指令的要求相符

COPY

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Fan Jingjie, JJ范晶捷

批准签署人

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 These terms are related to the results shown in this test report refer only to the sample(s) tested.



SHOW 4209660

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中国·上海·徐汇区宜山路889号3号楼 邮编: 200233

t E&E (86-21) 61402553 f E&E (86-21) 64953679 www.cn.sgs.com
HL: (86-21) 61402594 HL: (86-21) 54500353 e sgs.china@sgs.com

(b) Unless a shorter period is established in the invoice, Client will promptly pay not later than 30 days from the relevant invoice date or within such other period as may be established by the Company in the invoice (the "Due Date"), all fees due to the Company falling within interest will be charged at a rate of 1.5% per month (or such other rate as may be established in the invoice) from the date payment is actually received.

测试报告

No. SHAEC1103841401

日期: 2011年03月31日 第2页, 共4页

测试结果:

样品部件外观描述:

样品编号	SGS样品ID	描述
1	SHA11-038414.001	银色金属

备注:

- (1) 1 mg/kg = 1 ppm = 0.0001%
- (2) MDL = 检测极限值
- (3) ND = 未检出 (< MDL)
- (4) "-" = 未规定

RoHS指令2002/95/EC

测试方法:

参照IEC 62321:2008:

- (1) 用ICP-OES测定镉的含量.
- (2) 用ICP-OES测定铅的含量.
- (3) 用ICP-OES测定汞的含量.
- (4) 用点测试法/紫外-可见分光光度计比色法测定六价铬的含量.

测试项目

测试项目	限值	单位	MDL	001
镉 (Cd)	100	mg/kg	2	ND
铅 (Pb)	1,000	mg/kg	2	ND
汞 (Hg)	1,000	mg/kg	2	ND
六价铬 (CrVI)	-	-	◇	Negative

备注:

- (1) 最大允许限值引用自2002/95/EC RoHS指令和后续修正指令2005/618/EC.
- (2) ◇ 点测试法:

Negative = 镀层中未检测到六价铬, Positive = 镀层中检测到六价铬;

(当点测试结果为Negative或无法确定时,将采用沸水萃取法作进一步的结果验证.)

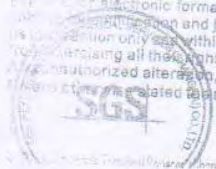
◇ 沸水萃取法:

Negative = 镀层中未检测到六价铬

Positive = 镀层中检测到六价铬; 表明50 cm²表面积的被测试样品的沸水萃取液中六价铬的浓度等于或大于0.02 mg/kg.

针对金属表面的防腐涂层: 由于未获知样品的存储条件和生产日期, 样品的六价铬测试结果仅代表测试时样品的状态.

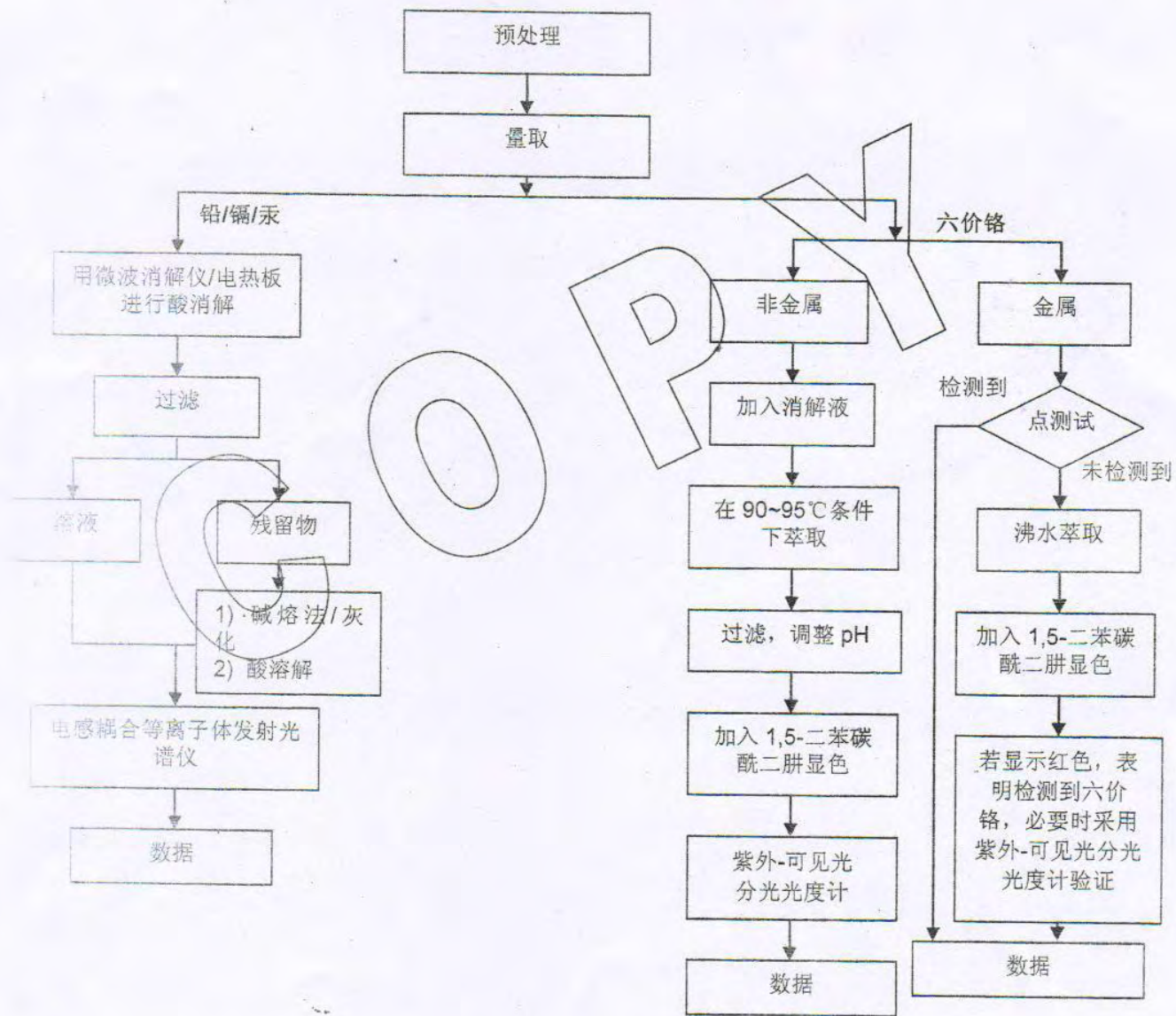
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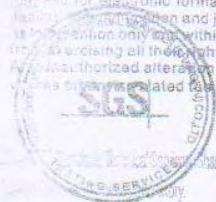
附件

RoHS 测试流程图

- 1) 分析人员: 肖飞/徐双/赵旭东
- 2) 项目负责人: 张春华/徐亮
- 3) 样品按照下述流程被完全消解 (六价铬测试除外)



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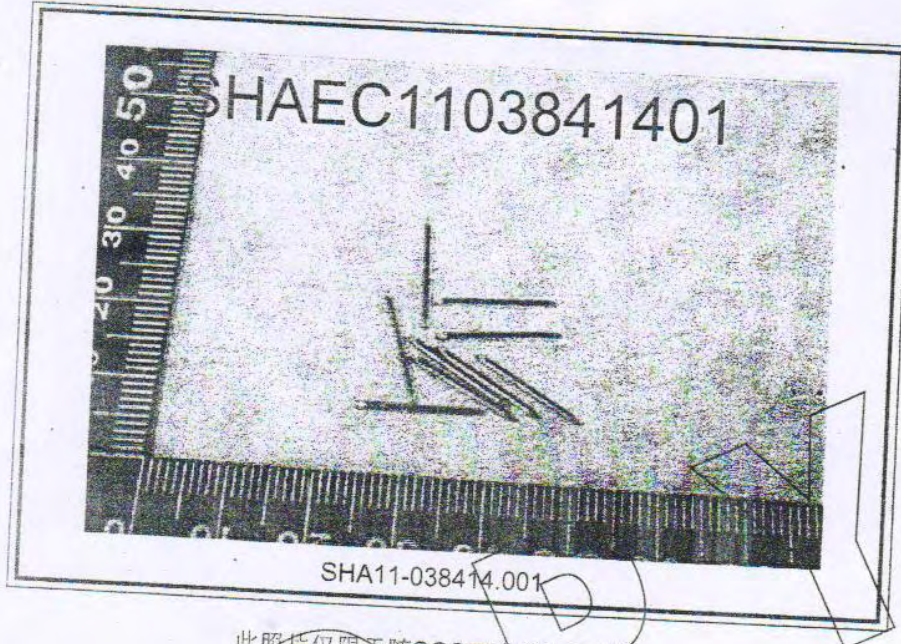
测试报告

No. SHAEC1103841401

日期: 2011年03月31日

第4页,共4页

样品照片:

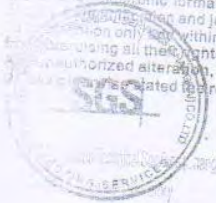


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测试报告

No. SHAEC1102902201

日期: 2011年03月18日

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乐清市精饰电镀厂
浙江省乐清市北白象镇象塔南路42号

以下测试之样品是由申请者所提供及确认: 镀锌层

SGS工作编号: SP11-006643 - SH

型号: 配件

样品接收日期: 2011年03月14日

测试周期: 2011年03月14日 - 2011年03月18日

测试要求: 根据客户要求测试

测试方法: 请参见下一页

测试结果: 请参见下一页

结论: 基于所送样品进行的测试, 测试结果与欧盟RoHS指令2002/95/EC以及后续修正指令的要求相符

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测试报告

No. SHAEC1102902201

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测试结果:

样品部件外观描述:

样品编号	SGS样品ID	描述
1	SHA11-029022.001	银蓝色金属

备注:

- (1) 1 mg/kg = 1 ppm = 0.0001%
- (2) MDL = 检测极限值
- (3) ND = 未检出 (< MDL)
- (4) "-" = 未规定

RoHS指令2002/95/EC

测试方法: 参照IEC 62321:2008:

- (1) 用ICP-OES测定镉的含量.
- (2) 用ICP-OES测定铅的含量.
- (3) 用ICP-OES测定汞的含量.
- (4) 用点测试法/紫外-可见分光光度计比色法测定六价铬的含量.

测试项目	限值	单位	MDL	001
镉 (Cd)	100	mg/kg	2	ND
铅 (Pb)	1,000	mg/kg	2	ND
汞 (Hg)	1,000	mg/kg	2	ND
六价铬 (CrVI)	-	-	◇	Negative

备注:

- (1) 最大允许极限值引用自2002/95/EC RoHS指令和后续修正指令2005/618/EC.
- (2) ◇ 点测试法:

Negative = 镀层中未检测到六价铬, Positive = 镀层中检测到六价铬;
(当点测试结果 Negative 或无法确定时,将采用沸水萃取法作进一步的结果验证.)

◇ 沸水萃取法:

Negative = 镀层中未检测到六价铬

Positive = 镀层中检测到六价铬; 表明50 cm²表面积的被测试样品的沸水萃取液中六价铬的浓度等于或大于0.02 mg/kg.

针对金属表面的防腐涂层: 由于未获知样品的存储条件和生产日期,样品的六价铬测试结果仅代表测试时样品的状态.

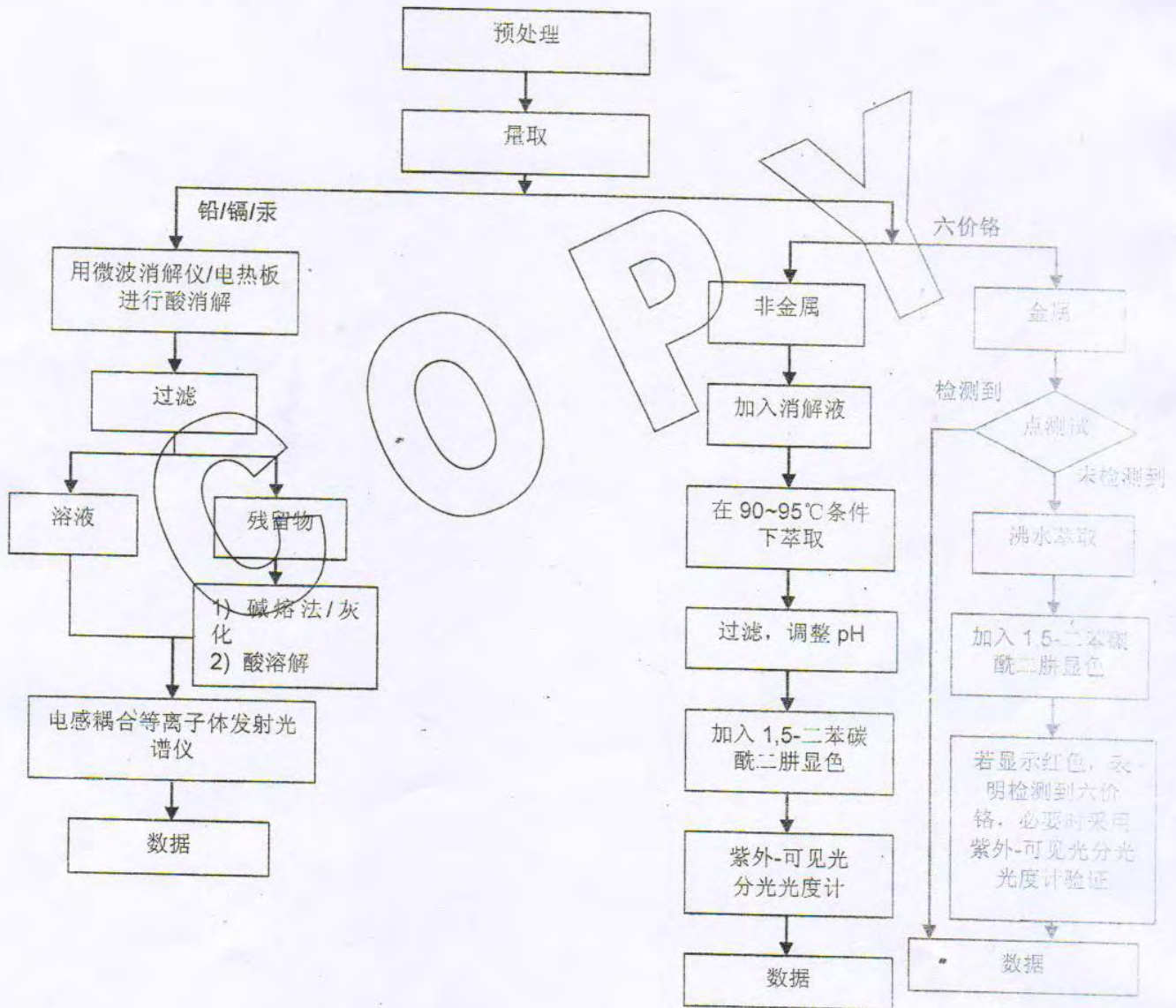
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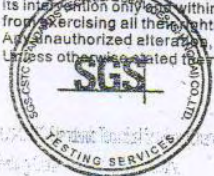
附件

RoHS 测试流程图

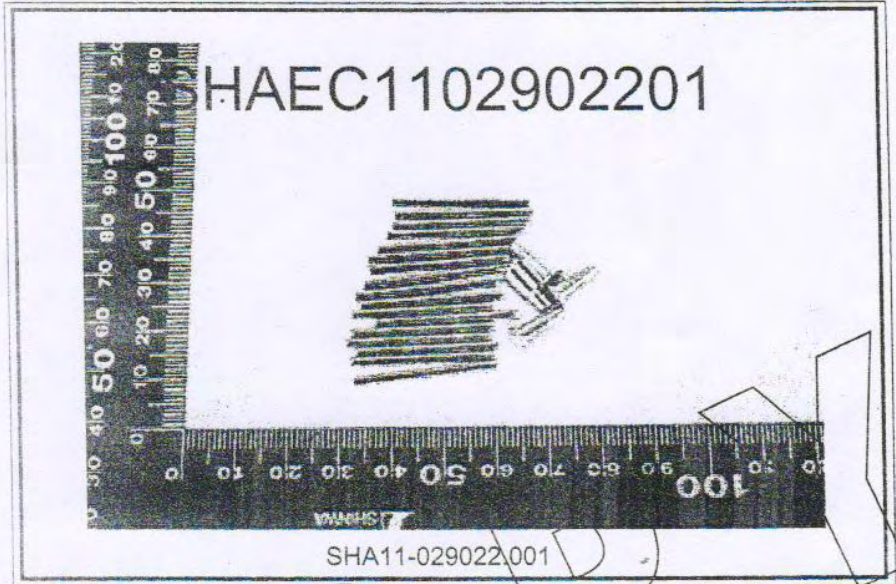
- 1) 分析人员: 肖飞/徐双/赵旭东
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- 3) 样品按照下述流程被完全消解 (六价铬测试除外)



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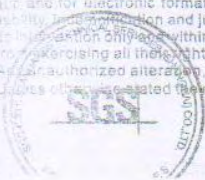


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