ICP Test Report Certification Packet

Company name: Littelfuse, Inc.

Product Series: Class J Fast-Acting Fuse

Product #: JLS SERIES

Issue Date: June 1, 2012

It is hereby certified by Littelfuse, Inc. that there is neither RoHS (2011/65/EU- recast of EU Directive 2002/95/EC)-restricted substance nor such use, for materials to be used for unit parts, for packing/packaging materials, and for additives and the like in the manufacturing processes. In addition, it is hereby reported to you that the parts and sub-materials, the materials to be used for unit parts, the packing/packaging materials, and the additives and the like in the manufacturing processes, are all composed of the following components.

Issued by: KRISTEEN BACILA

<Global EHS Engineer>

(1) Parts, sub-materials and unit parts

This document covers the Power-T Class Fuse series products manufactured by Littelfuse, Inc. Listed below are RoHS and Non-RoHS compliant series.

＜ Raw Materials Used

Please see Table 1

(2) The ICP data on all measurable substances

Please see appropriate pages as identifed in Table 1

Remarks :

Table 1: List of Raw Materials covered by this report

Total Parts	Raw Material Part Number	Raw Material Description	Page(s)
1	685xxx	Silver Strip 40A Element(920-220-001) 50A Element(920-220-002) 60A Element(920-220-001)	3-7
2	Cu 110	Copper 110 35A Element(920-220-005) 45A Element(920-220-007)	8-11
3	882-579A	Brass Disc	12-16
4	927-063/ 927-068	Solder 35,45,50A Tin Preform(927-063) 40,60A Solder(927-068)	12-31
5	927-294	Solder Preform	12-31
6	909-396 (039145)	Body - Melamine	32-38
7	090196	Silica	39-44
8	923-508	Cap - Bronze	45-49

Test Report Number : TWNC00240910

Applicant: Littelfuse Philippines Inc. Date : Jan 20, 2012
LIMA Technology Center, Lipa City,
Malvar, Batangas

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

Part Description	: Pure Silver Strip
Part Number	: 685xxx
Date Sample Received	: Jan 16, 2012
Date Test Started	: Jan 16, 2012

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

Authorized By:
On Behalf Of Intertek Testing Services
Taiwan Limited

K. Y. Liang
Director

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

Number : TWNC00240910

Test Conducted

(Ⅰ) Test Result Summary :

Test Item	Result (ppm)
	Silvery Metal
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 $50cm^2$ = milligram per kilogram with 50 square centimetre
Negative = A negative test result indicated positive observation was not found at the time of Test.

Responsibility of Chemist : Irene Chiou / Kevin Liu

Date Sample Received : Jan 16, 2012
Test Period : Jan 16, 2012 To Jan 20, 2012

(Ⅱ) RoHS Requirement:

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

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

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Number : TWNC00240910

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 (mg/kg with $50cm^2$)	With reference to IEC 62321 edition 1.0:2008 in annex B, by boiling water extraction and determined by UV-Vis Spectrophotometer.	0.02 mg/kg with $50cm^2$

Remark: Reporting limit = Quantitation limit of analyte in sample

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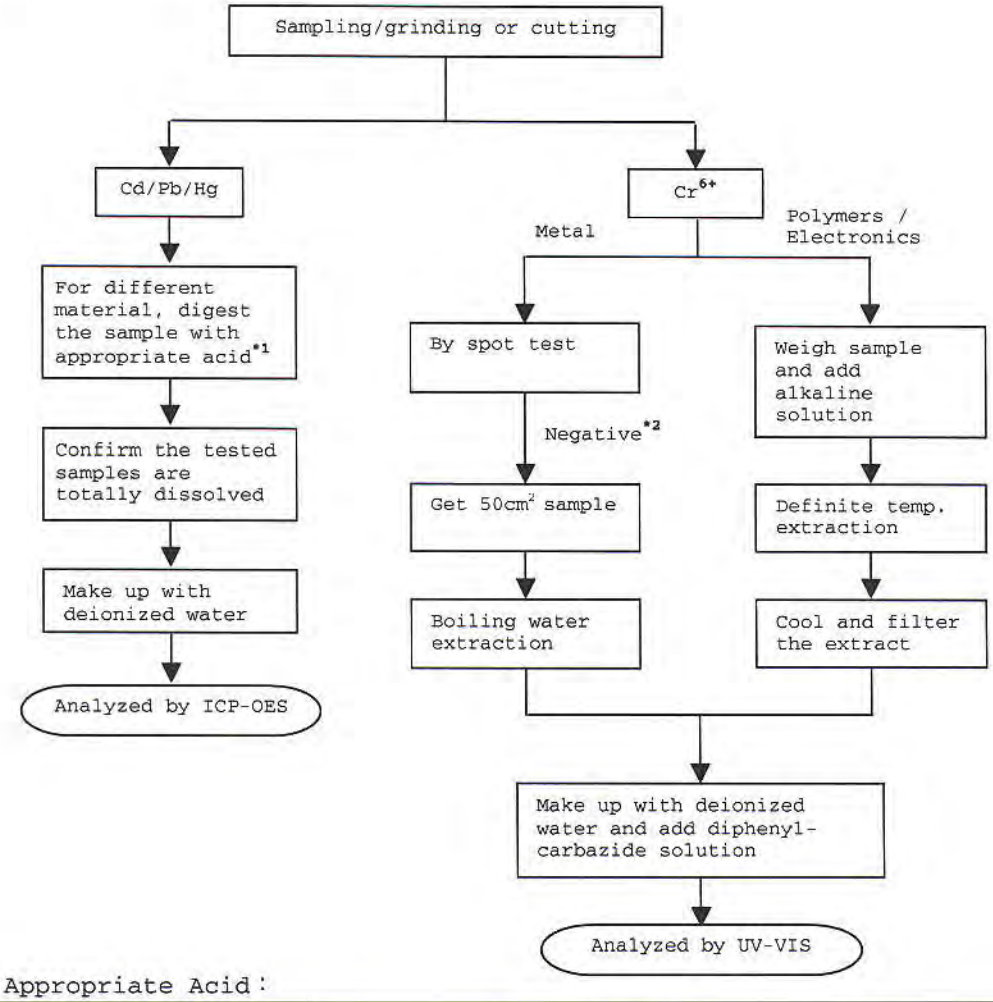
Number : TWNC00240910

Test Conducted

(IV) Measurement Flowchart:

Test For Cd/Pb/Hg/Chromium (VI)
Reference Standard : IEC 62321 edition 1.0:2008



Remarks:

*1: List Of Appropriate Acid :

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

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

End of Report

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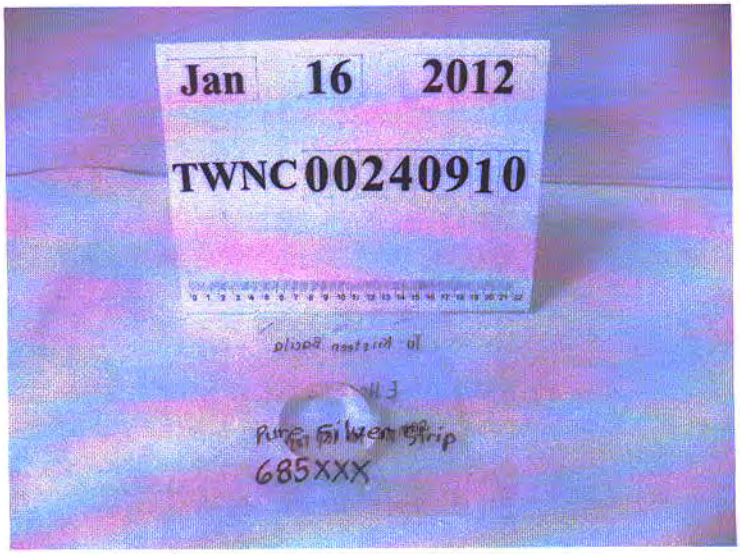
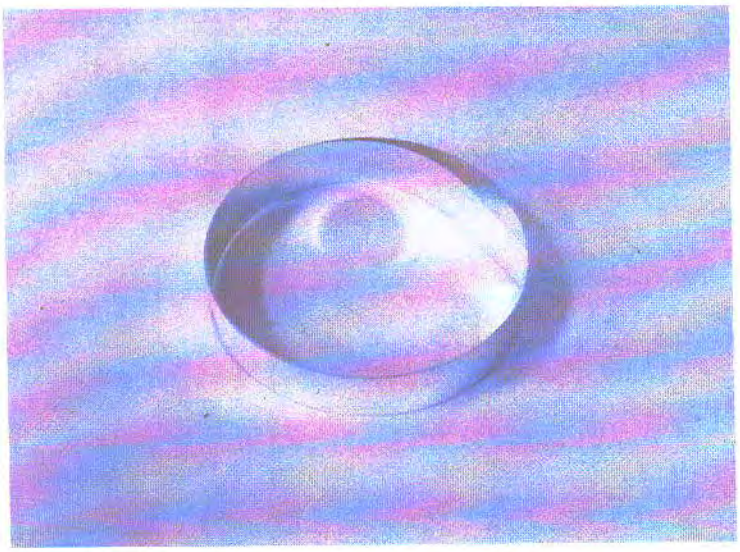
Number : TWNC00240910

Test Conducted

Photo





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Pony Testing International Group

Test Report

NO.: W02032011204D Date: 2012.02.07

Applicant: SUZHOU XINWU OPTRONICT TECHNOLOGY CO.,LTD

Address: 368 YOUYI RD,YOUYI DEVELOPMENT AREA,SONGLING TOWN WUJIANG SUZHOU,CHINA

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

Sample Name: BRASS

Manufacturer: SUZHOU XINWU OPTRONICT TECHNOLOGY CO.,LTD

Sample Description: SOLDER COATING ON Cu

Testing Part Description: MIX TESTED

Sample Received Date: 2012.02.03

Test Period: 2012.02.03 To 2012.02.07

Test Requested: In accordance with the RoHS Directive 2011/65/EU Annex II

Test Method: With reference to IEC62321 Edition 1.0 :2008 method: Regulated Substances Content of test process with Electrical & Electronic Products

(1) Lead Analysis is performed by AAS

(2) Cadmium Analysis is performed by AAS

(3) Mercury Analysis is performed by ICP-OES

(4) Hexavalent Chromium Analysis is performed By Spot-test/Boiling-water-extraction Method

(5) PBBs and PBDEs Analysis is performed by GC-MS

Test Result: Please refer to next page(s)

Approved by: zhang daiqin

Code: e5ptm0y6

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www.ponytest.com & Hotline 400-819-5688

Add: Yingzhi Building,No.49-3,Suzhou Road,Haidian District, Beijing | Building 35, No.680, Guiping Road, Xuhui District, Shanghai | Building 6 of Zhongxing Industry City,Chuangye Road, Nanshan District, Shenzhen

Tel: (010) 82618116 | (021) 64851999 | (0755) 26050909

Fax: (010) 86219629 | (021) 64856403 | (0755) 26068336

E-mail: pony@ponytest.com | csh@ponytest.com | sz@ponytest.com

Pony Testing International Group

Test Result (Unit: mg/kg)

Test Item	MDL	Test Result	RoHS Limit
Lead (Pb)	1	N.D.	1000
Cadmium (Cd)	1	N.D.	100
Mercury (Hg)	1	N.D.	1000
Hexavalent Chromium (Cr^{6+})	See Note (6)	Negative	—
PBBs	—	—	1000
Bromobiphenyl	5	N.D.	—
Dibromobiphenyl	5	N.D.	—
Tribromobiphenyl	5	N.D.	—
Tetrabromobiphenyl	5	N.D.	—
Pentabromobiphenyl	5	N.D.	—
Hexabromobiphenyl	5	N.D.	—
Heptabromobiphenyl	5	N.D.	—
Octabromobiphenyl	5	N.D.	—
Nonabromobiphenyl	5	N.D.	—
Decabromobiphenyl	5	N.D.	—
PBDEs	—	—	1000
Bromodiphenyl ether	5	N.D.	—
Dibromodiphenyl ether	5	N.D.	—
Tribromodiphenyl ether	5	N.D.	—
Tetrabromodiphenyl ether	5	N.D.	—
Pentabromodiphenyl ether	5	N.D.	—
Hexabromodiphenyl ether	5	N.D.	—
Heptabromodiphenyl ether	5	N.D.	—
Octabromodiphenyl ether	5	N.D.	—
Nonabromodiphenyl ether	5	N.D.	—
Decabromodiphenyl ether	5	N.D.	—

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Note: (1) mg/kg = ppm

(2) "—" = Does not stipulate

(3) N.D. = Not Detected (<MDL)

(4) MDL = Method Detection Limit

(5) The most allowable limit value reference to RoHS Directive 2011/65/EU Annex II

(6) Spot-test:

Negative = Not Detected of CrVI coating, Positive = Presence of CrVI coating;

(The tested sample should be further verified by boiling-water-extraction method if the spot test result cannot be confirmed or negative)

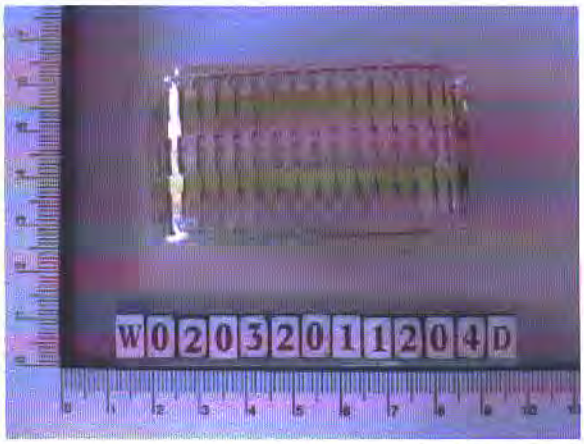
Boiling-water-extraction:

Negative = Not Detected of CrVI coating

Positive = Presence of CrVI coating; the detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50cm^2 sample surface area used.

(7) The mixing sample test was performed as client's request. Result obtained only gives informality value and does not represent individual sample material.

Photo:



Pony authenticate the photo on original report only

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Test Report NO.: W02032011204D Date: 2012.02.07

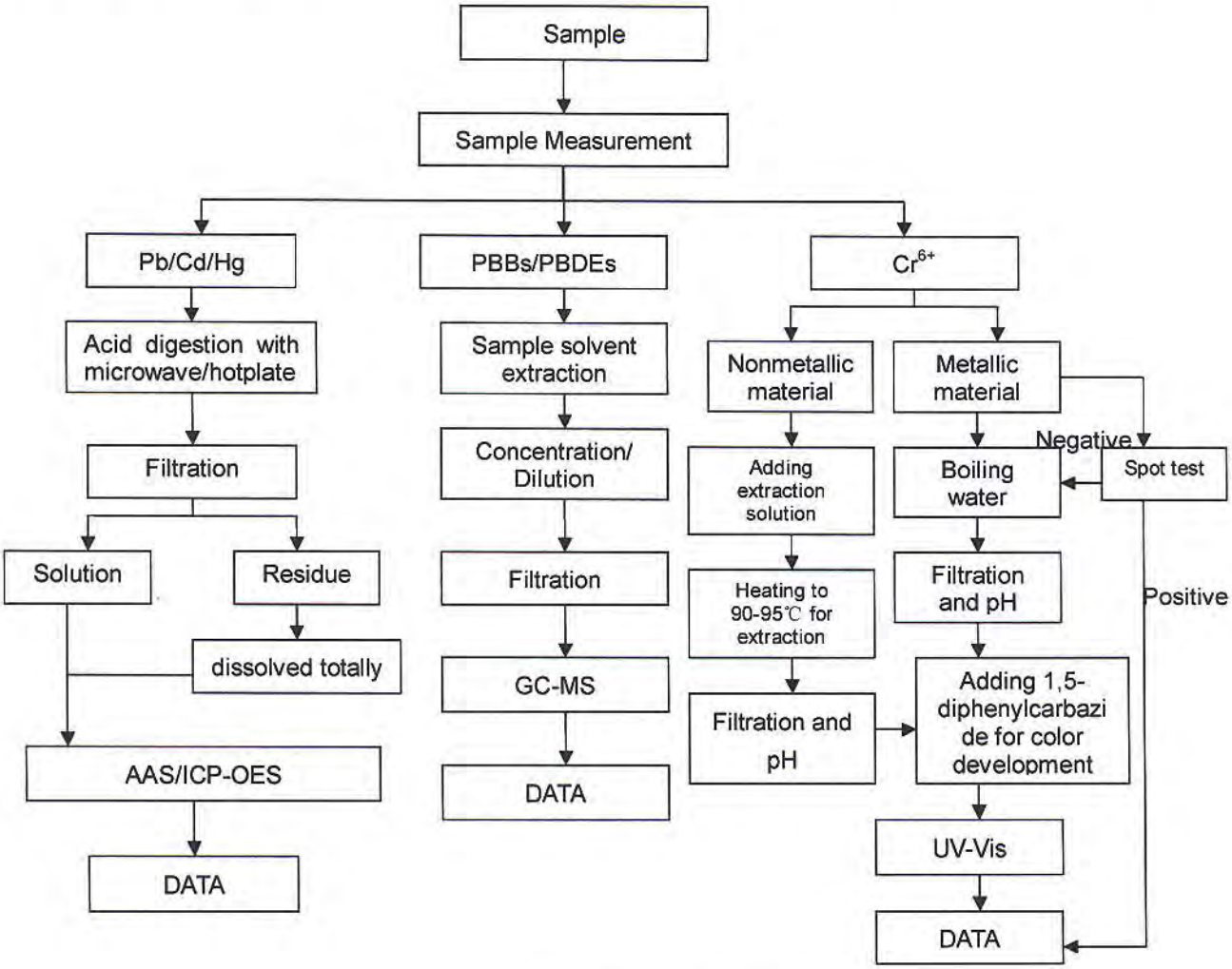
Measurement Flow-chart

Tested by: XuYing

Checked by: Walter

Person in charge of the lab: Zhangdaiqin

These Samples Were Dissolved Totally By Pre-conditioning Method According To Below Flow Chart. (Cr^{6+} And PBBs/PBDEs Test Method Excluded)



End of Report

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Test Report Number : TWNC00237722

Applicant: Littelfuse, S.A. de C.V.
Blvd. Fausto Z. Martinez #1800
Col. Magisterio Seccion 38 C.P.
26070 Piedra Negras, Coahuila,
Mexico

Date : Dec 27, 2011

Sample Description:
One (1) group of submitted samples said to be :
Part Description : BRASS DISC
Part Number : 882-579A
Date Sample Received : Dec 20, 2011
Date Test Started : Dec 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 : TWNC00237722

Test Conducted

(Ⅰ) Test Result Summary :

Test Item	Result (ppm)
	Golden Metal
Heavy Metal	
Cadmium (Cd) content	ND
Lead (Pb) content	15
Mercury (Hg) content	ND
Chromium VI (Cr^{6+}) content (mg/kg with $50cm^2$)	Negative (< 0.02)

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

Responsibility of Chemist : Irene Chiou / Kevin Liu

Date Sample Received : Dec 20, 2011
Test Period : Dec 20, 2011 To Dec 23, 2011

(Ⅱ) RoHS Requirement:

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

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

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Test Conducted
(Ⅲ) Test Method:

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

Remark: Reporting limit = Quantitation limit of analyte in sample

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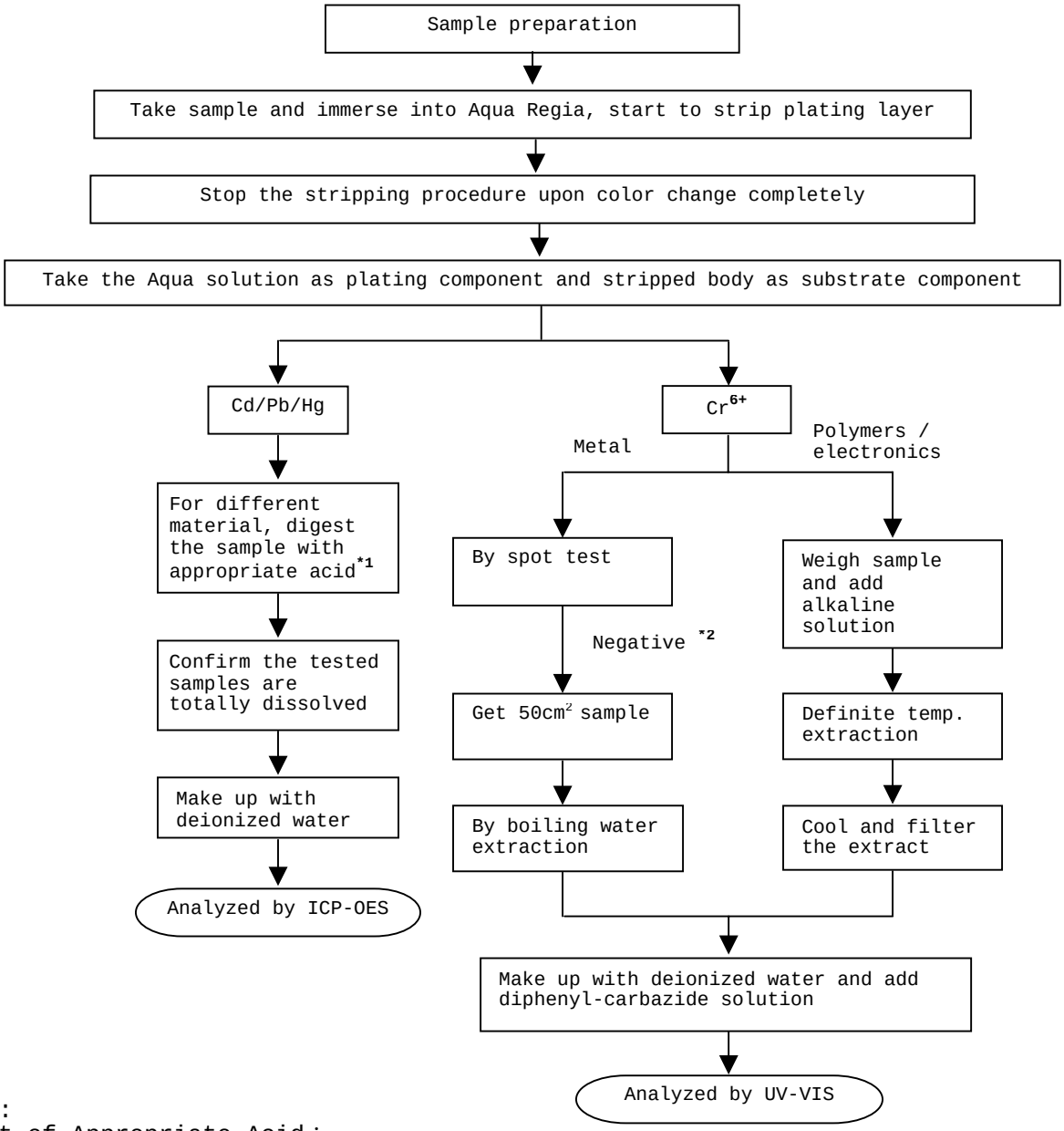
Number : TWNC00237722

Test Conducted

(Ⅳ) Measurement Flowchart:

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

Reference Standard：IEC 62321 edition 1.0:2008



Remarks:

*1: List of Appropriate Acid：

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

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

End of Report

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Number : TWNC00237722

Test Conducted

Photo



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Report No.: MX10-1716
Date : 2010-08-23

RESULTS REPORT

INTERTEK TESTING SERVICES DE MEXICO SA DE CV

LABORATORIO CD. DE MEXICO

DELIVER TO: Littelfuse, S.A. de C.V.
Blvd. Fausto Z. Martínez 1800, Col. Magisterio Sección 38, Piedras Negras, Coahuila

ATTENTION: Ing. Mario Falcón / Ing. Manuel Berain

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www.intertek.com

Report No.: MX10-1716
Date : 2010-08-23

TEST REPORT

APPLICANT

Littelfuse, S.A. de C.V.
Blvd. Fausto Z. Martínez 1800, Col. Magisterio Sección 38, Piedras Negras, Coahuila
Ing. Mario Falcón / Ing. Manuel Berain

SAMPLE DESCRIPTION

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

Sample Description	Serie JLLS
Item No.	1) N.P. 882-525A
	2) N.P. 882-570A
	3) N.P. 882-579A
	4) N.P. 882-695A
	5) N.P. 882-696A
	6) N.P. 882-739
	7) N.P. 882-802
	8) N.P. 900-102-001
	9) N.P. 909-264
	10) N.P. 927-063
	11) N.P. 927-111
	12) N.P. 927-243
	13) N.P. 927-294
	14) N.P. 927-299
	15) N.P. 927-301
	16) N.P. 911-039-400
	17) N.P. 923-247-100
	18) N.P. 923-534-001
	19) N.P. 923-507-100
	20) N.P. 923-529-500
	21) N.P. 923-532-200
	22) N.P. 923-548-100
Country of Origin	NP
Buyer's Name	NP
Supplier's Name	NP
Date sample received	2010-08-05
Testing period	2010-08-09 to 2010-08-20

****

TEST CONDUCTED

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

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www.intertek.com

CONCLUSION

Sample Number	Testing item	Conclusion	Failed component	Failed result
1	N.P. 882-525A	Pass See Result summary	---	---
2	N.P. 882-570A	Pass See Result summary	---	---
3	N.P. 882-579A	Pass See Result summary	---	---
4	N.P. 882-695A	Pass See Result summary	---	---
5	N.P. 882-696A	Pass See Result summary	---	---
6	N.P. 882-739	Pass See Result summary	---	---
7	N.P. 882-802	Pass See Result summary	---	---
8	N.P. 900-102-001	Pass See Result summary	---	---
9	N.P. 909-264	Pass See Result summary	---	---
10	N.P. 927-063	Pass See Result summary	---	---
11	N.P. 927-111	Fail See Result summary	Lead	94300
12	N.P. 927-243	Fail See Result summary	Lead	95600
13	N.P. 927-294	Pass See Result summary	---	---
14	N.P. 927-299	Pass See Result summary	---	---
15	N.P. 927-301	Pass See Result summary	---	---
16	N.P. 911-039-400	Pass See Result summary	---	---
17	N.P. 923-247-100	Pass See Result summary	---	---
18	N.P. 923-534-001	Pass See Result summary	---	---
19	N.P. 923-507-100	Pass See Result summary	---	---
20	N.P. 923-529-500	Pass See Result summary	---	---
21	N.P. 923-532-200	Pass See Result summary	---	---
22	N.P. 923-548-100	Pass See Result summary	---	---

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Report No.: MX10-1716
Date : 2010-08-23

TEST CONDUCTED
Samples:

9) N.P. 909-264
10) N.P. 927-063
11) N.P. 927-111
12) N.P. 927-243

TEST RESULT SUMMARY FOR RoHS DIRECTIVE :

TESTING ITEM	Ω RESULT (ppm)				Limit
	(9)	(10)	(11)	(12)	
Cadmium (Cd) content	ND	ND	ND	ND	0,01% (100 ppm)
Lead (Pb) content	ND	221,7	94300	95600	0,1% (1000 ppm)
Mercury (Hg) content	ND	ND	ND	ND	0,1% (1000 ppm)
Chromium (VI) (Cr^{6+})	ND	ND	ND	ND	0,1% (1000 ppm)
POLYBROMINATED BIPHENYLS (PBBs) Total	ND	---	---	---	0,1% (1000 ppm)
Monobromobiphenyl (MonoBB)	ND	---	---	---	---
Dibromobiphenyl (DiBB)	15,0	---	---	---	---
Tribromobiphenyl (TriBB)	ND	---	---	---	---
Tetrabromobiphenyl (TetraBB)	ND	---	---	---	---
Pentabromobiphenyl (PentaBB)	ND	---	---	---	---
Hexabromobiphenyl (HexaBB)	ND	---	---	---	---
Heptabromobiphenyl (HeptaBB)	ND	---	---	---	---
Octabromobiphenyl (OctaBB)	ND	---	---	---	---
Nonabromobiphenyl (NonaBB)	ND	---	---	---	---
Decabromobiphenyl (DecaBB)	ND	---	---	---	---
POLYBROMINATED DIPHENYL ETHERS (PBDEs) Total	ND	---	---	---	0,1% (1000 ppm)
Monobromodiphenyl (MonoBDE)	ND	---	---	---	---
Dibromodiphenyl (DiBDE)	ND	---	---	---	---
Tribromodiphenyl (TriBDE)	ND	---	---	---	---
Tetrabromodiphenyl (TetraBDE)	ND	---	---	---	---
Pentabromodiphenyl (PentaBDE)	21,0	---	---	---	---
Hexabromodiphenyl (HexaBDE)	ND	---	---	---	---
Heptabromodiphenyl (HeptaBDE)	ND	---	---	---	---
Octabromodiphenyl (OctaBDE)	ND	---	---	---	---
Nonabromodiphenyl (NonaBDE)	ND	---	---	---	---
Decabromodiphenyl (DecaBDE)	ND	---	---	---	---

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Report No.: MX10-1716
Date : 2010-08-23

TEST CONDUCTED

Samples:

13) N.P. 927-294
14) N.P. 927-299
15) N.P. 927-301
16) N.P. 911-039-400

TEST RESULT SUMMARY FOR RoHS DIRECTIVE :

TESTING ITEM	Ω RESULT (ppm)				Limit
	(13)	(14)	(15)	(16)	
Cadmium (Cd) content	ND	ND	ND	ND	0,01% (100 ppm)
Lead (Pb) content	337,1	169,4	150,7	ND	0,1% (1000 ppm)
Mercury (Hg) content	ND	ND	ND	ND	0,1% (1000 ppm)
Chromium (VI) (Cr^{6+})	ND	ND	ND	ND	0,1% (1000 ppm)

TEST CONDUCTED

Samples:

17) N.P. 923-247-100
18) N.P. 923-534-001
19) N.P. 923-507-100
20) N.P. 923-529-500

TEST RESULT SUMMARY FOR RoHS DIRECTIVE :

TESTING ITEM	Ω RESULT (ppm)				Limit
	(17)	(18)	(19)	(20)	
Cadmium (Cd) content	ND	ND	ND	ND	0,01% (100 ppm)
Lead (Pb) content	ND	52,56	ND	27,99	0,1% (1000 ppm)
Mercury (Hg) content	ND	ND	ND	ND	0,1% (1000 ppm)
Chromium (VI) (Cr^{6+})	ND	ND	ND	ND	0,1% (1000 ppm)

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Report No.: MX10-1716
Date : 2010-08-23

TEST CONDUCTED

Samples:

21) N.P. 923-532-200
22) N.P. 923-548-100

TEST RESULT SUMMARY FOR RoHS DIRECTIVE :

TESTING ITEM	Ω RESULT (ppm)		Limit
	(21)	(22)	
Cadmium (Cd) content	ND	ND	0,01% (100 ppm)
Lead (Pb) content	ND	ND	0,1% (1000 ppm)
Mercury (Hg) content	ND	ND	0,1% (1000 ppm)
Chromium (VI) (Cr^{6+})	ND	ND	0,1% (1000 ppm)

ppm = parts per million based on dry weight of sample.
$\mu g/cm^2$ = microgram per square centimeter.
mg/kg WITH $50cm^2$ = milligram per kilogram with 50 square centimeter.
< = less than.
ND = Not detected.
The above limits were quoted from 2002/95/EC and amendment 2005/618/EC for homogeneous material.

These Accreditations only apply for the methods listed in such. Not accredited under EMA Ω.

Prepared and checked by :
For Intertek

Irma López M
Jefa de área

Laboratory Manager

The Official Mexican Standard NOM-008-SCFI-1993 establishes like separator decimal the comma (,).

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NOTE :DecaBDE IN POLYMERIC APPLICATIONS IS EXEMPTED ACCORDING TO ROHS DIRECTIVE AMENDMENT 2005/717/EC.

=ACCORDING TO IEC 62321, A POSITIVE RESULT INDICATES THE PRESENCE OF Cr(VI) COATING. IT IS THE Cr(VI) CONCENTRATION DETECTED IN THE BOILING-WATER-EXTRACTION SOLUTION AND SHOULD NOT BE INTERPRETED AS THE Cr(VI) CONCENTRATION IN THE COATING LAYER OF THE SAMPLE.

REMARK : AS REQUESTED BY THE APPLICANT, COATING WITH BASE MATERIAL OF TESTED COMPONENTS OF THE SAMPLE MX10-1716-1 WERE TESTED TOGETHER.

REMARK : AS REQUESTED BY THE APPLICANT, COATING WITH BASE MATERIAL OF TESTED COMPONENTS OF THE SAMPLE MX10-1716-2 WERE TESTED TOGETHER.

REMARK : AS REQUESTED BY THE APPLICANT, COATING WITH BASE MATERIAL OF TESTED COMPONENTS OF THE SAMPLE MX10-1716-3 WERE TESTED TOGETHER.

REMARK : AS REQUESTED BY THE APPLICANT, COATING WITH BASE MATERIAL OF TESTED COMPONENTS OF THE SAMPLE MX10-1716-4 WERE TESTED TOGETHER.

REMARK : AS REQUESTED BY THE APPLICANT, COATING WITH BASE MATERIAL OF TESTED COMPONENTS OF THE SAMPLE MX10-1716-5 WERE TESTED TOGETHER.

REMARK : AS REQUESTED BY THE APPLICANT, COATING WITH BASE MATERIAL OF TESTED COMPONENTS OF THE SAMPLE MX10-1716-6 WERE TESTED TOGETHER.

REMARK : AS REQUESTED BY THE APPLICANT, COATING WITH BASE MATERIAL OF TESTED COMPONENTS OF THE SAMPLE MX10-1716-7 WERE TESTED TOGETHER.

REMARK : AS REQUESTED BY THE APPLICANT, COATING WITH BASE MATERIAL OF TESTED COMPONENTS OF THE SAMPLE MX10-1716-8 WERE TESTED TOGETHER.

REMARK : AS REQUESTED BY THE APPLICANT, COATING WITH BASE MATERIAL OF TESTED COMPONENTS OF THE SAMPLE MX10-1716-9 WERE TESTED TOGETHER.

REMARK : AS REQUESTED BY THE APPLICANT, COATING WITH BASE MATERIAL OF TESTED COMPONENTS OF THE SAMPLE MX10-1716-10 WERE TESTED TOGETHER.

REMARK : AS REQUESTED BY THE APPLICANT, COATING WITH BASE MATERIAL OF TESTED COMPONENTS OF THE SAMPLE MX10-1716-11 WERE TESTED TOGETHER.

REMARK : AS REQUESTED BY THE APPLICANT, COATING WITH BASE MATERIAL OF TESTED COMPONENTS OF THE SAMPLE MX10-1716-12 WERE TESTED TOGETHER.

REMARK : AS REQUESTED BY THE APPLICANT, COATING WITH BASE MATERIAL OF TESTED COMPONENTS OF THE SAMPLE MX10-1716-13 WERE TESTED TOGETHER.

REMARK : AS REQUESTED BY THE APPLICANT, COATING WITH BASE MATERIAL OF TESTED COMPONENTS OF THE SAMPLE MX10-1716-14 WERE TESTED TOGETHER.

REMARK : AS REQUESTED BY THE APPLICANT, COATING WITH BASE MATERIAL OF TESTED COMPONENTS OF THE SAMPLE MX10-1716-15 WERE TESTED TOGETHER.

REMARK : AS REQUESTED BY THE APPLICANT, COATING WITH BASE MATERIAL OF TESTED COMPONENTS OF THE SAMPLE MX10-1716-16 WERE TESTED TOGETHER.

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REMARK : AS REQUESTED BY THE APPLICANT, COATING WITH BASE MATERIAL OF TESTED COMPONENTS OF THE SAMPLE MX10-1716-17 WERE TESTED TOGETHER.

REMARK : AS REQUESTED BY THE APPLICANT, COATING WITH BASE MATERIAL OF TESTED COMPONENTS OF THE SAMPLE MX10-1716-18 WERE TESTED TOGETHER.

REMARK : AS REQUESTED BY THE APPLICANT, COATING WITH BASE MATERIAL OF TESTED COMPONENTS OF THE SAMPLE MX10-1716-19 WERE TESTED TOGETHER.

REMARK : AS REQUESTED BY THE APPLICANT, COATING WITH BASE MATERIAL OF TESTED COMPONENTS OF THE SAMPLE MX10-1716-20 WERE TESTED TOGETHER.

REMARK : AS REQUESTED BY THE APPLICANT, COATING WITH BASE MATERIAL OF TESTED COMPONENTS OF THE SAMPLE MX10-1716-21 WERE TESTED TOGETHER.

REMARK : AS REQUESTED BY THE APPLICANT, COATING WITH BASE MATERIAL OF TESTED COMPONENTS OF THE SAMPLE MX10-1716-22 WERE TESTED TOGETHER.

Test method :

Sample Number	Testing item	Ω Testing method	Quality control Batch:	Analysis Date:	Analyzed By:	Reporting limit ppm
1-22	Chromium VI (Cr^{6+}) content	With reference to USEPA 3060, by EPA 7196	QHU2009-3p164-166	2010-08-09	JLHS,MLG	2,0

Sample Number	Testing item	Ω Testing method	Quality control Batch:	Analysis Date:	Analyzed By:	Reporting limit ppm
9	POLYBROMINATED BIPHENYLS (PBBs)	Determined by GC-MSD	2010-004642-PCL-001	2010-08-12	▲ CONT	50,0
9	POLYBROMINATED DIPHENYL ETHERS (PBDEs)	Determined by GC-MSD	2010-004642-PCL-001	2010-08-12	▲ CONT	50,0

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Sample Number	Testing item	Ω Testing method	Quality control Batch:	Analysis Date:	Analyzed By:	Reporting limit ppm
1	Lead (Pb) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p52	2010-08-20	DCL,JMR	5,0
2	Lead (Pb) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p52	2010-08-20	DCL,JMR	5,0
3	Lead (Pb) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p52	2010-08-20	DCL,JMR	5,0
4	Lead (Pb) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p52	2010-08-20	DCL,JMR	5,0
5	Lead (Pb) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p52	2010-08-20	DCL,JMR	5,0
6	Lead (Pb) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p52	2010-08-20	DCL,JMR	5,0
7	Lead (Pb) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p52	2010-08-20	DCL,JMR	5,0
8	Lead (Pb) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p52	2010-08-20	DCL,JMR	5,0
9	Lead (Pb) content	With reference to USEPA 3052, by EPA 6010	MET2010-32p54	2010-08-20	DCL,JMR	5,0
10	Lead (Pb) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p52	2010-08-20	DCL,JMR	5,0
11	Lead (Pb) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p52	2010-08-20	DCL,JMR	5,0
12	Lead (Pb) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p52	2010-08-20	DCL,JMR	5,0
13	Lead (Pb) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p52	2010-08-20	DCL,JMR	5,0
14	Lead (Pb) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p52	2010-08-20	DCL,JMR	5,0
15	Lead (Pb) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p53	2010-08-20	DCL,JMR	5,0
16	Lead (Pb) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p52	2010-08-20	DCL,JMR	5,0
17	Lead (Pb) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p53	2010-08-20	DCL,JMR	5,0
18	Lead (Pb) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p52	2010-08-20	DCL,JMR	5,0
19	Lead (Pb) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p52	2010-08-20	DCL,JMR	5,0
20	Lead (Pb) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p52	2010-08-20	DCL,JMR	5,0
21	Lead (Pb) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p52	2010-08-20	DCL,JMR	5,0
22	Lead (Pb) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p53	2010-08-20	DCL,JMR	5,0

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Sample Number	Testing item	Ω Testing method	Quality control Batch:	Analysis Date:	Analyzed By:	Reporting limit ppm
1	Cadmium (Cd) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p52	2010-08-20	DCL,JMR	2,0
2	Cadmium (Cd) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p52	2010-08-20	DCL,JMR	2,0
3	Cadmium (Cd) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p52	2010-08-20	DCL,JMR	2,0
4	Cadmium (Cd) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p52	2010-08-20	DCL,JMR	2,0
5	Cadmium (Cd) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p52	2010-08-20	DCL,JMR	2,0
6	Cadmium (Cd) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p52	2010-08-20	DCL,JMR	2,0
7	Cadmium (Cd) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p52	2010-08-20	DCL,JMR	2,0
8	Cadmium (Cd) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p52	2010-08-20	DCL,JMR	2,0
9	Cadmium (Cd) content	With reference to USEPA 3052, by EPA 6010	MET2010-32p54	2010-08-20	DCL,JMR	2,0
10	Cadmium (Cd) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p52	2010-08-20	DCL,JMR	2,0
11	Cadmium (Cd) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p52	2010-08-20	DCL,JMR	2,0
12	Cadmium (Cd) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p52	2010-08-20	DCL,JMR	2,0
13	Cadmium (Cd) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p52	2010-08-20	DCL,JMR	2,0
14	Cadmium (Cd) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p52	2010-08-20	DCL,JMR	2,0
15	Cadmium (Cd) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p53	2010-08-20	DCL,JMR	2,0
16	Cadmium (Cd) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p52	2010-08-20	DCL,JMR	2,0
17	Cadmium (Cd) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p53	2010-08-20	DCL,JMR	2,0
18	Cadmium (Cd) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p52	2010-08-20	DCL,JMR	2,0
19	Cadmium (Cd) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p52	2010-08-20	DCL,JMR	2,0
20	Cadmium (Cd) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p52	2010-08-20	DCL,JMR	2,0
21	Cadmium (Cd) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p52	2010-08-20	DCL,JMR	2,0
22	Cadmium (Cd) content	With reference to USEPA 3050MOD, by EPA 6010	MET2010-32p53	2010-08-20	DCL,JMR	2,0

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Sample Number	Testing item	Ω Testing method	Quality control Batch:	Analysis Date:	Analyzed By:	Reporting limit ppm
1	Mercury (Hg) content	With reference to USEPA 7471 by USEPA 7471	MET2010-31p18	2010-08-10	JAPM	0,083
2	Mercury (Hg) content	With reference to USEPA 7471 by USEPA 7471	MET2010-31p18	2010-08-10	JAPM	0,083
3	Mercury (Hg) content	With reference to USEPA 7471 by USEPA 7471	MET2010-31p18	2010-08-10	JAPM	0,083
4	Mercury (Hg) content	With reference to USEPA 7471 by USEPA 7471	MET2010-31p18	2010-08-10	JAPM	0,083
5	Mercury (Hg) content	With reference to USEPA 7471 by USEPA 7471	MET2010-31p18	2010-08-10	JAPM	0,083
6	Mercury (Hg) content	With reference to USEPA 7471 by USEPA 7471	MET2010-31p18	2010-08-10	JAPM	0,083
7	Mercury (Hg) content	With reference to USEPA 7471 by USEPA 7471	MET2010-31p18	2010-08-10	JAPM	0,083
8	Mercury (Hg) content	With reference to USEPA 7471 by USEPA 7471	MET2010-31p18	2010-08-10	JAPM	0,083
9	Mercury (Hg) content	With reference to USEPA 7471 by USEPA 7471	MET2010-31p15	2010-08-10	JAPM	0,083
10	Mercury (Hg) content	With reference to USEPA 7471 by USEPA 7471	MET2010-31p18	2010-08-10	JAPM	0,083
11	Mercury (Hg) content	With reference to USEPA 7471 by USEPA 7471	MET2010-31p18	2010-08-10	JAPM	0,083
12	Mercury (Hg) content	With reference to USEPA 7471 by USEPA 7471	MET2010-31p19	2010-08-10	JAPM	0,083
13	Mercury (Hg) content	With reference to USEPA 7471 by USEPA 7471	MET2010-31p19	2010-08-10	JAPM	0,083
14	Mercury (Hg) content	With reference to USEPA 7471 by USEPA 7471	MET2010-31p19	2010-08-10	JAPM	0,083
15	Mercury (Hg) content	With reference to USEPA 7471 by USEPA 7471	MET2010-31p19	2010-08-10	JAPM	0,083
16	Mercury (Hg) content	With reference to USEPA 7471 by USEPA 7471	MET2010-31p19	2010-08-10	JAPM	0,083
17	Mercury (Hg) content	With reference to USEPA 7471 by USEPA 7471	MET2010-31p19	2010-08-10	JAPM	0,083
18	Mercury (Hg) content	With reference to USEPA 7471 by USEPA 7471	MET2010-31p19	2010-08-10	JAPM	0,083
19	Mercury (Hg) content	With reference to USEPA 7471 by USEPA 7471	MET2010-31p19	2010-08-10	JAPM	0,083
20	Mercury (Hg) content	With reference to USEPA 7471 by USEPA 7471	MET2010-31p19	2010-08-10	JAPM	0,083
21	Mercury (Hg) content	With reference to USEPA 7471 by USEPA 7471	MET2010-31p19	2010-08-10	JAPM	0,083
22	Mercury (Hg) content	With reference to USEPA 7471 by USEPA 7471	MET2010-31p19	2010-08-10	JAPM	0,083

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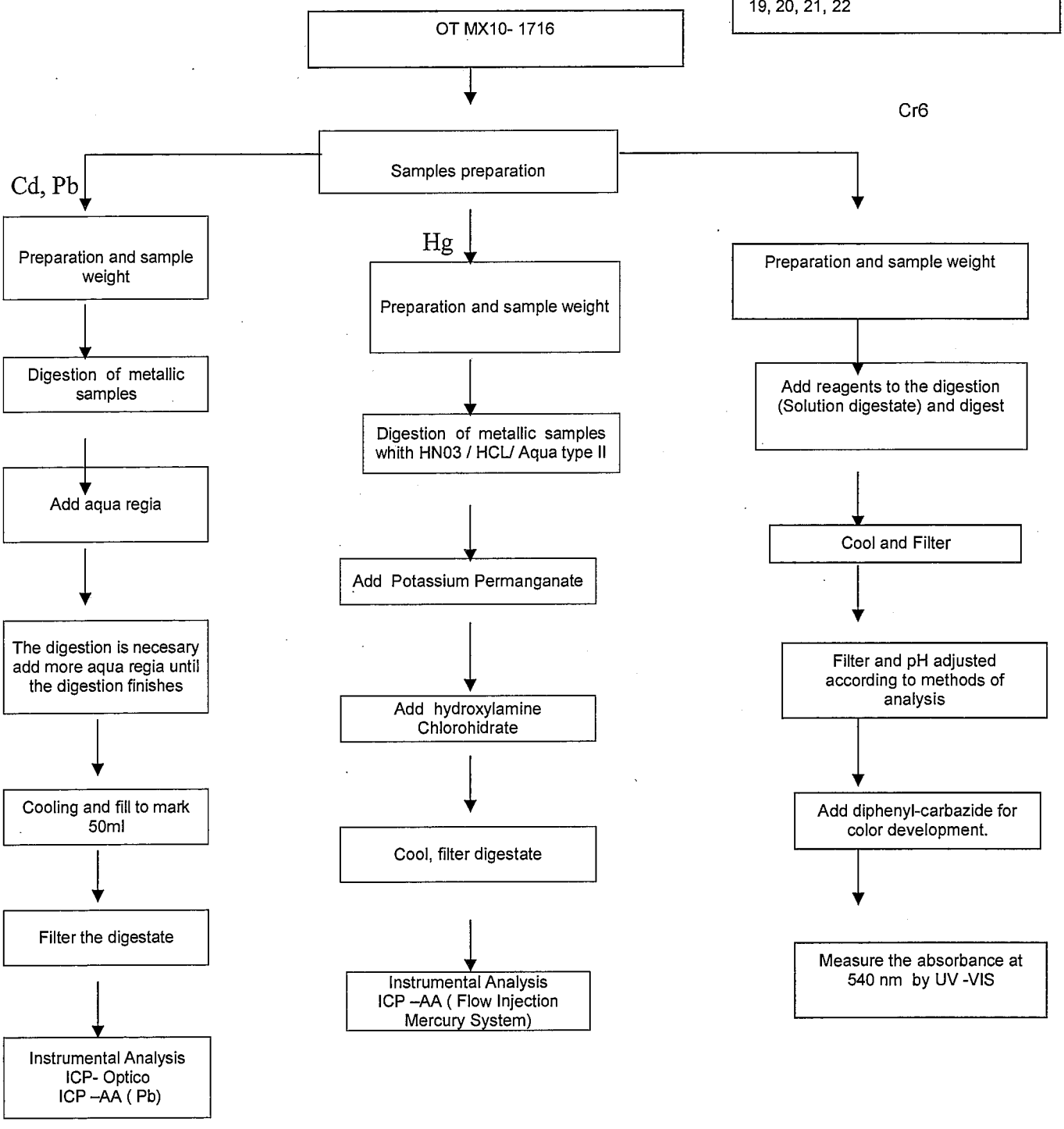
Metallic samples
Flow chart for samples: 1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22



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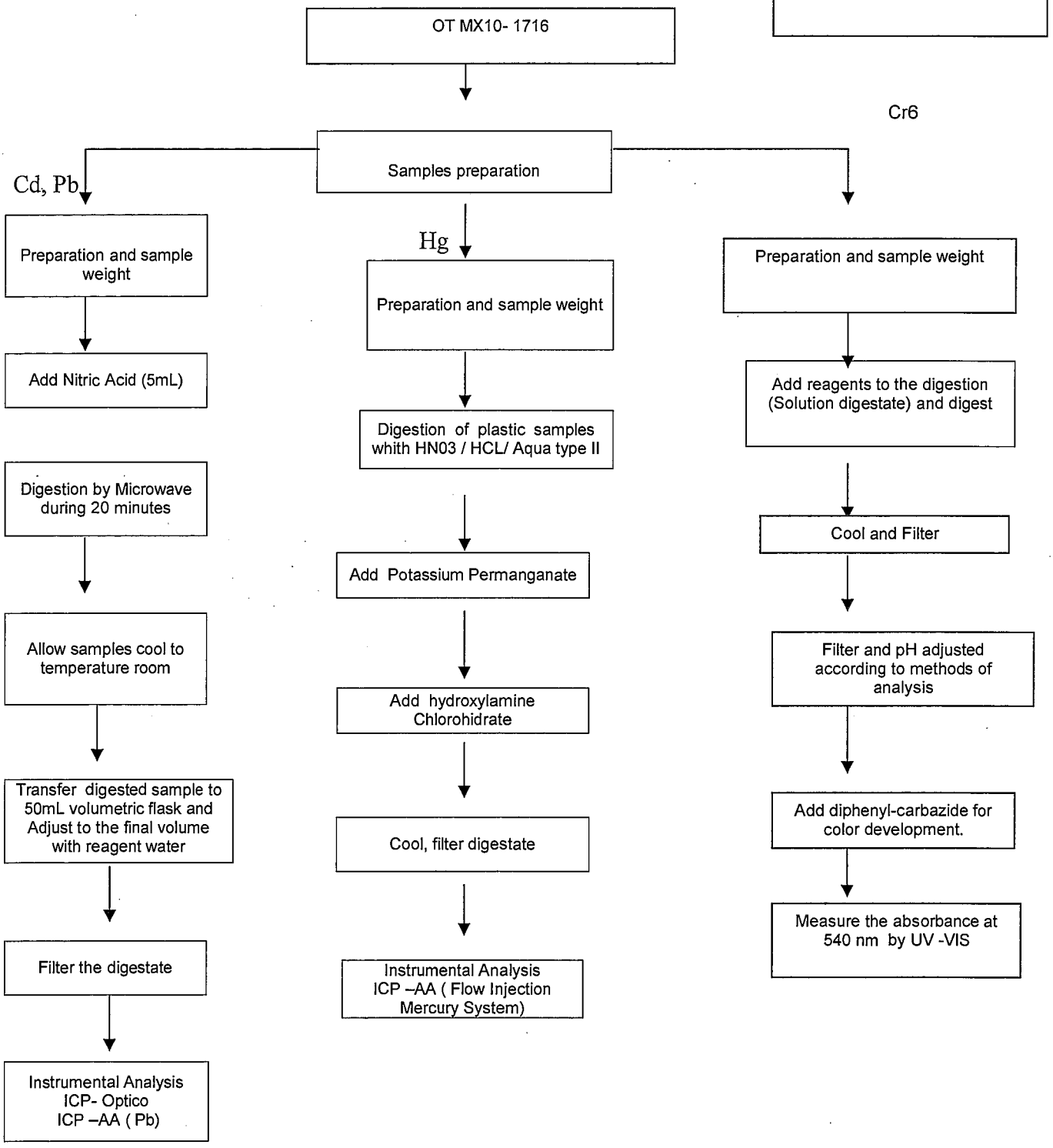
www.intertek.com

Report No.: MX10-1716
Date: 2010-08-23

Plastic samples
Flow char for samples: 9.



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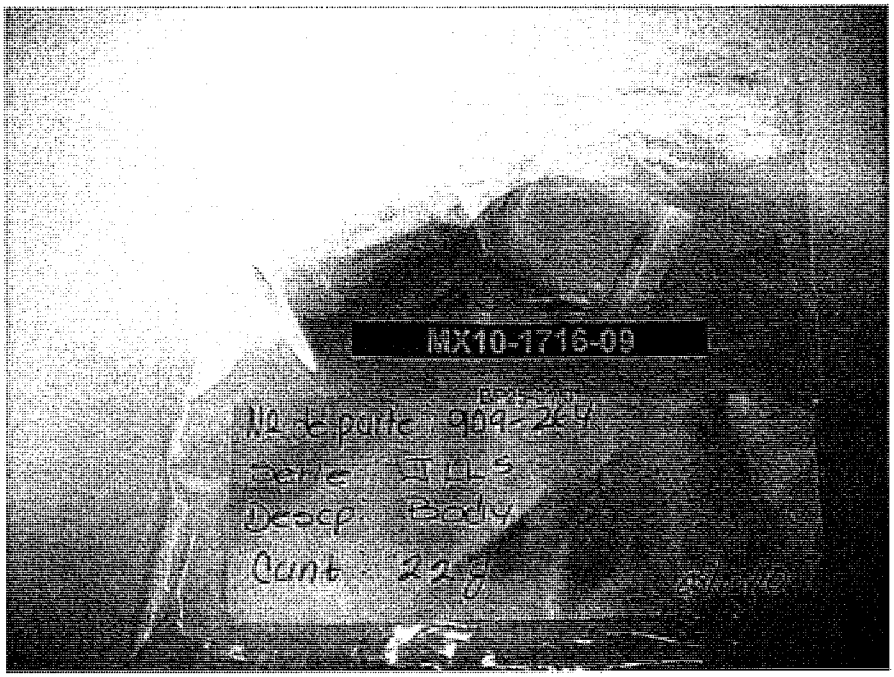

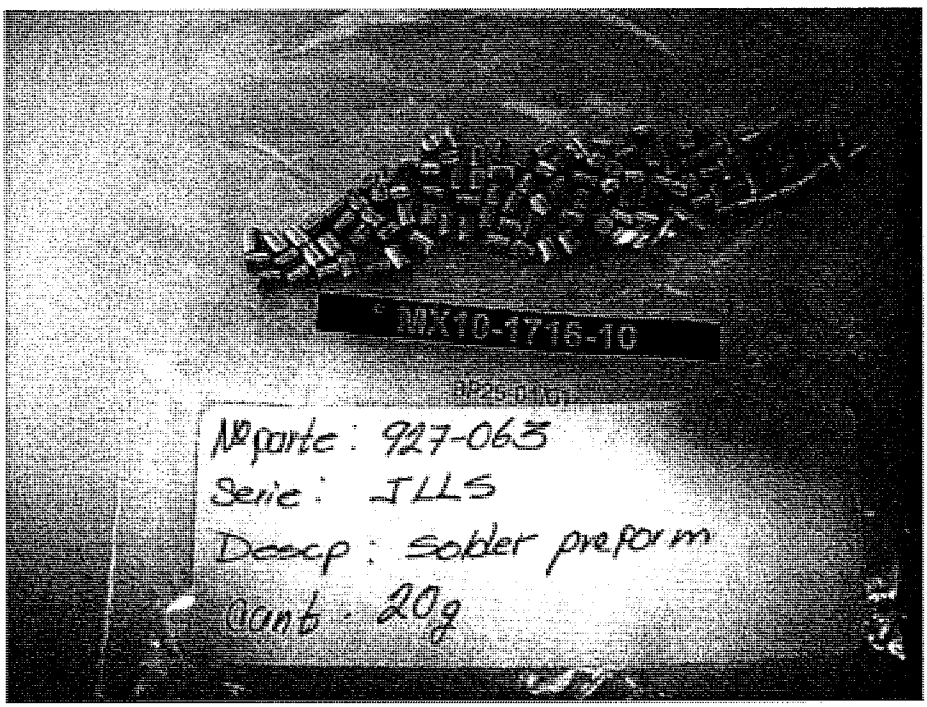

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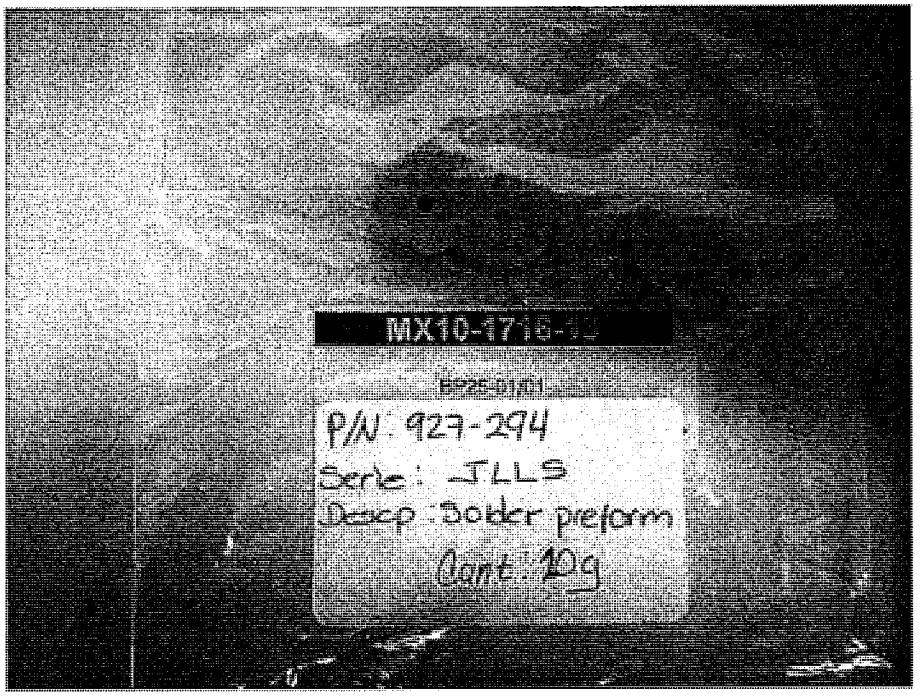

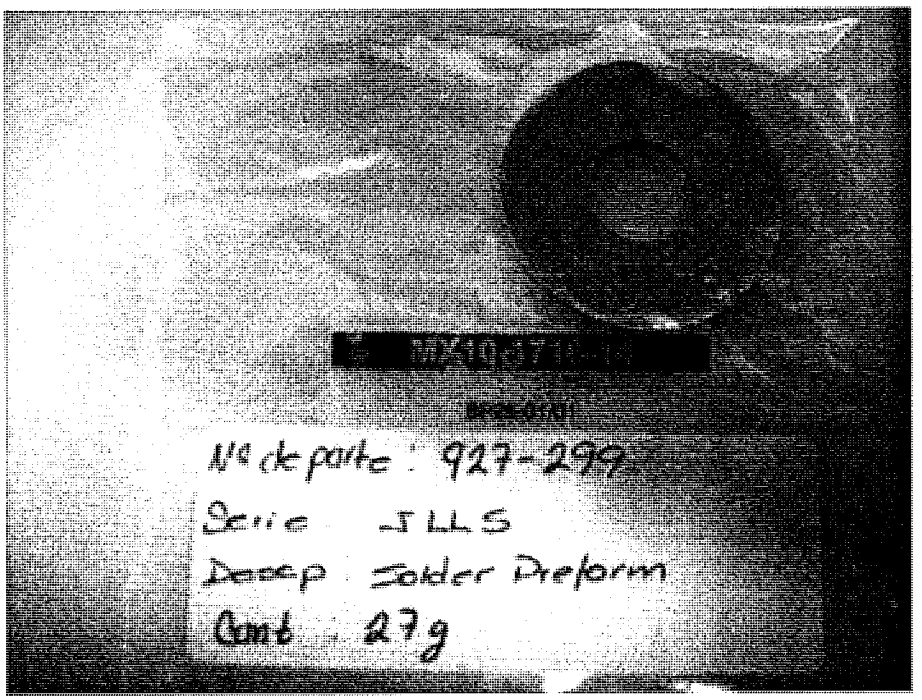

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Test Report Number : TWNC00216194

Applicant: Littelfuse, S.A. de C.V.
Blvd. Fausto Z. Martinez #1800
Col. Magisterio Seccion 38 C.P.
26070 Piedra Negras, Coahuila,
Mexico

Date : Jul 19, 2011

Sample Description:
One (1) group of submitted samples said to be :
Part Description : Body
Part Number : 039145
Date Sample Received : Jul 14, 2011
Date Test Started : Jul 14, 2011

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

Authorized By:
On Behalf Of Intertek Testing Services
Taiwan Limited

K. Y. Liang
Director

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Number : TWNC00216194

Test Conducted

(Ⅰ) Test Result Summary :

Test Item	Result (ppm)
	White 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)	ND
Chlorine (Cl)	ND
Bromine (Br)	ND
Iodine (I)	ND

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

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

Date Sample Received : Jul 14, 2011
Test Period : Jul 14, 2011 To Jul 19, 2011

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Test Conducted

(Ⅱ) RoHS Requirement:

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

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

(Ⅲ) Test Method:

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

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Test Conducted
(Ⅲ) Test Method:

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

Remark: Reporting limit = Quantitation limit of analyte in sample

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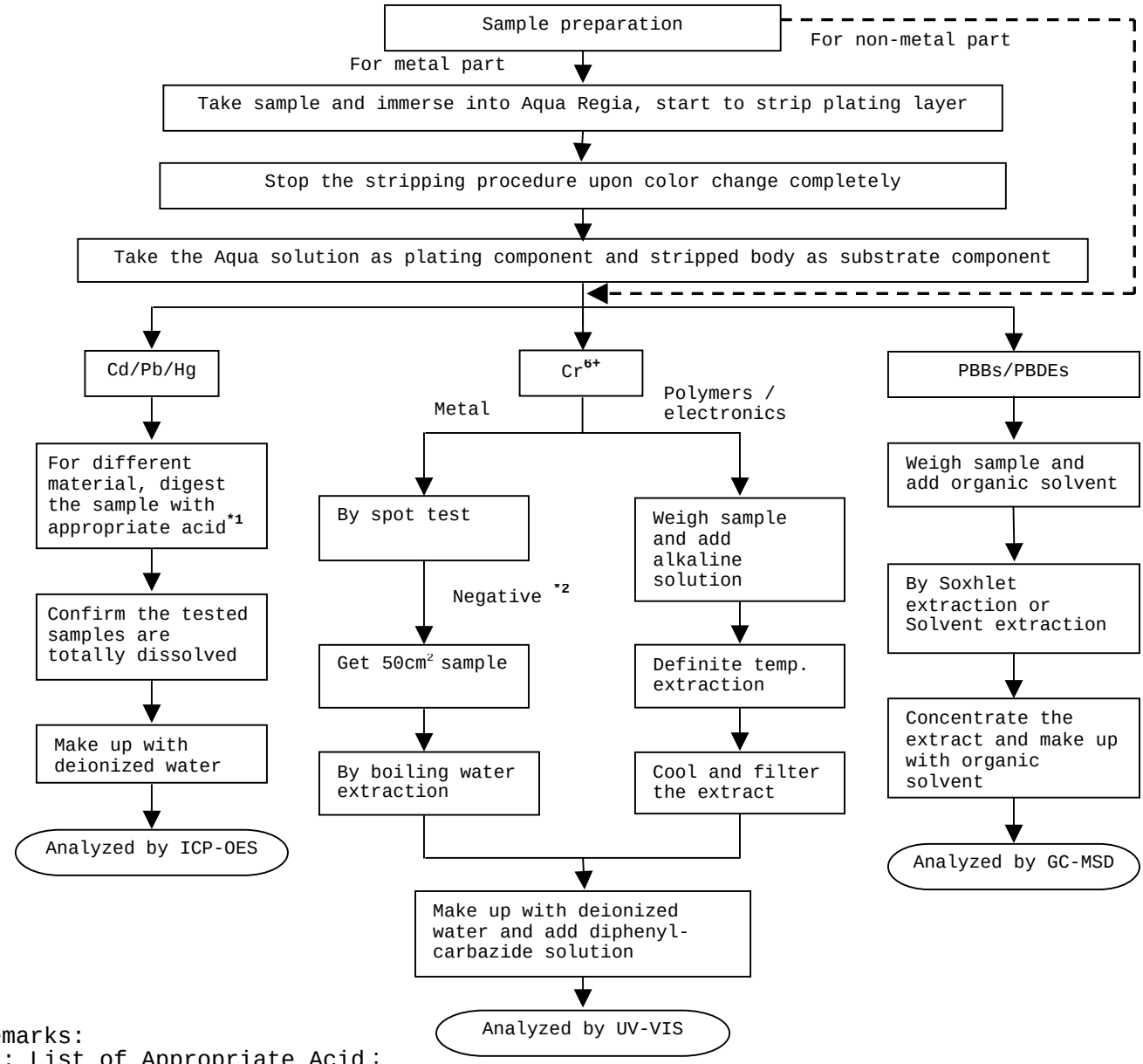
Test Conducted

(Ⅳ) Measurement Flowchart:

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

Reference Standard: IEC 62321 edition 1.0:2008



Remarks:

*1: List of Appropriate Acid：

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

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

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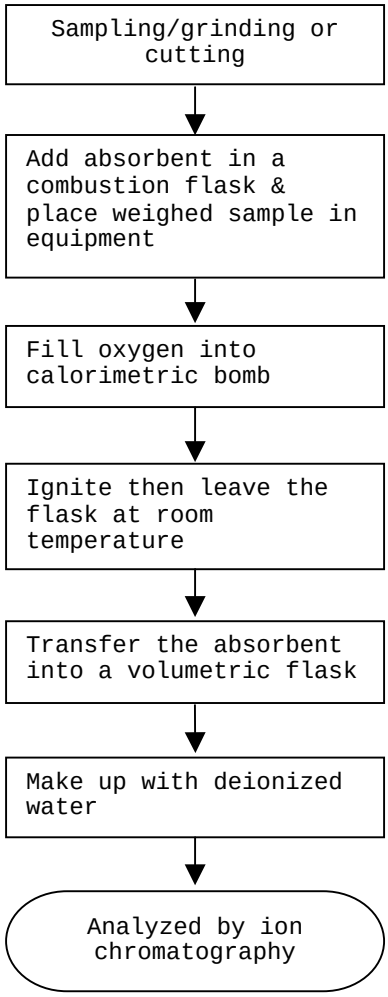
Test Conducted

(Ⅳ) Measurement Flowchart:

Test for Halogen Content

Reference Standard：EN 14582



End of Report

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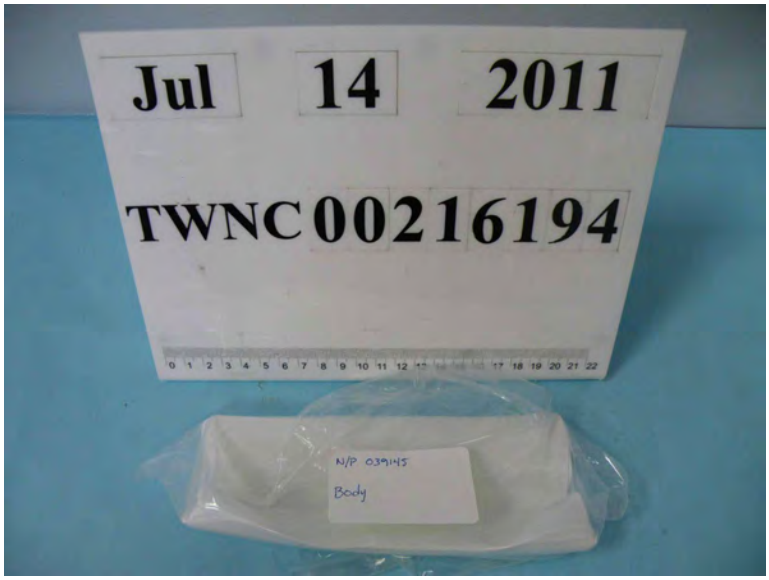
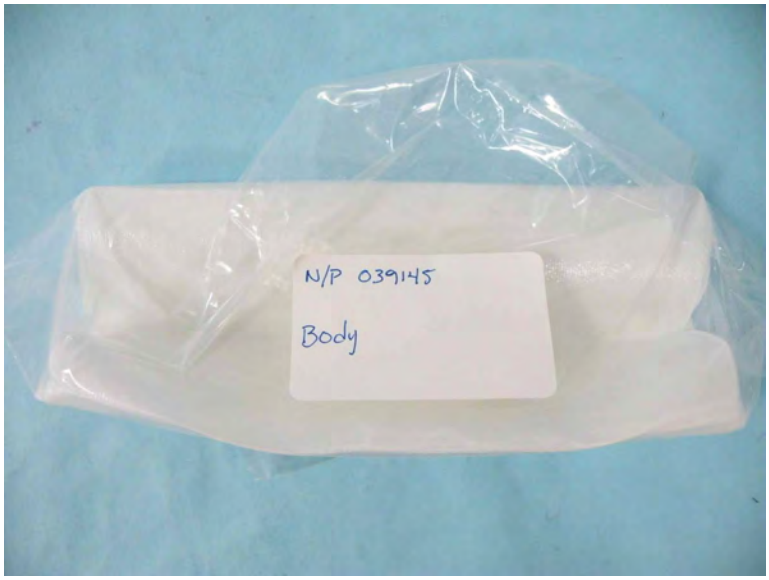
Number : TWNC00216194

Test Conducted

Photo





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Test Report Number : TWNC00222570

Applicant: Littelfuse, S.A. de C.V.
Blvd. Fausto Z. Martinez #1800
Col. Magisterio Seccion 38 C.P.
26070 Piedra Negras, Coahuila,
Mexico

Date : Sep 07, 2011

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

Part Description	: Filler
Part Number	: 090196
Date Sample Received	: Sep 05, 2011
Date Test Started	: Sep 05, 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 : TWNC00222570

Test Conducted

(Ⅰ) Test Result Summary :

Test Item	Result (ppm)
	Semitransparent 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)	ND
Chlorine (Cl)	ND
Bromine (Br)	ND
Iodine (I)	ND

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

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

Date Sample Received : Sep 05, 2011
Test Period : Sep 05, 2011 To Sep 07, 2011

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Number : TWNC00222570

Test Conducted

(Ⅱ) RoHS Requirement:

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

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

(Ⅲ) Test Method:

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

Remark: Reporting limit = Quantitation limit of analyte in sample

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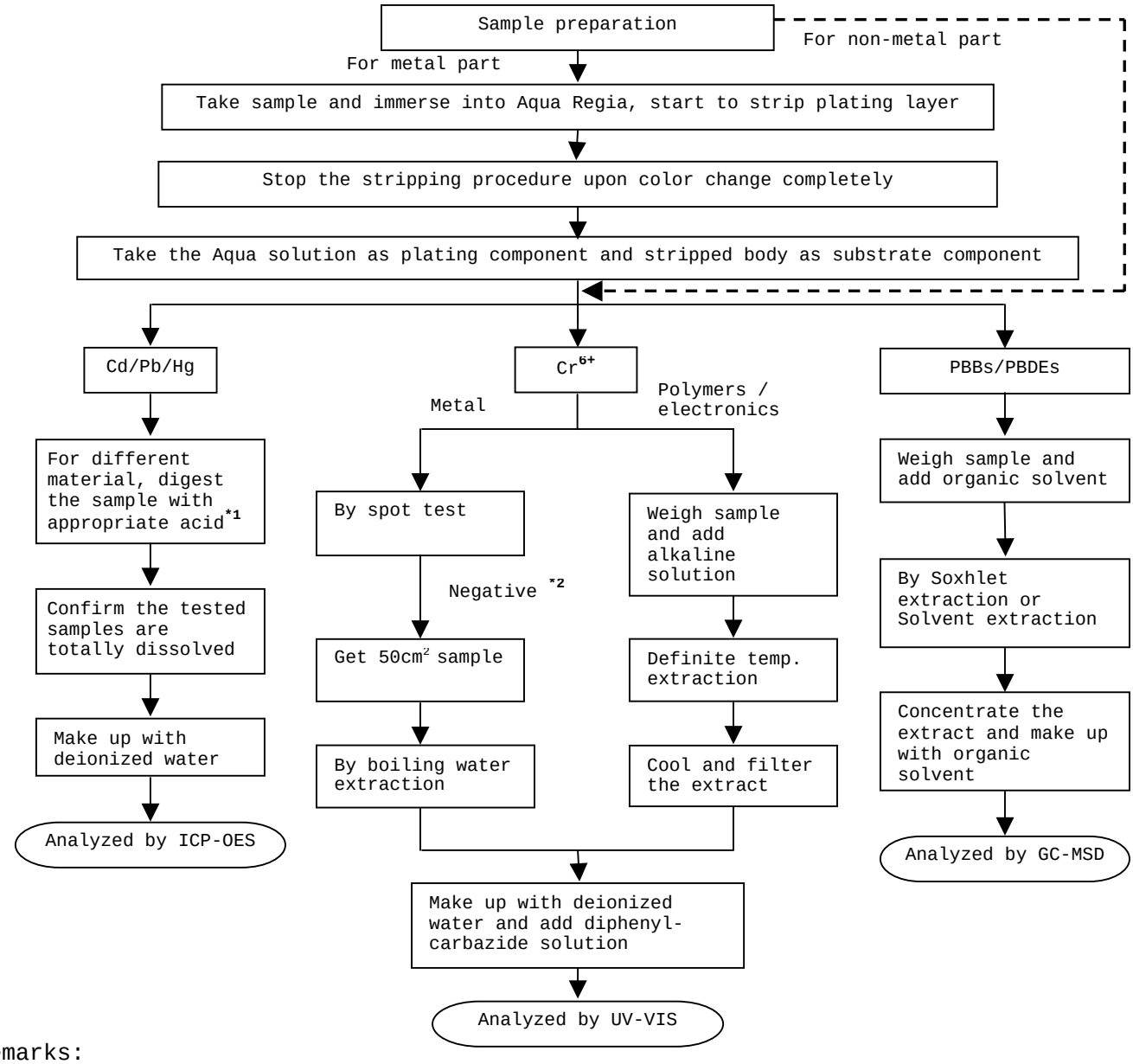
Number : TWNC00222570

Test Conducted

(Ⅳ) Measurement Flowchart:

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

Reference Standard: IEC 62321 edition 1.0:2008



Remarks:

*1: List of Appropriate Acid：

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

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

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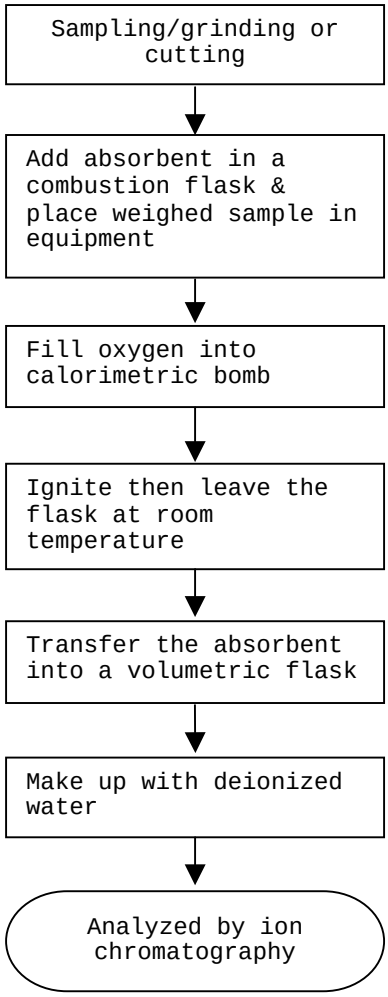
Test Conducted

(Ⅳ) Measurement Flowchart:

Test for Halogen Content

Reference Standard：EN 14582



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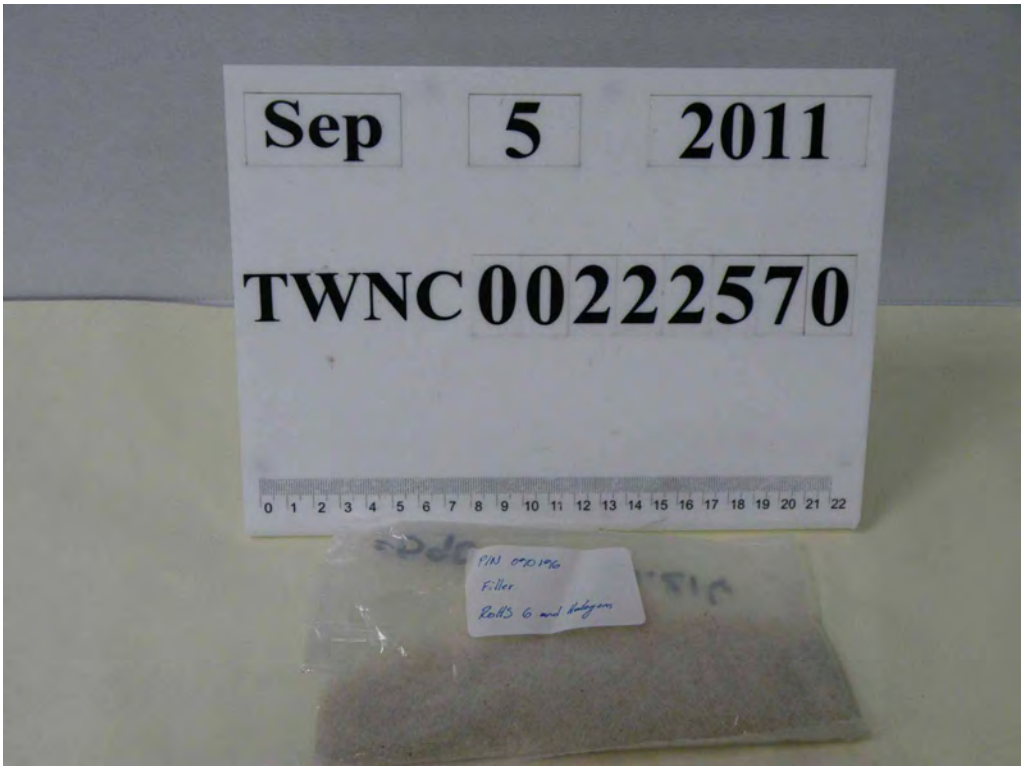
Number : TWNC00222570

Test Conducted

Photo



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Test Report Number : TWNC00248700

Applicant: Littelfuse, Philippines Inc. Date : Mar 28, 2012
LIMA Technology Center, Lipa City,
Malvar, Batangas

Sample Description:
One (1) group of submitted samples said to be :
Part Description : 1 ID BRASS NLS
Part Number : 923-508
Date Sample Received : Mar 20, 2012
Date Test Started : Mar 23, 2012

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

Authorized By:
On Behalf Of Intertek Testing Services
Taiwan Limited



K. Y. Liang
Director

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Number : TWNC00248700

Test Conducted

(Ⅰ) Test Result Summary :

Test Item	Result (ppm)	
	(1)	(2)
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 $50cm^2$ = milligram per kilogram with 50 square centimetre
Negative = A negative test result indicated positive observation was not found at the time of Test.
# = Due to the insufficient sample area, reduced total sample surface of 20 cm^2 was used and the dilution factor was adjusted accordingly.

Tested Components
(1) Coppery Metal Base Material
(2) Silvery Plating Layer

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

Date Sample Received : Mar 20, 2012
Test Period : Mar 23, 2012 To Mar 27, 2012

(Ⅱ) RoHS Requirement:

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

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

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Test Conducted
(Ⅲ) Test Method:

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

Remark: Reporting limit = Quantitation limit of analyte in sample

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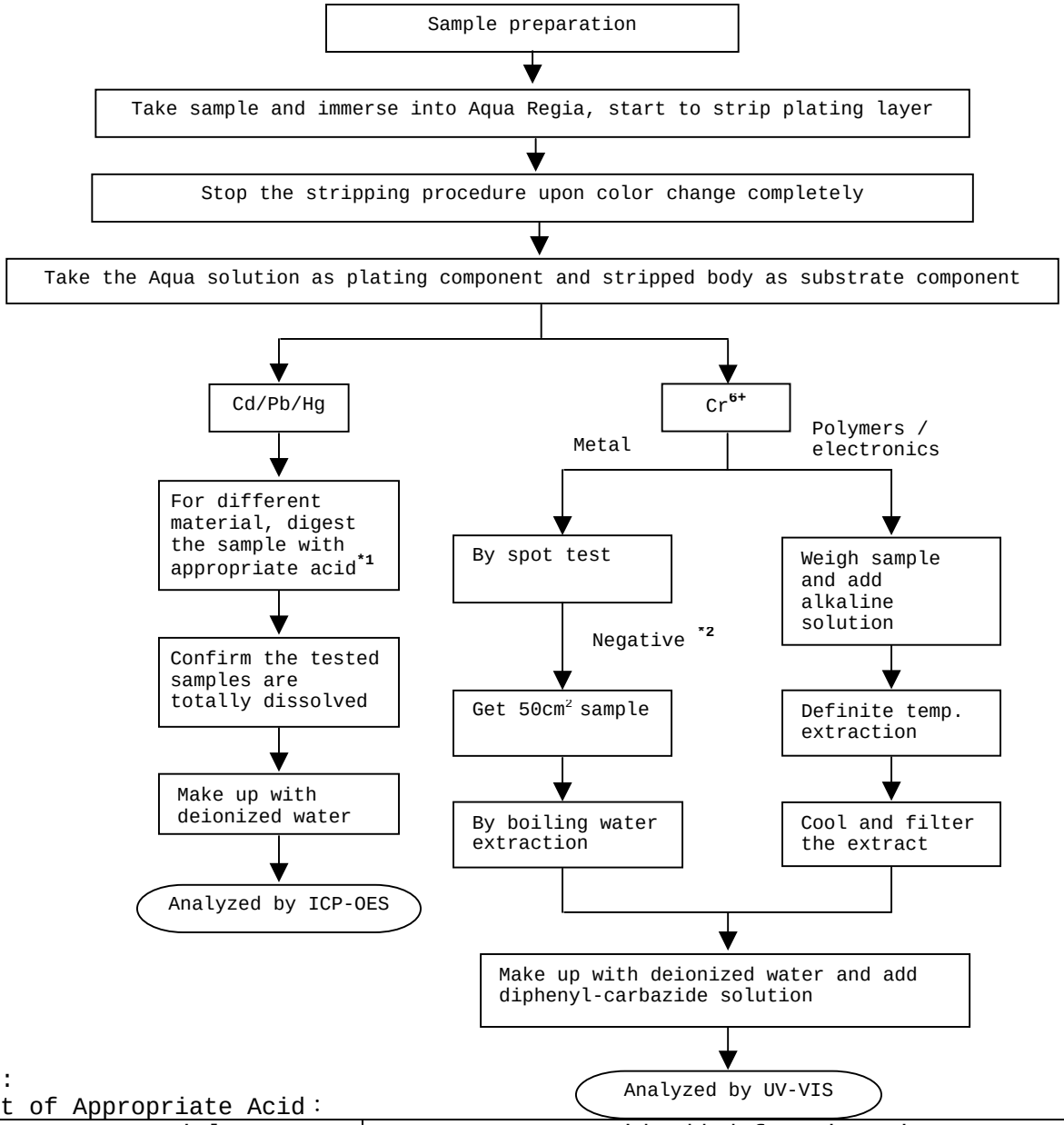
Number : TWNC00248700

Test Conducted

(Ⅳ) Measurement Flowchart:

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

Reference Standard：IEC 62321 edition 1.0:2008



Remarks:

*1: List of Appropriate Acid：

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

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

End of Report

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Number : TWNC00248700

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Photo





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