

Specification For Approval

Date: 2013 / 12 / 13

File No.: 131213001

Version: 1.0

Customer : 研華股份有限公司

Customer P/N : 1750007265-01

INVAX P/N : NB1053-E

Description : Antenna

Cortec Checked By:



Customer Approved By:



INVAX System Technology Corp.
4F. No. 815.Chung Hsiao East Rd., Sec.5
Taipei, TAIWAN

TEL:886-2-2788-5218 FAX:886-2-2783-1658
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Xian-Xi Industrial, Sha-Tou Administration Zone,
Chang-An Town, Dong-Guan City, Guangdong
Province, China
TEL:86-76 9-85388261 F AX:86-769-85317869
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Product Number: NB1053-E

Product Name: Antenna



1. Revision History

Revision	Date	Change Notification	Description
1.0			

Product Number: NB1053-E

Product Name: Antenna



2. Specification

Sample Photo



A. Electrical Characteristics

Frequency	2400~2500 MHz
Return loss	≤ -7 dB
Peak Gain	< 2.0 dBi
Efficiency	45 %
Polarization	Linear
Impedance	50 Ohm

B. Material & Mechanical Characteristics

Material of Radiator	C7521
Cable Type	OD1.13mm
Connector Type	Mini Connector
Connector Pull Test	>= 1Kg

C. Environmental

Operation Temperature	- 40 °C ~ + 65 °C
Storage Temperature	- 40 °C ~ + 80 °C

3. Characteristics and Reliability Test

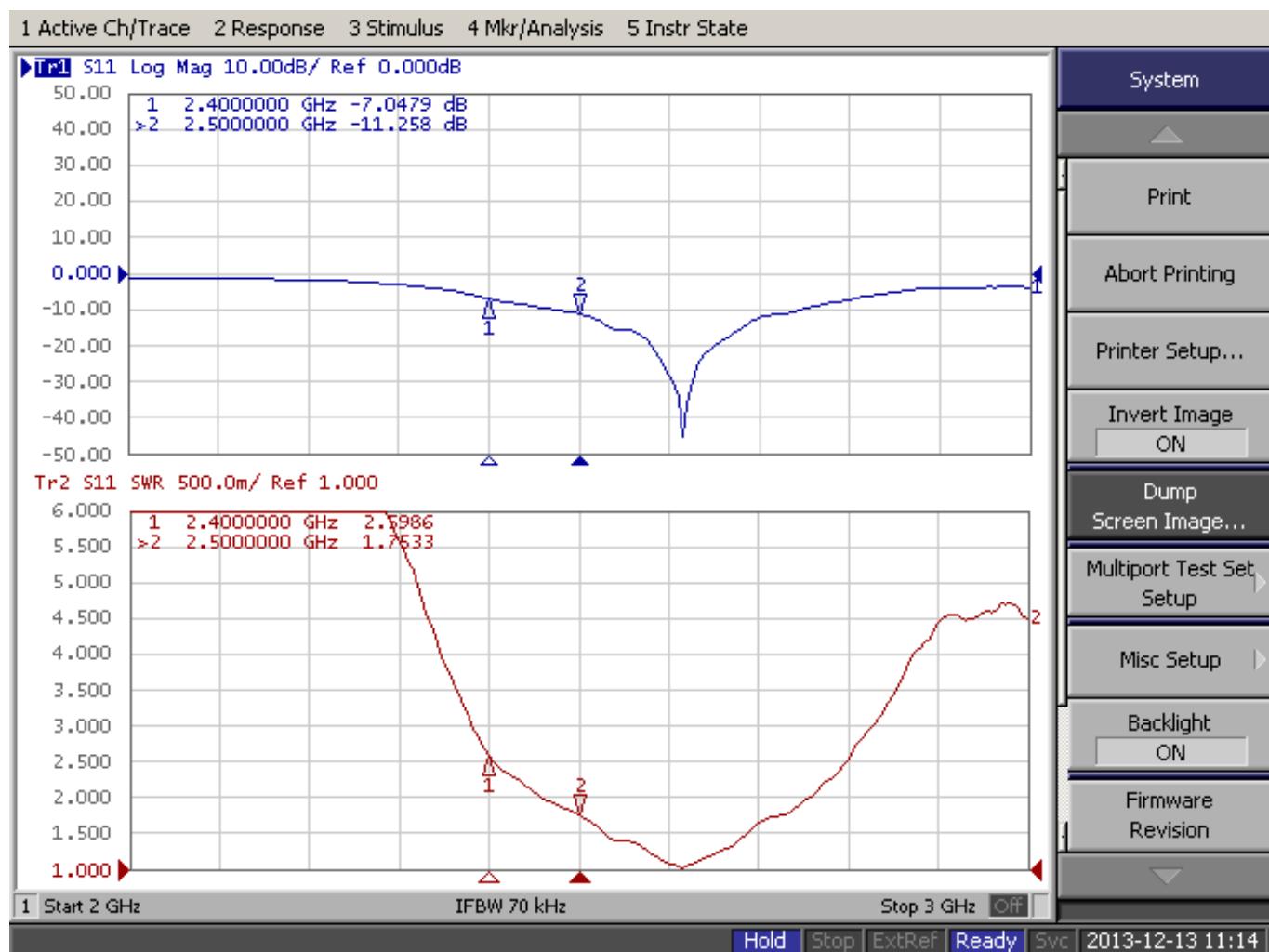
Test Items		Test Condition and Procedure	Requirements
C1	S.W.R.	Set DUT on Network Analyzer; make individual calibration to test	Directive DUT specification
C2	Antenna Gain	Set DUT on Antenna Chamber; make individual calibration to test	Directive DUT specification
M1	Vibration	GB / T2423 . 48-1997 Amplitude: 0.03 inch (1.5mm); Freq: 20 to 80 to 20 Hz 3 directions; 2 hours for each direction	1. No Visual Damage 2. Frequency Tol.<= 5%
M2	Random Drop	GB / T2423.8-1995 Height: 1.0 Meter; 3 directions; 1 time for each direction	1. No parts separated 2. Frequency Tol.<= 5%
M3	Solderability	GB 2423 . 28- 82 Solder iron: 260±5°C; Duration: 5 seconds	1. Mounted on PCB 2. No Visual Damage
M4	Terminal-Pull Test	Holding with individual specification; force applied to axis of terminal	1. Directive DUT specification 2. Frequency Tol.<= 5%
M5	Terminal-Torque Test	Holding with individual specification; applied clockwise and counterclockwise to the axis of terminal	1. Directive DUT specification 2. Frequency Tol.<= 5%
M6	Dimension	Inspection of dimension, color, material, package, surface process	Directive DUT specification
E1	Salt Spray	GB / T 2423 . 17- 93 Temp: 35°C; RH: >= 95%; NaCl solution: >= 5%; Time: 24 hours	After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol.<= 5%
E2	Humidity	GB / T 2423 . 4 - 93 Temp: 80°C / 12 H; -40°C / 12H RH: >= 90%; Time: 24 hours	After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol.<= 5%
E3	Thermal Shock	GB / T 2423 . 22 - 87 1 Cycle: - 40°C (30 minutes) to + 80°C (30 minutes) Cycles: 24	After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol.<= 5%
E4	Life (High Temp.)	GB /T 2423 . 2 - 89 Temp: 80°C; Time: 24 hours	After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol.<= 5%
R1	RoHS	With Reference to IEC 62321:2008 with flow chart	Directive RoHS 2011/65/EU
R2	PFOS	With Reference to USA EPA 3540C:1996 by LC/MS	Directive RoHS 2006/122/EC
R3	PFOA	With Reference to USA EPA 3540C:1996 by LC/MS	Directive RoHS 2006/122/EC

Product Number: NB1053-E

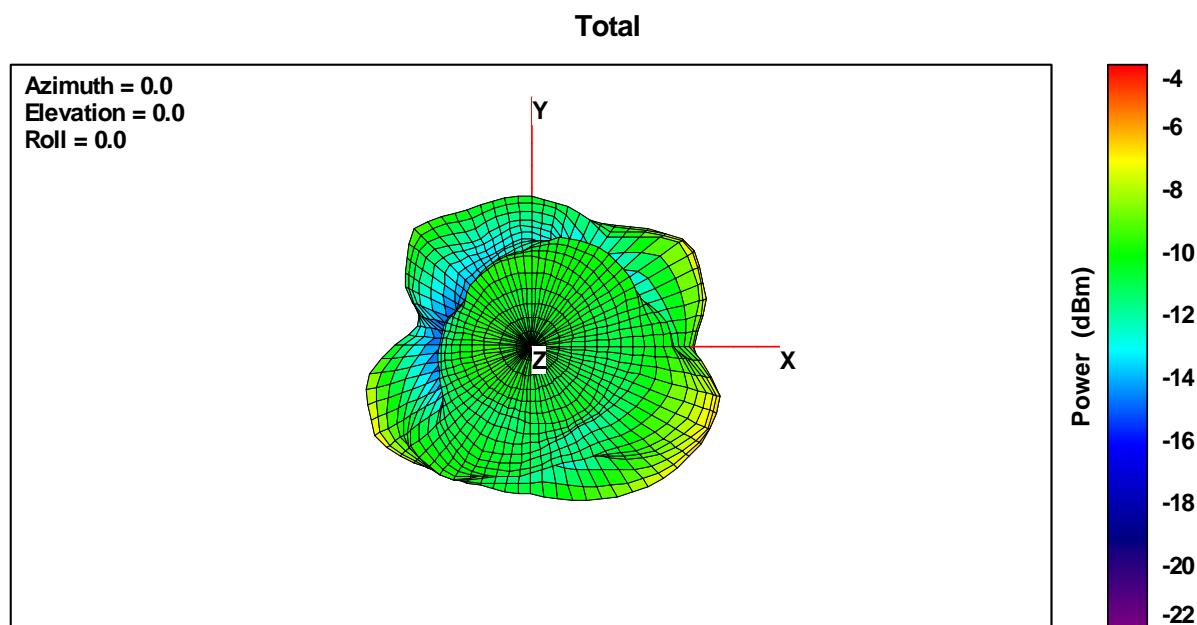
Product Name: Antenna



4. Antenna - S Parameter Test Data



5. Antenna - Radiation Pattern Test Data



Total	Point Values	Ant. Port Input Pwr. (dBm)	Tot. Rad. Pwr. (dBm)	Peak EIRP (dBm)	Directivity (dBi)	Efficiency (dB)	Efficiency (%)	Gain (dBi)
Frequency (MHz)								
	2400	0	-3.21068	1.38173	4.59241	-3.21068	47.7454	1.38173
	2410	0	-3.23591	1.43535	4.67126	-3.23591	47.4689	1.43535
	2420	0	-3.20826	1.44512	4.65338	-3.20826	47.7721	1.44512
	2430	0	-3.40216	1.28733	4.68949	-3.40216	45.6861	1.28733
	2440	0	-3.49955	1.17009	4.66964	-3.49955	44.673	1.17009
	2450	0	-3.39655	1.2854	4.68194	-3.39655	45.7452	1.2854
	2460	0	-3.30508	1.33222	4.6373	-3.30508	46.7188	1.33222
	2470	0	-3.22639	1.4437	4.67009	-3.22639	47.573	1.4437
	2480	0	-3.244	1.32785	4.57185	-3.244	47.3806	1.32785
	2490	0	-3.10579	1.44964	4.55542	-3.10579	48.9127	1.44964
	2500	0	-3.12333	1.48019	4.60352	-3.12333	48.7155	1.48019

6. Mechanical Drawing

See attached files

7. Material Description and RoHS Test Report

See attached files

1

2

3

4

5

6

7

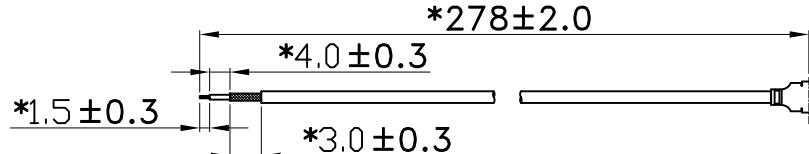
DESCRIPTION

8

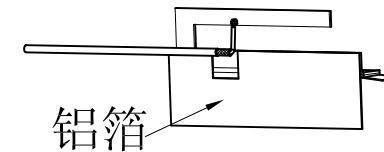
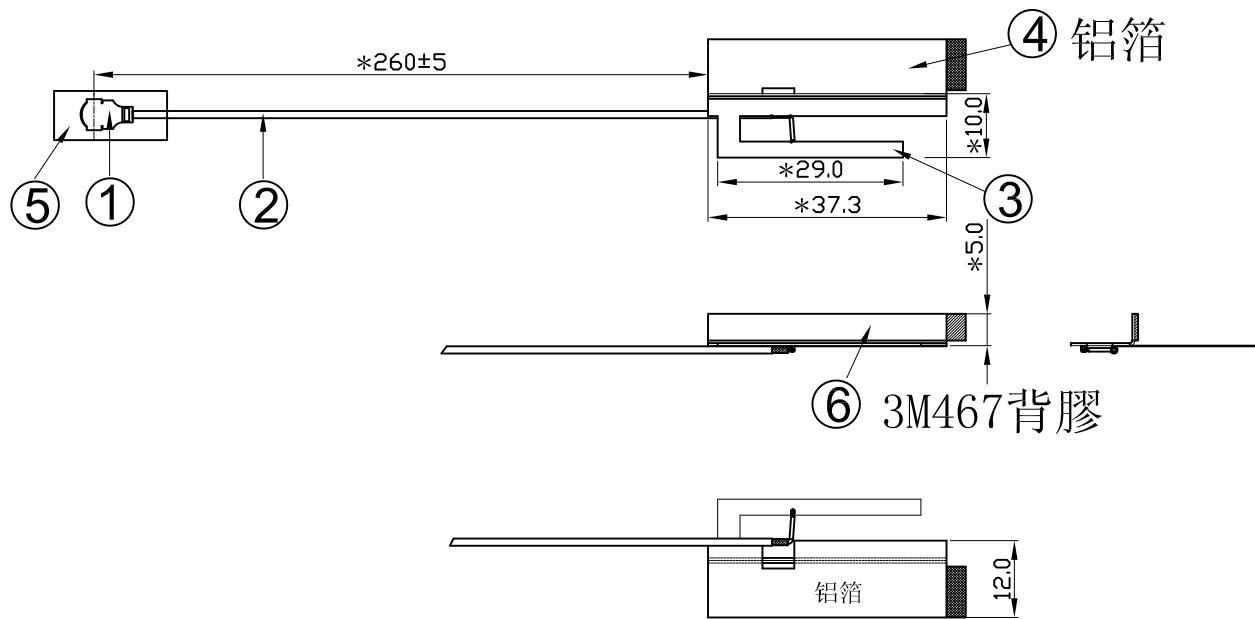
APPROVER

RoHS

Compatible



SIGN	DATE		
△			
△			
△			



Note:

1. Take " * " is the important dimension.
2. Tolerance: Unmarked tolerance refer to the standard tolerance please.
3. Pull Strength of the connector must be $\geq 1.0\text{kg}$.

6	GS-NB1053-01A	Adhesive	3M467	4.2mm*37mm *0.15mm	1
5	R-HSTUBE-028T	Sheath	EVA	ø3.0mm*15mm	1
4	Foil-AL-NB1053-02A	Al FOIL	Al	12*37mm	1
3	SM-NB1053E-01C	Shell	C7521	37.3mm*5mm *0.4mm	1
2	R-CB-113B	Coaxial Cable	OD1.13	Black	1
1	CR-113	Connector	Cu	Mini Connector	1
No.	Part Number	Name	Material	Finish	Q'ty

<i>Invax System Group.</i> Cortec TITLE: Embedded Antenna PART NO.: NB1053-E CUSTOMER P/N: /				
APP BY	CHK BY	RF BY	DES BY	Tolerance
Grant 13/11/27	Jack 13/11/27	SiFei 13/11/27	LJHUA 13/11/27	UNITS: mm SCALE: / REVISION: A
X.X	±0.2			X.XX ±0.1
				X° ±1

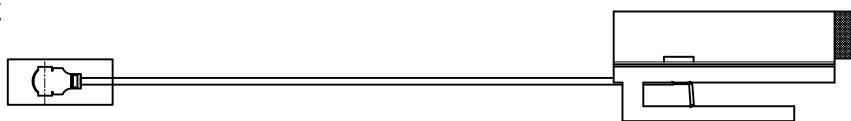


Date: 2013/11/27

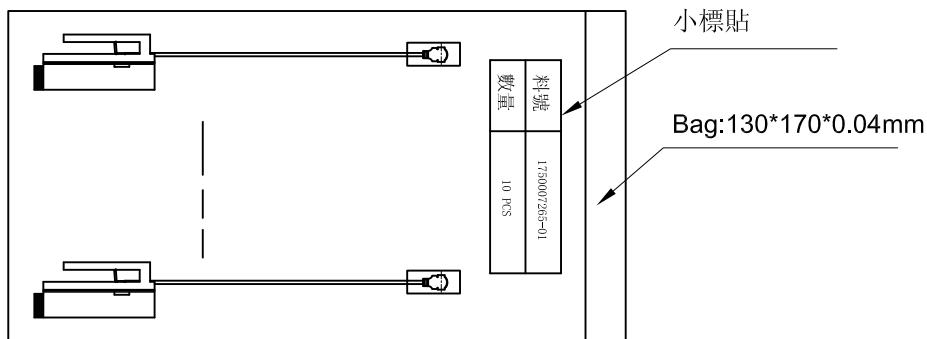
Page: 1 of 1

Part Number : NB1053-E	Revision : A
Name: Embedded Antenna	Customer :

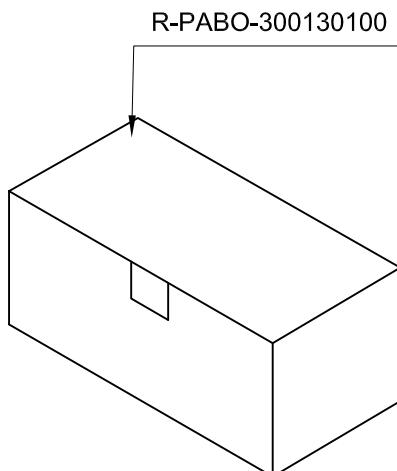
1. The Product



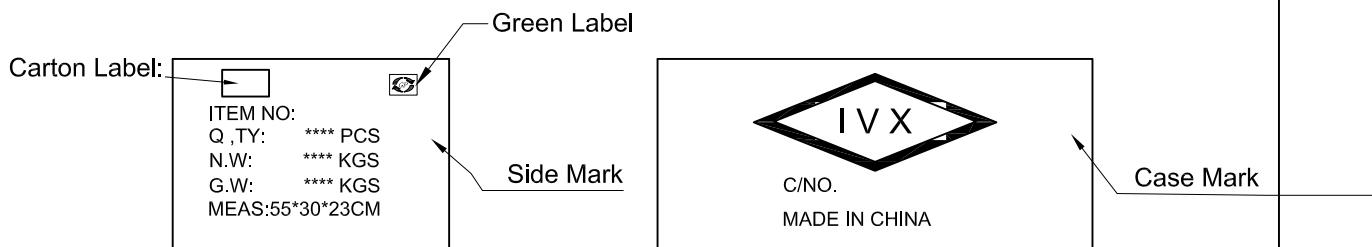
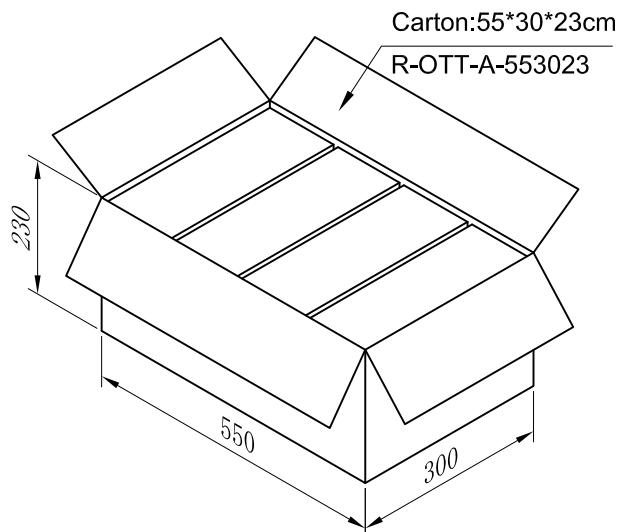
2. 10 PCS/per Bag



3. 250 PCS/per Box



4. 2000 PCS/per Carton

APPROVED BY : GrantCHECKED BY : JackDESIGNED BY : Ijhua

請輸入以下報告正確資料及檢查碼以便查核

1. 報告編號
2. 報告日期 (YYYY/MM/DD)
3. 產品名稱 (輸入前 10 個字不含空白)
4. 圖示檢查碼 (依指示畫面)



物料中HSF對象物質含量調查表

康捷電子有限公司	
填表：	時麗
部門：	研發部
職務：	文員

物料名稱：NB1053 -E

序號	物料型號	物料各構成名稱	各構成物料的材質	測試報告裡RoHS對應物質測試結果						檢測報告編號	測試日期	測試名稱	測試機構名稱
				Cd	Pb	Hg	Cr(VI)	PBBs	PBDEs				
1	SM-NB1053E-01C	Shell	C7521	N.D.	12	N.D.	Negative			CANEC1302378808	2013.03.05	C7521 white copper	SGS
2	FOIL-AL-NB1053-A	Al foil	Al	N.D.	15	N.D.	N.D.	N.D.	N.D.	CANEC1302401401	2013.03.06	Aluminum foil	SGS
3	R-HSTUBE-028T	Sheath	EVA	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	CANEC1302065601	2013.02.27	HEAT SHRINKABLE	SGS
4	GS-NB1053-01A	Asheslive	3M	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	SHAEC1308224601	2013.05.13	3M 9471 LE	SGS
5	R-CB-113B	Coaxial Cable	黑色色母	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	SHAEC1304390301	2013.03.26	FEP Colormasterbatch	SGS
6			FEP	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	RHS05F011891001E	2013.08.26	电线电缆料	CTI
7			鍍錫銅	N.D.	N.D.	N.D.	Negative	N.D.	N.D.	RHS05F011891003E	2013.08.26	电线电缆料	CTI
8			鍍銀銅	N.D.	N.D.	N.D.	Negative	N.D.	N.D.	RHS05F011891004E	2013.08.26	电线电缆料	CTI
9	CR-113	Mini Connector	PBT黑色	N.D.	6.47	N.D.	N.D.	N.D.	N.D.	KA201370363	2013.07.15	PBT	SGS
10			銅	N.D.	N.D.	N.D.	Negative			JP/2012/110811	2012.12.05	C5210R	SGS
11			鍍金層	N.D.	N.D.	N.D.	Negative			RLSHF001373050001	2013.02.25	镀金层Gold coating	CTI

根據測試報告如實填寫鉛、鎘、汞、六價鉻、PBBs和PBDEs六項禁用物質的含量

包裝材料中鉛、鎘、汞、六價鉻總含量不超過100ppm，鎘的允許濃度為5ppm

歐盟ROHS指令豁免條款2009/95/BC、鋼中合金元素中的鉛含量達0.35%、鋁含量達0.4%、銅合金中的鉛含量達4%



Test Report

No. CANEC1302378808

Date: 05 Mar 2013

Page 1 of 4

DONGGUAN CITY JINFENG METAL MATERIAL CO.,LTD
509 ZHEN'AN ZHONG ROAD,CHANG'AN TOWN,DONGGUAN CITY
CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as : C7521 white copper(in chinese as C7521 白铜)

SGS Job No. : CP13-007106 - GZ

Date of Sample Received : 28 Feb 2013

Testing Period : 28 Feb 2013 - 05 Mar 2013

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 of Lead, Mercury, Cadmium, Hexavalent chromium comply with the limits as set by RoHS Directive 2011/65/EU Annex II; recasting 2002/95/EC.

Signed for and on behalf of
SGS-CSTC Ltd.

Trophy Zhang
Approved Signatory

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Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested.



SGS-CSTC Standards Technical Services Co., Ltd.
Guangzhou Science & Technology Development Center Chemical Laboratory

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Test Report

No. CANEC1302378808

Date: 05 Mar 2013

Page 2 of 4

Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
1	CAN13-023788.010	Silvery metal sheet

Remarks :

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

RoHS Directive 2011/65/EU

Test Method : With reference to IEC 62321:2008

- (1) Determination of Cadmium by ICP-OES.
- (2) Determination of Lead by ICP-OES.
- (3) Determination of Mercury by ICP-OES.
- (4) Determination of Hexavalent Chromium by Spot test / Colorimetric Method using UV-Vis.

<u>Test Item(s)</u>	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>O10</u>
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	12
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (CrVI)	-	-	◊	Negative

Notes :

- (1) The maximum permissible limit is quoted from the directive 2011/65/EU, Annex II
- (2) ◊Spot-test:
Negative = Absence of CrVI coating, Positive = Presence of CrVI coating;
(The tested sample should be further verified by boiling-water-extraction method if the spot test result is Negative or cannot be confirmed.)
◊Boiling-water-extraction:
Negative = Absence of CrVI coating
Positive = Presence of CrVI coating; the detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm² sample surface area.
Information on storage conditions and production date of the tested sample is unavailable and thus results of Cr(VI) represent status of the sample at the time of testing.

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Test Report

No. CANEC1302378808

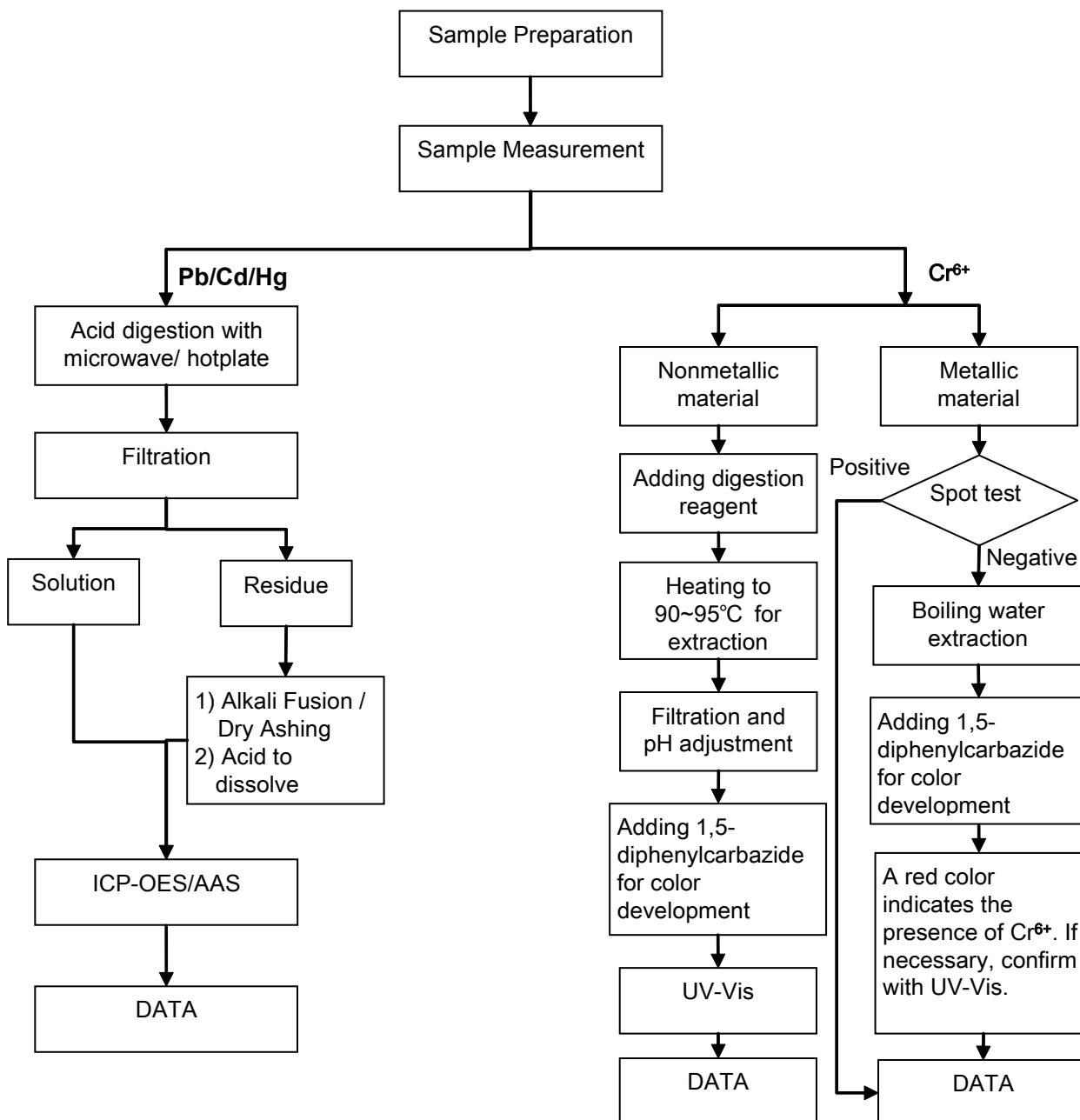
Date: 05 Mar 2013

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ATTACHMENTS

RoHS Testing Flow Chart

- 1) Name of the person who made testing: Michael Tso
- 2) Name of the person in charge of testing: Adams Yu
- 3) These samples were dissolved totally by pre-conditioning method according to below flow chart (Cr⁶⁺ test method excluded).



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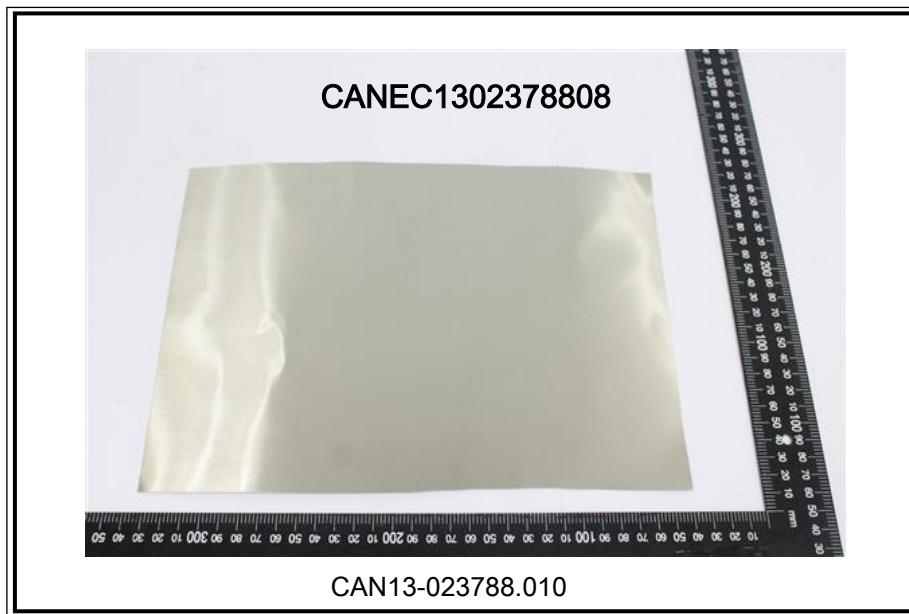
Test Report

No. CANEC1302378808

Date: 05 Mar 2013

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Sample photo:



SGS authenticate the photo on original report only

*** End of Report ***

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Test Report

No. CANEC1302401401

Date: 06 Mar 2013

Page 1 of 9

DONGGUAN QINGXI JUZHUAN STICKINESS PRODUCTS FACTORY

THE INDUSTRIAL AREAS OF JIN QIAO TU QIAO COUNTRYSIDE QING XI TOWN, DONGGUAN
CITY, GUANGDONG PROVINCE
CHINA

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

SGS Job No. : CP13-007460 - GZ

Date of Sample Received : 28 Feb 2013

Testing Period : 28 Feb 2013 - 06 Mar 2013

Test Requested : Selected test(s) as requested by client.

Test Method : Please refer to next page(s).

Test Results : Please refer to next page(s).

Signed for and on behalf of
SGS-CSTC Ltd.

Trophy Zhang
Approved Signatory

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Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested.



SGS-CSTC Standards Technical Services Co., Ltd.
Guangzhou Scientific Park Testing Center Chemical Laboratory

198 Kezhu Road, Scientech Park Guangzhou Economic & Technology Development District, Guangzhou, China 510663 t (86-20) 82155555 f (86-20) 82075113 www.cn.sgs.com

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Test Report

No. CANEC1302401401

Date: 06 Mar 2013

Page 2 of 9

Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
1	CAN13-024014.001	Silvery metal foil

Remarks :

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

Elementary Analysis & Flame Retardants

Test Method : With reference to IEC 62321:2008

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

Test Item(s)	Unit	MDL	001
Cadmium (Cd)	mg/kg	2	ND
Lead (Pb)	mg/kg	2	15
Mercury (Hg)	mg/kg	2	ND
Hexavalent Chromium (CrVI)	-	◊	Negative
Sum of PBBs	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	mg/kg	-	ND
Monobromodiphenyl ether	mg/kg	5	ND

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SGS STC Testing Services Co., Ltd.
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Test Report

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<u>Test Item(s)</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)◊Spot-test:

Negative = Absence of CrVI coating, Positive = Presence of CrVI coating;

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

◊Boiling-water-extraction:

Negative = Absence of CrVI coating

Positive = Presence of CrVI coating; the detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm² sample surface area.

Information on storage conditions and production date of the tested sample is unavailable and thus results of Cr(VI) represent status of the sample at the time of testing.

Halogen

Test Method : With reference to EN 14582: 2007, analysis was performed by Ion Chromatograph (IC).

<u>Test Item(s)</u>	<u>Unit</u>	<u>MDL</u>	<u>001</u>
Fluorine (F)	mg/kg	50	ND
Chlorine (Cl)	mg/kg	50	ND
Bromine (Br)	mg/kg	50	ND
Iodine (I)	mg/kg	50	ND

Hexabromocyclododecane (HBCDD)

Test Method : Determination of HBCDD by GC-MS based on IEC 62321:2008.

<u>Test Item(s)</u>	<u>Unit</u>	<u>MDL</u>	<u>001</u>
Hexabromocyclododecane (HBCDD)	mg/kg	10	ND

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Notes :

- (1) Reference Information: Directive 2011/65/EU recasting RoHS directive 2002/95/EC:
Hexabromocyclododecane (HBCDD) is considered as a priority for risk evaluation and substance restriction.

Phthalate

Test Method : Determination of phthalates by GC-MS based on EN 14372:2004.

<u>Test Item(s)</u>	<u>Unit</u>	<u>MDL</u>	<u>001</u>
Dibutyl Phthalate (DBP)	% (w/w)	0.003	ND
Benzylbutyl Phthalate (BBP)	% (w/w)	0.003	ND
Bis-(2-ethylhexyl) Phthalate (DEHP)	% (w/w)	0.003	ND

Notes :

- (1) Reference Information: Directive 2011/65/EU recasting RoHS directive 2002/95/EC:
Bis (2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP) and Dibutyl phthalate (DBP) are considered as a priority for risk evaluation and substance restriction.

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No. CANEC1302401401

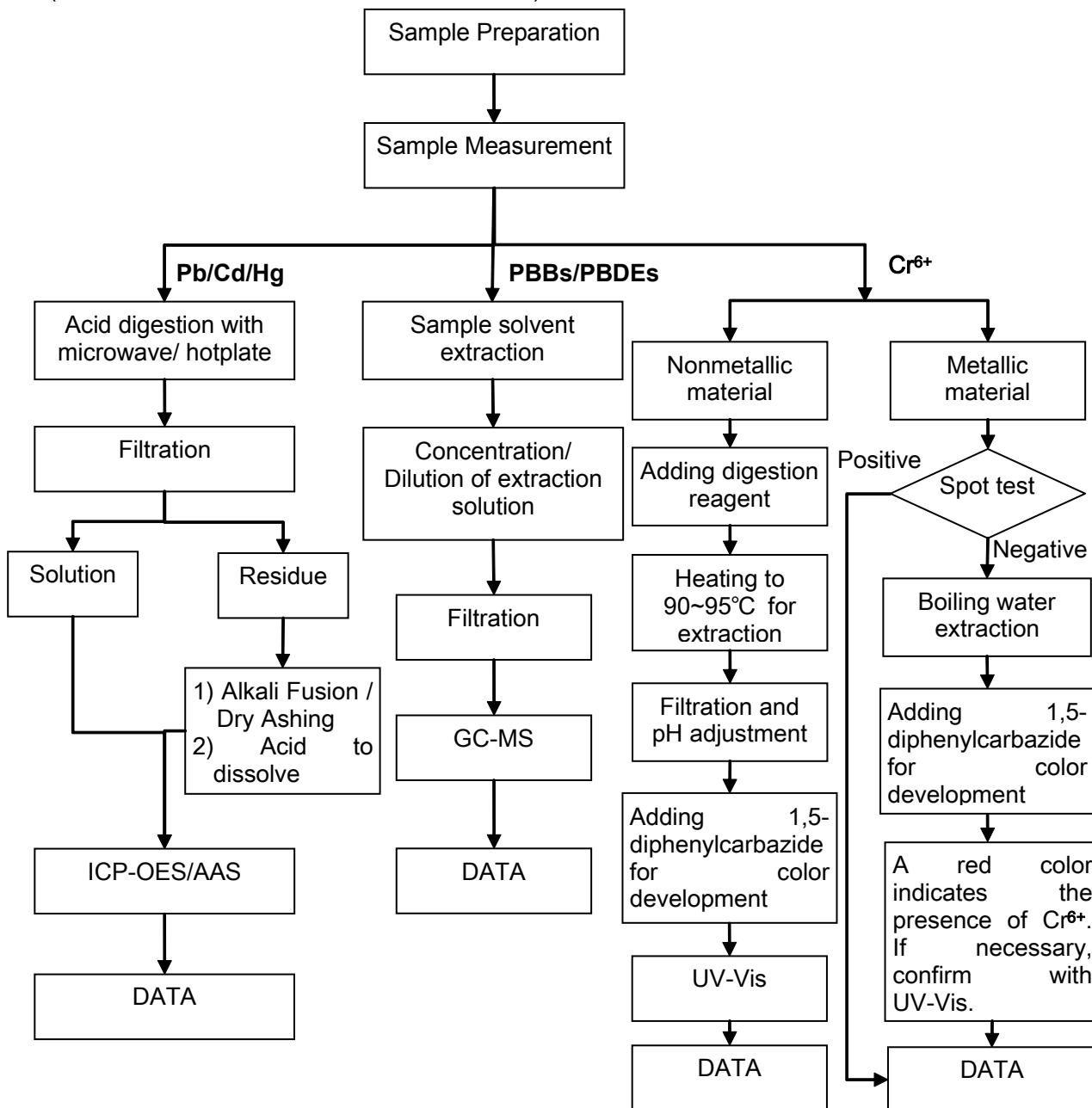
Date: 06 Mar 2013

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ATTACHMENTS

RoHS Testing Flow Chart

- 1) Name of the person who made testing: Michael Tso / Cutey Yu
- 2) Name of the person in charge of testing: Adams Yu / Yolanda Wei
- 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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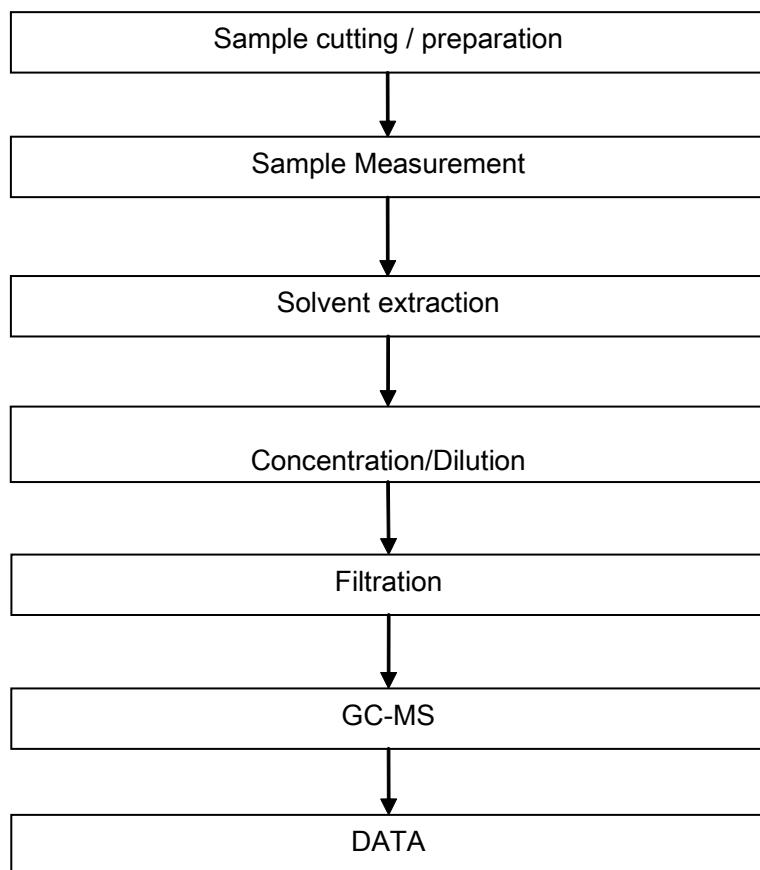
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Phthalates Testing Flow Chart

- 1) Name of the person who made testing: Liu Qiong
- 2) Name of the person in charge of testing: Yolanda Wei



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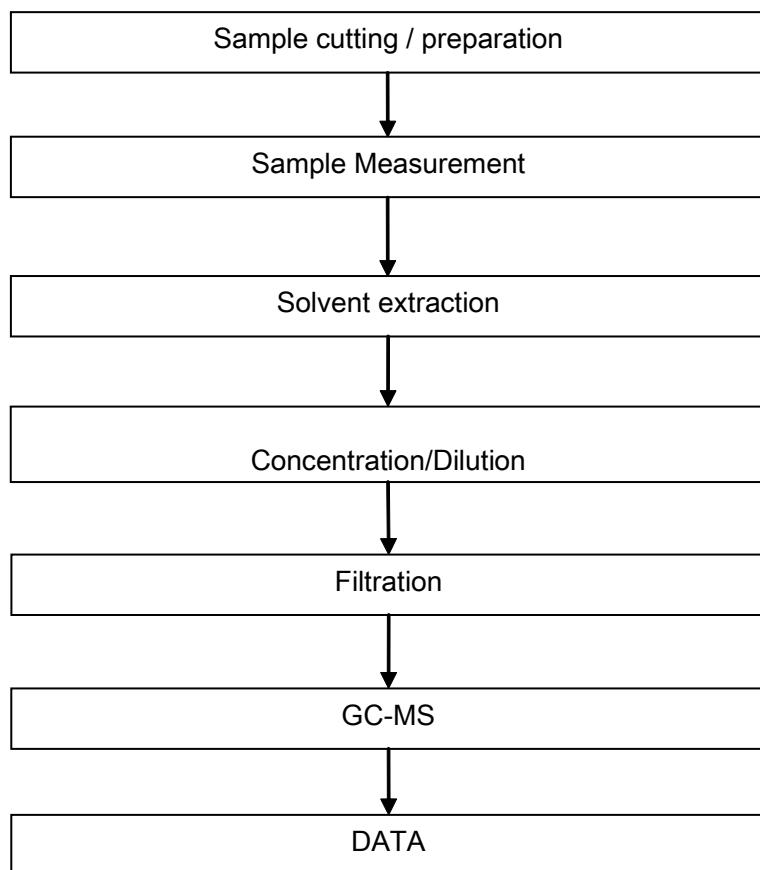
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HBCDD Testing Flow Chart

- 1) Name of the person who made testing: Cutey Yu
- 2) Name of the person in charge of testing: Yolanda Wei



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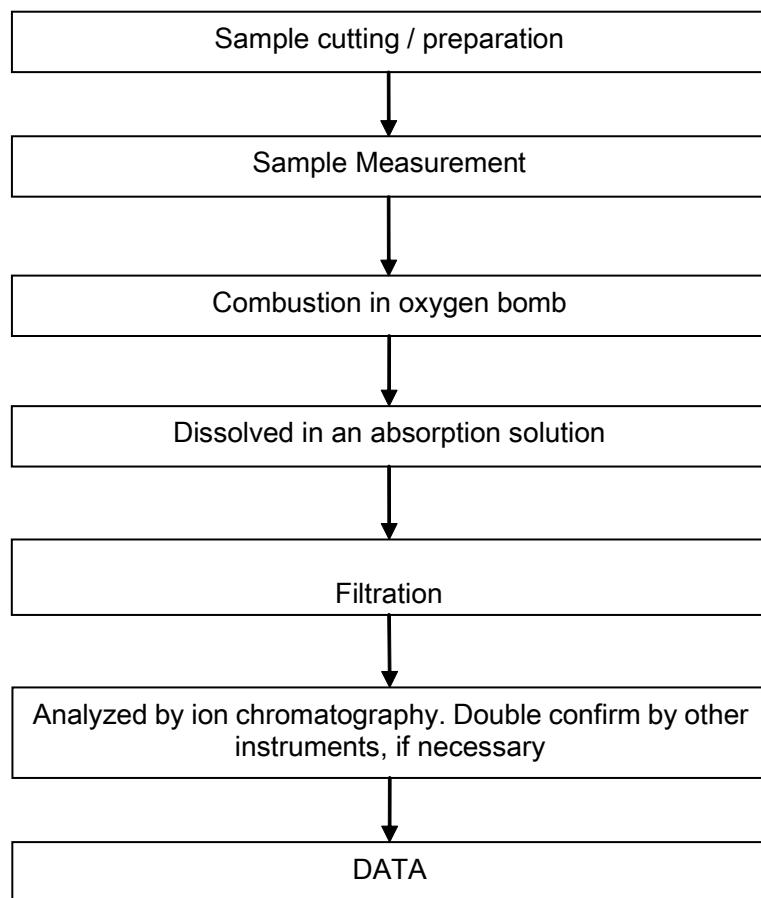
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ATTACHMENTS**Halogen Testing Flow Chart**

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



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Sample photo:



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Test Report

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Date: 27 Feb 2013

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DONGGUAN SALIPT CO.,LTD.

SALIPT SCIENCE PARK,JINGXIANG INDUSTRY DIST.,LIAOBU,DONGGUAN CITY,GUANGDONG PROVINCE CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as : HEAT SHRINKABLE TUBING(Clear)

SGS Job No. : CP13-005919 - SZ
Tested Sample Info. : S-902-600
Client Ref. Info. : S-902-300
Manufacturer : SALIPT
Date of Sample Received : 21 Feb 2013
Testing Period : 21 Feb 2013 - 27 Feb 2013
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 of Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBB), Polybrominated diphenyl ethers (PBDE) comply with the limits as set by RoHS Directive 2011/65/EU Annex II; recasting 2002/95/EC.

Signed for and on behalf of
SGS-CSTC Ltd.



Trophy Zhang
Approved Signatory



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Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
1	CAN13-020656.001	Transparent tube

Remarks :

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

RoHS Directive 2011/65/EU

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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<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 directive 2011/65/EU, Annex II.

Hexabromocyclododecane (HBCDD)

Test Method : Determination of HBCDD by GC-MS based on IEC 62321:2008.

<u>Test Item(s)</u>	<u>Unit</u>	<u>MDL</u>	<u>001</u>
Hexabromocyclododecane (HBCDD)	mg/kg	10	ND

Notes :

- (1) Reference Information: Directive 2011/65/EU recasting RoHS directive 2002/95/EC:
Hexabromocyclododecane (HBCDD) is considered as a priority for risk evaluation and substance restriction.

Phthalate

Test Method : Determination of phthalates by GC-MS based on EN 14372:2004.

<u>Test Item(s)</u>	<u>Unit</u>	<u>MDL</u>	<u>001</u>
Dibutyl Phthalate (DBP)	% (w/w)	0.003	ND
Benzylbutyl Phthalate (BBP)	% (w/w)	0.003	ND
Bis-(2-ethylhexyl) Phthalate (DEHP)	% (w/w)	0.003	ND

Notes :

- (1) Reference Information: Directive 2011/65/EU recasting RoHS directive 2002/95/EC:
Bis (2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP) and Dibutyl phthalate (DBP) are considered as a priority for risk evaluation and substance restriction.



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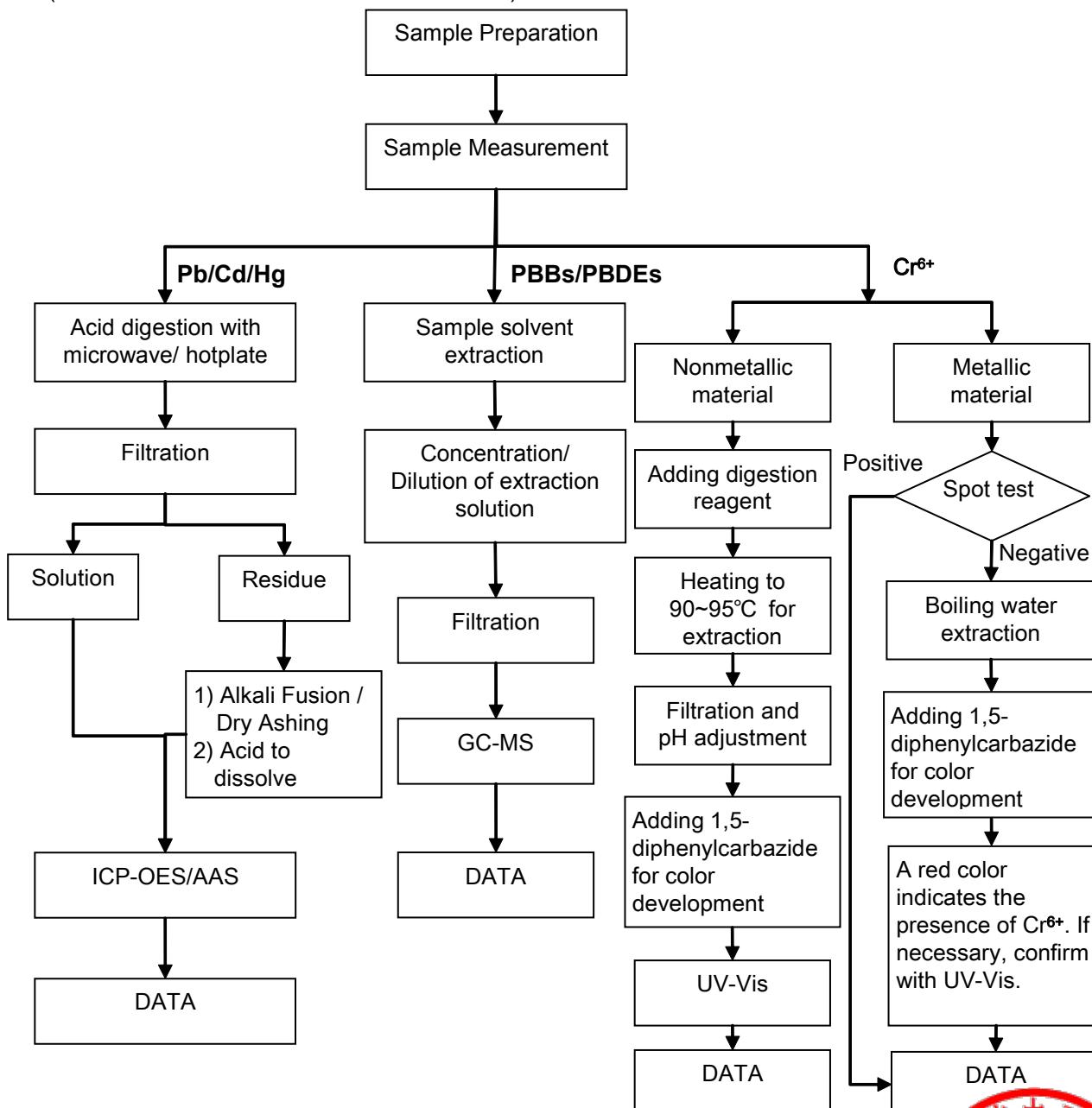
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ATTACHMENTS

RoHS Testing Flow Chart

- 1) Name of the person who made testing: Michael Tso / Cutey Yu
- 2) Name of the person in charge of testing: Adams Yu / Yolanda Wei
- 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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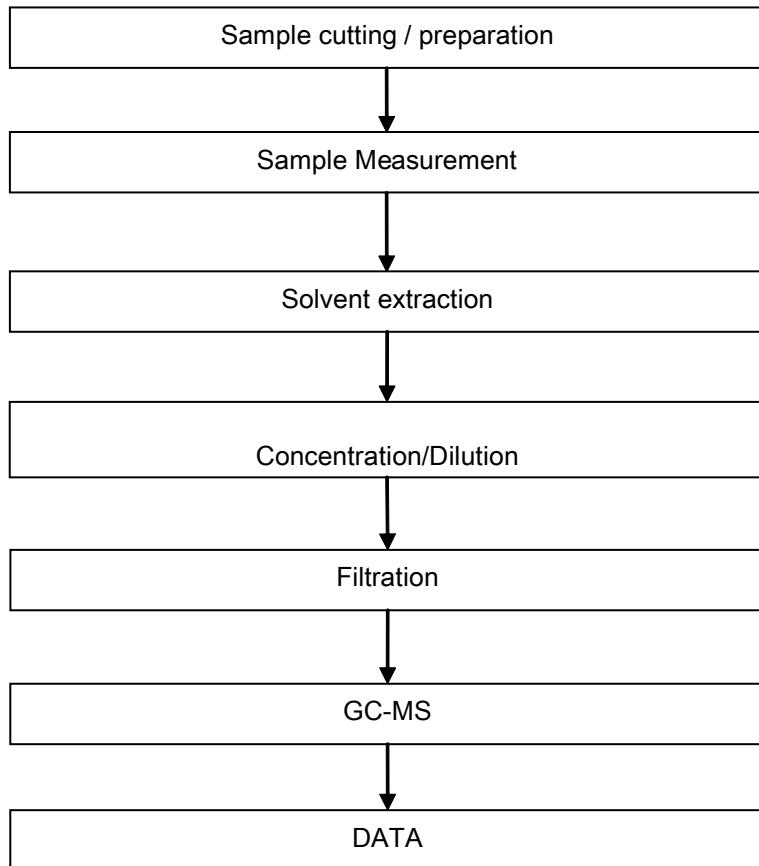
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ATTACHMENTS**Phthalates Testing Flow Chart**

- 1) Name of the person who made testing: Liu Qiong
- 2) Name of the person in charge of testing: Yolanda Wei



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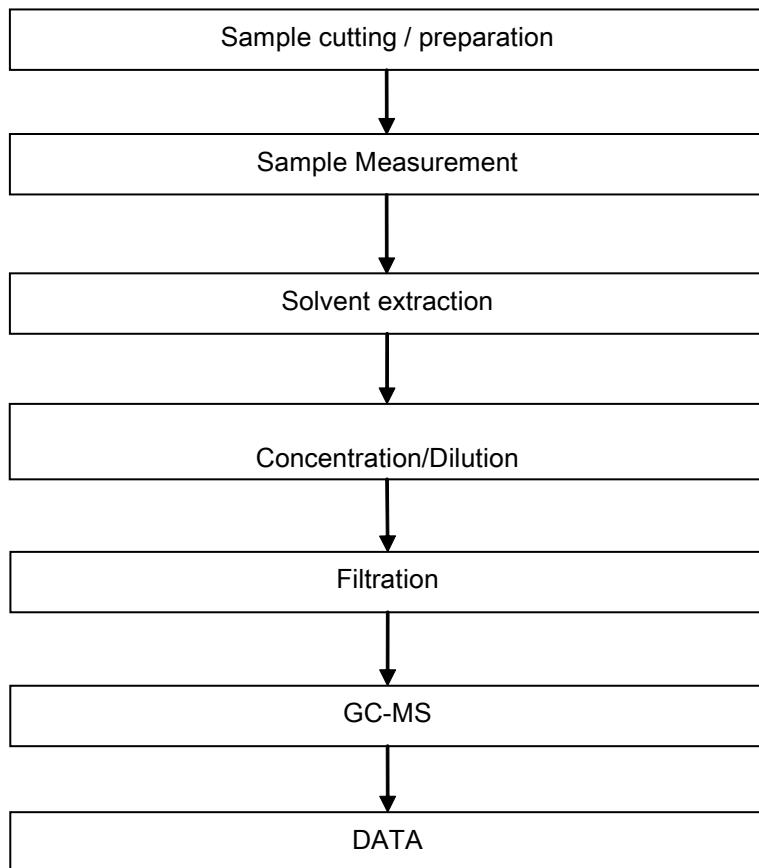
No. CANEC1302065601

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ATTACHMENTS**HBCDD Testing Flow Chart**

- 1) Name of the person who made testing: Cutey Yu
- 2) Name of the person in charge of testing: Yolanda Wei



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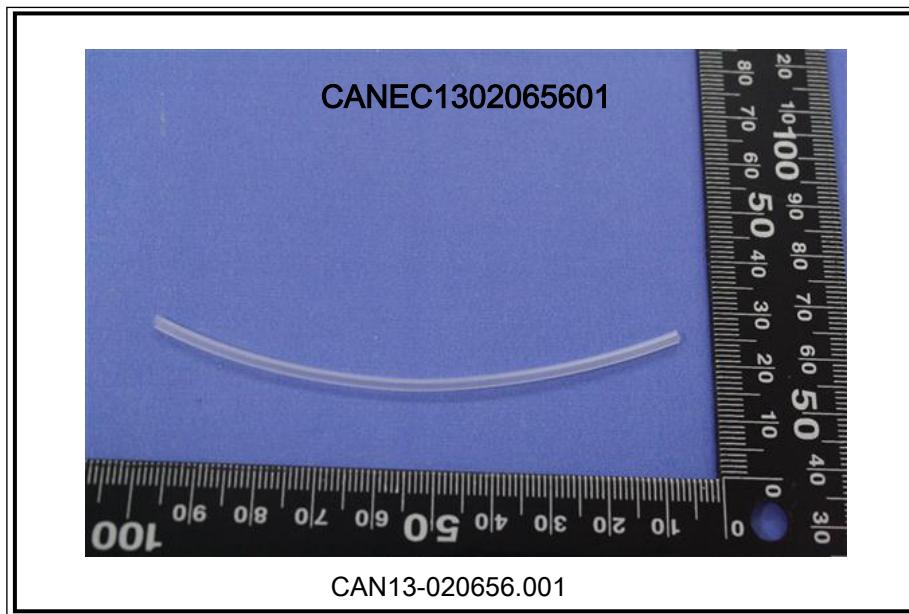
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Sample photo:



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SGS STC Standards Technical Services Co., Ltd.
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Test Report

No. SHAEC1308224601

Date: 13 May 2013

Page 1 of 5

3M CHINA LIMITED

222# TIAN LIN ROAD, SHANGHAI (200233)

The following sample(s) was/were submitted and identified on behalf of the clients as : 3M 9471 LE

SGS Job No. : SP13-012946 - SH

Date of Sample Received : 09 May 2013

Testing Period : 09 May 2013 - 13 May 2013

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 of Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBB), Polybrominated diphenyl ethers (PBDE) comply with the limits as set by RoHS Directive 2011/65/EU Annex II; recasting 2002/95/EC.

Signed for and on behalf of
SGS-CSTC Ltd.

JJ Fan

Approved Signatory

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Test Report

No. SHAEC1308224601

Date: 13 May 2013

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Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
1	SHA13-082246.001	Transparent adhesive part

Remarks :

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

RoHS Directive 2011/65/EU

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)	1000	mg/kg	2	ND
Mercury (Hg)	1000	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))	1000	mg/kg	2	ND
Sum of PBBs	1000	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	1000	mg/kg	-	ND
Monobromodiphenyl ether	-	mg/kg	5	ND

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Test Report

No. SHAEC1308224601

Date: 13 May 2013

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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 directive 2011/65/EU, Annex II

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Test Report

No. SHAEC1308224601

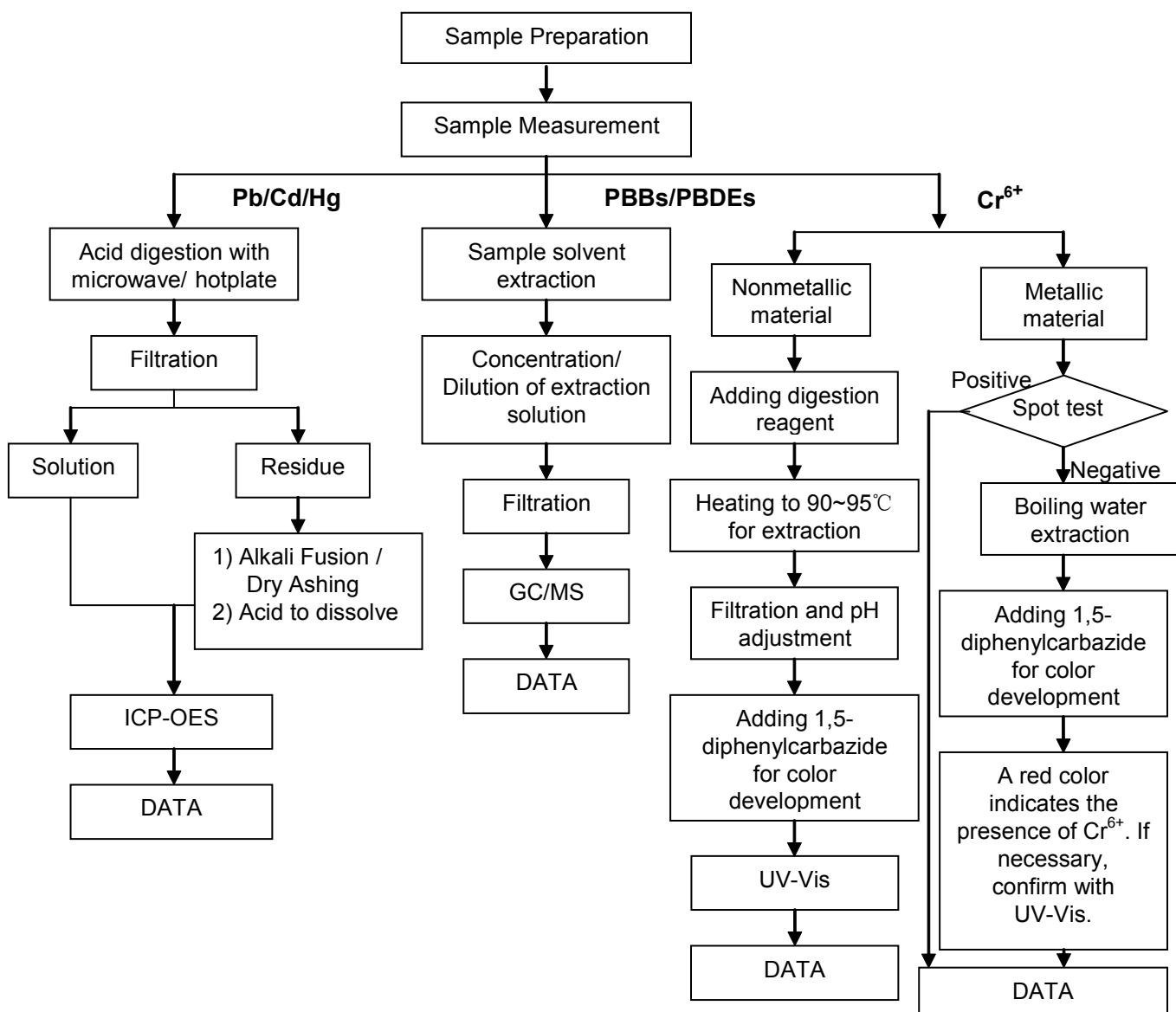
Date: 13 May 2013

Page 4 of 5

ATTACHMENTS

RoHS Testing Flow Chart

- 1) Name of the person who made testing: Jan Shi/Yoyo Wang/Allen Xiao/Gary Xu
- 2) Name of the person in charge of testing: Jeff Zhang/George Xu/ Linda Li
- 3) These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr^{6+} and PBBs/PBDEs test method excluded)



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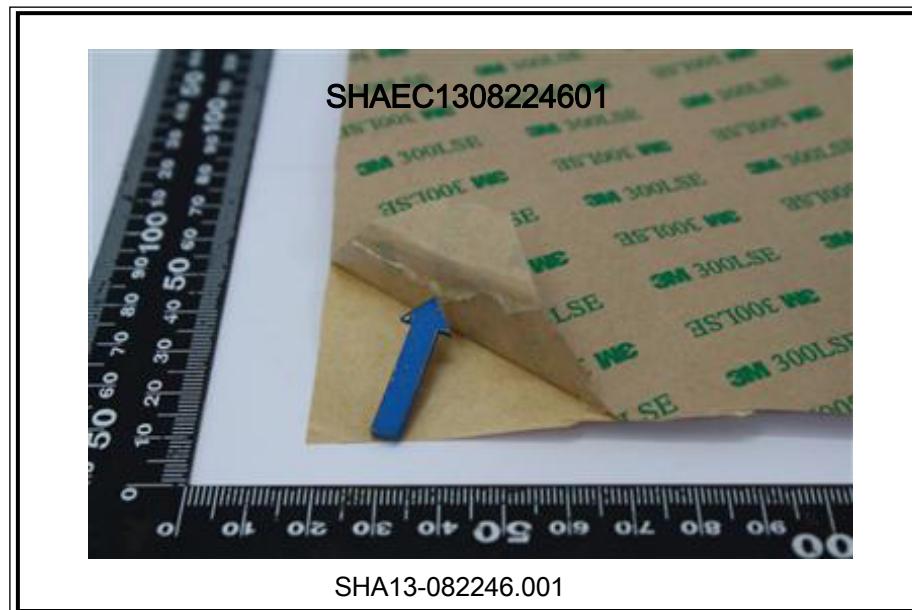
Test Report

No. SHAEC1308224601

Date: 13 May 2013

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Sample photo:



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Test Report

No. SHAEC1304390301

Date: 26 Mar 2013

Page 1 of 6

COLORANT CHROMATICS TRADING (SHANGHAI) CO.,LTD.

1607 LI AN ROAD, MINHANG DISTRICT, SHANGHAI, 201100 , CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as : FEP Colormasterbatch Black

SGS Job No. : SP13-007605 - SH

Lot No. : S1209102

Date of Sample Received : 22 Mar 2013

Testing Period : 22 Mar 2013 - 26 Mar 2013

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 of Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBB), Polybrominated diphenyl ethers (PBDE) comply with the limits as set by RoHS Directive 2011/65/EU Annex II; recasting 2002/95/EC.

Signed for and on behalf of
SGS-CSTC Ltd.

JJ Fan

Approved Signatory

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Test Report

No. SHAEC1304390301

Date: 26 Mar 2013

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Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
1	SHA13-043903.001	Black solid pellet

Remarks :

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

RoHS Directive 2011/65/EU

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)	1000	mg/kg	2	ND
Mercury (Hg)	1000	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))	1000	mg/kg	2	ND
Sum of PBBs	1000	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	1000	mg/kg	-	ND
Monobromodiphenyl ether	-	mg/kg	5	ND

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Test Report

No. SHAEC1304390301

Date: 26 Mar 2013

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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 directive 2011/65/EU, Annex II

Halogen

Test Method : With reference to EN 14582: 2007, analysis was performed by Ion Chromatograph (IC).

<u>Test Item(s)</u>	<u>Unit</u>	<u>MDL</u>	<u>001</u>
Fluorine (F)	mg/kg	50	>100000
Chlorine (Cl)	mg/kg	50	ND
Bromine (Br)	mg/kg	50	ND
Iodine (I)	mg/kg	50	ND

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Test Report

No. SHAEC1304390301

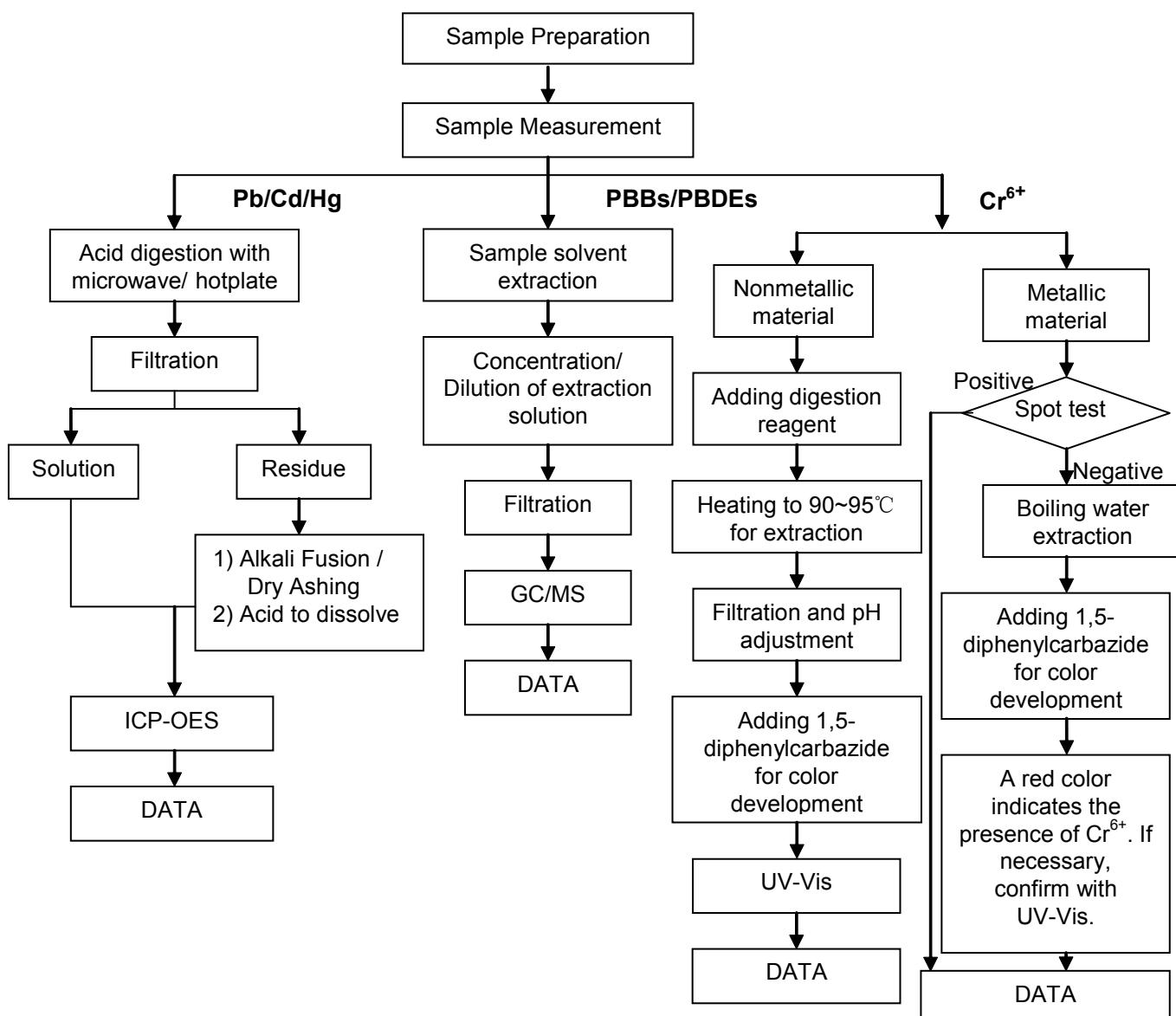
Date: 26 Mar 2013

Page 4 of 6

ATTACHMENTS

RoHS Testing Flow Chart

- 1) Name of the person who made testing: Jan Shi/Yoyo Wang/Allen Xiao/Gary Xu
- 2) Name of the person in charge of testing: Jeff Zhang/George Xu/ Linda Li
- 3) These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr^{6+} and PBBs/PBDEs test method excluded)



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Test Report

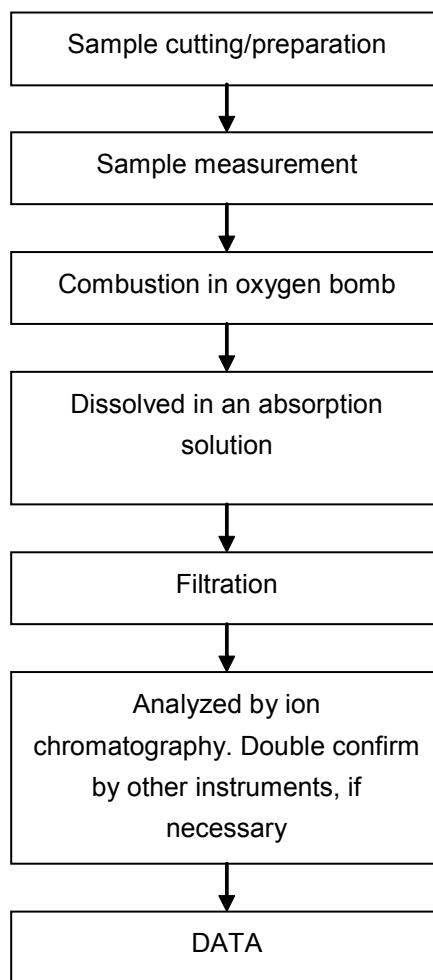
No. SHAEC1304390301

Date: 26 Mar 2013

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Halogen Testing Flow Chart

- 1) Name of the person who made testing: Sisily Yin
- 2) Name of the person in charge of testing: Linda Li



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Test Report

No. SHAEC1304390301

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Sample photo:



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检测报告 Test Report

报告编号 Report No. RHS05F011891001E
RHS05F011891001E

第 1 页 共 8 页
Page 1 of 8

申请单位 Applicant 苏州市华诺线缆科技有限公司
SUZHOU HUANUO CABLE TECHNOLOGY CO., LTD
地址 Address 苏州市相城区太平镇太平大街
TAIPING STREET TAIPING TOWN XIANGCHENG, SUZHOU

以下测试之样品及样品信息由申请者提供并确认

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

样品名称 Sample Name	电线电缆料 Wire and cable materials
样品型号 Part No.	FEP
样品接收日期 Sample Received Date	2013.08.22 Aug. 22, 2013
样品检测日期 Testing Period	2013.08.22-2013.08.26 Aug. 22, 2013 to Aug. 26, 2013
检测要求 Test Requested	根据客户要求, 对所提交样品中的六溴环十二烷(HBCDD), 铅(Pb), 镉(Cd), 汞(Hg), 六价铬(Cr(VI)), 多溴联苯(PBBs), 多溴二苯醚(PBDEs), 邻苯二甲酸酯进行测试。 As specified by client, to test Hexabromocyclododecane (HBCDD), Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium (Cr(VI)), Polybrominated Biphenyls (PBBs), Polybrominated Diphenyl Ethers (PBDEs), Phthalates in the submitted sample(s).

检测依据/检测结果
Test Method/Test Result(s)

请参见下页。
Please refer to the following page(s).

主 检
Tested by
批 准
Approved by

Chen Lijuan
Su Hongwei

Su Hongwei
Senior Laboratory Manager

审 核
Reviewed by
日 期
Date

Zhong Yijun
2013.08.26

No. 1102121596



深圳市华测检测技术股份有限公司上海分公司
Centre Testing International Corporation Shanghai Branch No.1996,New Jinqiao Road, Pudong District,Shanghai,China

上海市浦东新区新金桥路1996号

检测报告

Test Report

报告编号 RHS05F011891001E
 Report No. RHS05F011891001E

第 2 页 共 8 页
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检测依据 Test Method

测试项目 Test Item(s)	测试方法 Test Method	测试仪器 Measured Equipment(s)
铅(Pb) Lead(Pb)	IEC 62321:2008 Ed.1 Sec.8	ICP-OES
镉(Cd) Cadmium(Cd)	IEC 62321:2008 Ed.1 Sec.8	ICP-OES
汞(Hg) Mercury(Hg)	IEC 62321:2008 Ed.1 Sec.7	ICP-OES
六价铬(Cr(VI)) Hexavalent Chromium (Cr(VI))	IEC 62321:2008 Ed.1 Annex C	UV-Vis
多溴联苯(PBBS) Polybrominated Biphenyls (PBBS)	IEC 62321:2008 Ed.1 Annex A	GC-MS
多溴二苯醚(PBDEs) Polybrominated Diphenyl Ethers (PBDEs)	IEC 62321:2008 Ed.1 Annex A	GC-MS
六溴环十二烷(HBCDD) Hexabromocyclododecane (HBCDD)	参考US EPA 3550C: 2007 Refer to US EPA 3550C:2007	GC-MS
邻苯二甲酸酯 Phthalates	参考EN 14372: 2004(E) Refer to EN 14372:2004(E)	GC-MS

检测结果 Test Result(s)

测试项目 Test Item(s)	结果 Result	方法检测限 MDL
铅(Pb) Lead(Pb)	N.D.	2 mg/kg
镉(Cd) Cadmium (Cd)	N.D.	2 mg/kg
汞(Hg) Mercury(Hg)	N.D.	2 mg/kg
六价铬(Cr(VI)) Hexavalent Chromium (Cr(VI))	N.D.	2 mg/kg

测试项目 Test Item(s)	结果 Result	方法检测限 MDL
多溴联苯(PBBS) Polybrominated Biphenyls (PBBS)		
一溴联苯 Monobromobiphenyl	N.D.	5 mg/kg
二溴联苯 Dibromobiphenyl	N.D.	5 mg/kg
三溴联苯 Tribromobiphenyl	N.D.	5 mg/kg
四溴联苯 Tetrabromobiphenyl	N.D.	5 mg/kg
五溴联苯 Pentabromobiphenyl	N.D.	5 mg/kg
六溴联苯 Hexabromobiphenyl	N.D.	5 mg/kg
七溴联苯 Heptabromobiphenyl	N.D.	5 mg/kg
八溴联苯 Octabromobiphenyl	N.D.	5 mg/kg

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九溴联苯 Nonabromobiphenyl	N.D.	5 mg/kg
十溴联苯 Decabromobiphenyl	N.D.	5 mg/kg

测试项目 Test Item(s)	结果 Result	方法检测限 MDL
多溴二苯醚(PBDEs) Polybrominated Diphenyl Ethers (PBDEs)		
一溴二苯醚 Monobromodiphenyl ether	N.D.	5 mg/kg
二溴二苯醚 Dibromodiphenyl ether	N.D.	5 mg/kg
三溴二苯醚 Tribromodiphenyl ether	N.D.	5 mg/kg
四溴二苯醚 Tetrabromodiphenyl ether	N.D.	5 mg/kg
五溴二苯醚 Pentabromodiphenyl ether	N.D.	5 mg/kg
六溴二苯醚 Hexabromodiphenyl ether	N.D.	5 mg/kg
七溴二苯醚 Heptabromodiphenyl ether	N.D.	5 mg/kg
八溴二苯醚 Octabromodiphenyl ether	N.D.	5 mg/kg
九溴二苯醚 Nonabromodiphenyl ether	N.D.	5 mg/kg
十溴二苯醚 Decabromodiphenyl ether	N.D.	5 mg/kg

测试项目 Test Item(s)	结果 Result	方法检测限 MDL
六溴环十二烷(HBCDD) Hexabromocyclododecane (HBCDD)	N.D.	5 mg/kg

测试项目 Tested Item(s)	结果 Result	方法检测限 MDL
邻苯二甲酸酯 Phthalates		
邻苯二甲酸二正丁酯(DBP) Dibutyl phthalate(DBP) CAS#:84-74-2	N.D.	50 mg/kg
邻苯二甲酸丁基苄酯(BBP) Benzylbutyl phthalate(BBP) CAS#:85-68-7	N.D.	50 mg/kg
邻苯二甲酸二(2-乙基己基)酯(DEHP) Bis(2-ethyl(hexyl)) phthalate (DEHP) CAS#:117-81-7	N.D.	50 mg/kg

测试样品/部位描述
Tested Sample/Part Description

棕黄色塑料线皮
 Brown yellow plastic wire jacket

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注释: 对于检测铅, 镉, 汞之样品已完全溶解。

-N.D. = 未检出 (小于方法检测限)

-mg/kg= ppm = 百万分之几

Note: **The sample(s) had been dissolved totally tested for Lead, Cadmium, Mercury.**

-MDL = Method Detection Limit

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

-mg/kg = ppm = parts per million

备注: 报告编号中“E”表示此报告为中英文对照版本。

Remark: The end sign of report number E represents the bilingual version.

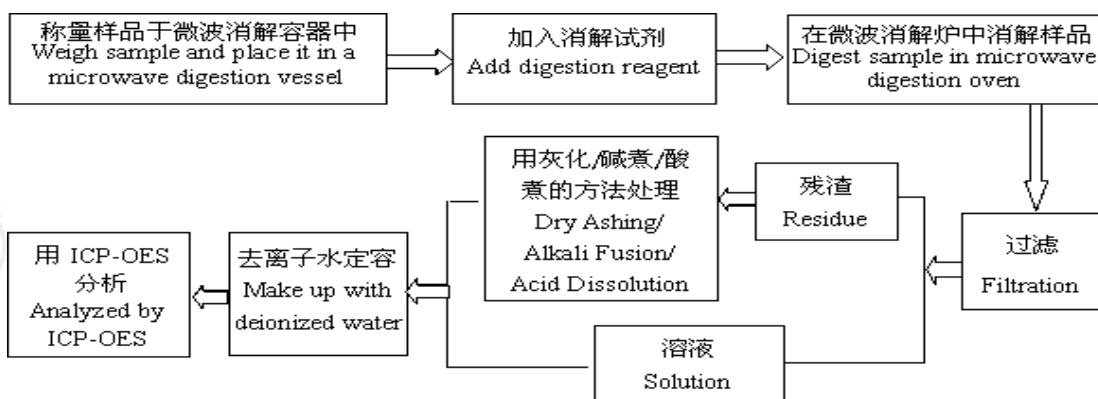
检测报告 Test Report

报告编号 RHS05F011891001E
Report No. RHS05F011891001E

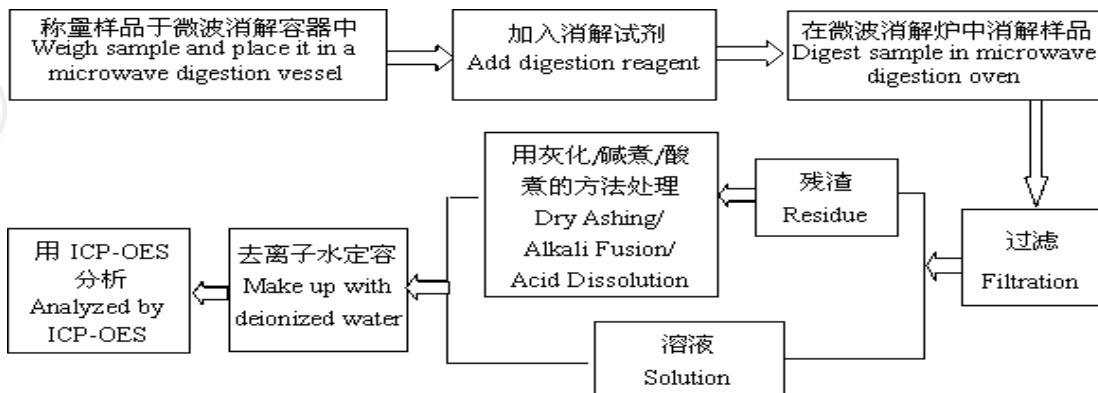
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检测流程 Test Process

1. 铅(Pb), 镉(Cd)
Lead(Pb), Cadmium(Cd)



2. 汞(Hg)
Mercury(Hg)



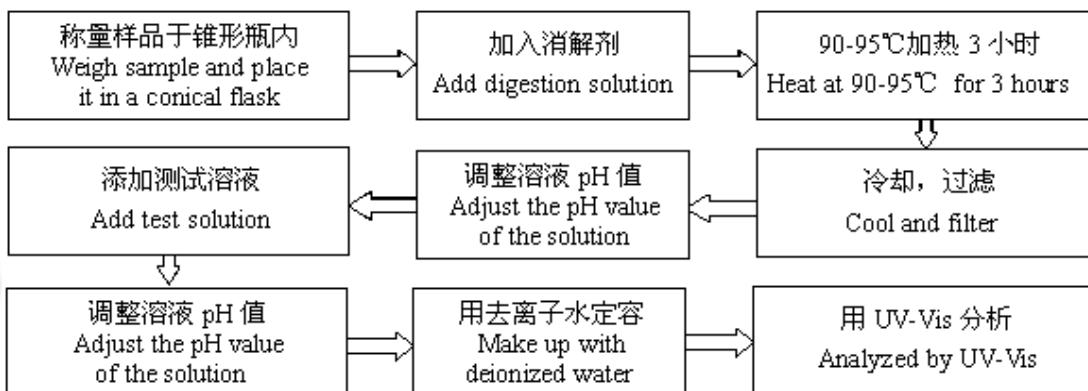
检测报告

Test Report

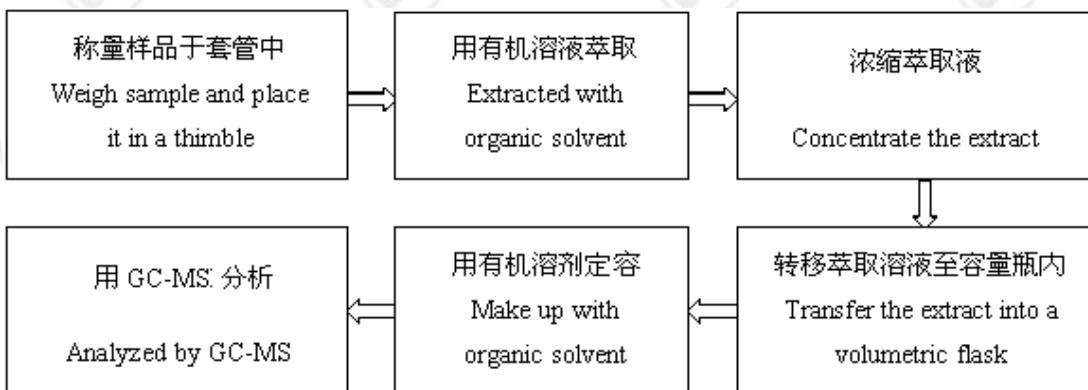
报告编号 RHS05F011891001E
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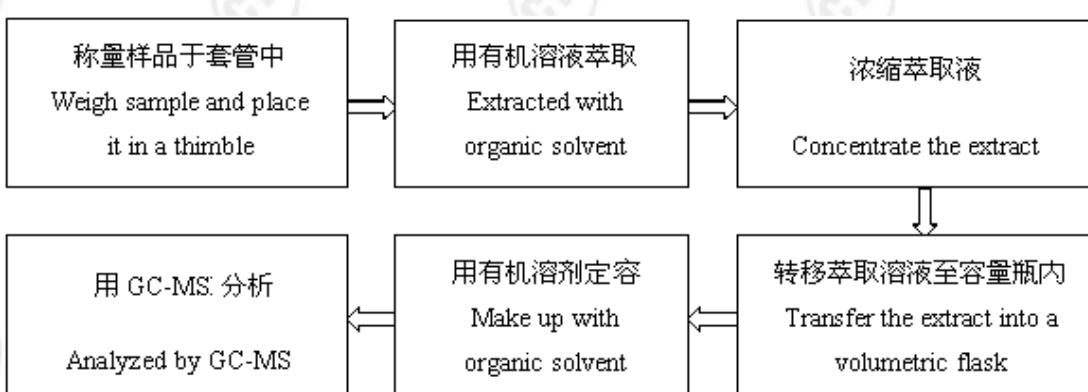
3. 六价铬(Cr(VI)) Hexavalent Chromium (Cr(VI))



4. 邻苯二甲酸酯 Phthalates



5. 多溴联苯(PBBs), 多溴二苯醚(PBDEs) Polybrominated Biphenyls (PBBs), Polybrominated Diphenyl Ethers (PBDEs)

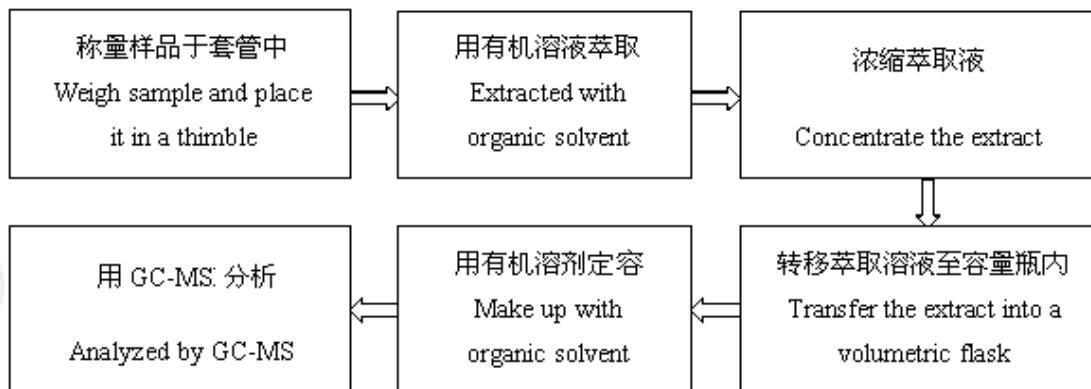


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6. 六溴环十二烷(HBCDD) Hexabromocyclododecane (HBCDD)



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样品图片 Photo(s) of the sample(s)



报告结束
*** End of report ***

检测报告无批准人签字及“报告专用章”无效，本报告检测结果仅对受测样品负责。未经CTI书面同意，不得部分复制本报告。

The test report is effective only with both signature and specialized stamp. The result(s) shown in this report refer only to the sample(s) tested. Without written approval of CTI, this report can't be reproduced except in full.

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申请单位 Applicant 苏州市华诺线缆科技有限公司
SUZHOU HUANUO CABLE TECHNOLOGY CO., LTD
地址 Address 苏州市相城区太平镇太平大街
TAIPING STREET TAIPING TOWN XIANGCHENG, SUZHOU

以下测试之样品及样品信息由申请者提供并确认

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

样品名称 Sample Name	电线电缆料 Wire and cable materials
样品型号 Part No.	镀银铜丝 Silver-plated copper wire
样品接收日期 Sample Received Date	2013.08.22 Aug. 22, 2013
样品检测日期 Testing Period	2013.08.22-2013.08.26 Aug. 22, 2013 to Aug. 26, 2013
检测要求	根据客户要求, 对所提交样品中的六溴环十二烷(HBCDD), 铅(Pb), 镉(Cd), 汞(Hg), 六价铬(Cr(VI)), 多溴联苯(PBBs), 多溴二苯醚(PBDEs), 邻苯二甲酸酯进行测试。
Test Requested	As specified by client, to test Hexabromocyclododecane (HBCDD), Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium (Cr(VI)), Polybrominated Biphenyls (PBBs), Polybrominated Diphenyl Ethers (PBDEs), Phthalates in the submitted sample(s).

检测依据/检测结果
Test Method/Test Result(s)

请参见下页。
Please refer to the following page(s).

主 检
Tested by
批 准
Approved by

Chen Lijuan
Su Hongwei

Su Hongwei
Senior Laboratory Manager

审 核
Reviewed by
日 期
Date

Zhong Yijun
2013.08.26

No. 1102121596



深圳市华测检测技术股份有限公司上海分公司
Centre Testing International Corporation Shanghai Branch No.1996, New Jinqiao Road, Pudong District, Shanghai, China

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检测依据 Test Method

测试项目 Test Item(s)	测试方法 Test Method	测试仪器 Measured Equipment(s)
铅(Pb) Lead(Pb)	IEC 62321:2008 Ed.1 Sec.9	ICP-OES
镉(Cd) Cadmium(Cd)	IEC 62321:2008 Ed.1 Sec.9	ICP-OES
汞(Hg) Mercury(Hg)	IEC 62321:2008 Ed.1 Sec.7	ICP-OES
六价铬(Cr(VI)) Hexavalent Chromium (Cr(VI))	IEC 62321:2008 Ed.1 Annex B	UV-Vis
多溴联苯(PBBS) Polybrominated Biphenyls (PBBS)	IEC 62321:2008 Ed.1 Annex A	GC-MS
多溴二苯醚(PBDEs) Polybrominated Diphenyl Ethers (PBDEs)	IEC 62321:2008 Ed.1 Annex A	GC-MS
六溴环十二烷(HBCDD) Hexabromocyclododecane (HBCDD)	参考US EPA 3550C: 2007 Refer to US EPA 3550C:2007	GC-MS
邻苯二甲酸酯 Phthalates	参考EN 14372: 2004(E) Refer to EN 14372:2004(E)	GC-MS

检测结果 Test Result(s)

测试项目 Test Item(s)	结果 Result	方法检测限 MDL
铅(Pb) Lead(Pb)	N.D.	2 mg/kg
镉(Cd) Cadmium (Cd)	N.D.	2 mg/kg
汞(Hg) Mercury(Hg)	N.D.	2 mg/kg
六价铬(Cr(VI)) Hexavalent Chromium (Cr(VI))	阴性 Negative	/

测试项目 Test Item(s)	结果 Result	方法检测限 MDL
多溴联苯(PBBS) Polybrominated Biphenyls (PBBS)		
一溴联苯 Monobromobiphenyl	N.D.	5 mg/kg
二溴联苯 Dibromobiphenyl	N.D.	5 mg/kg
三溴联苯 Tribromobiphenyl	N.D.	5 mg/kg
四溴联苯 Tetrabromobiphenyl	N.D.	5 mg/kg
五溴联苯 Pentabromobiphenyl	N.D.	5 mg/kg
六溴联苯 Hexabromobiphenyl	N.D.	5 mg/kg
七溴联苯 Heptabromobiphenyl	N.D.	5 mg/kg
八溴联苯 Octabromobiphenyl	N.D.	5 mg/kg

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九溴联苯 Nonabromobiphenyl	N.D.	5 mg/kg
十溴联苯 Decabromobiphenyl	N.D.	5 mg/kg

测试项目 Test Item(s)	结果 Result	方法检测限 MDL
多溴二苯醚(PBDEs) Polybrominated Diphenyl Ethers (PBDEs)		
一溴二苯醚 Monobromodiphenyl ether	N.D.	5 mg/kg
二溴二苯醚 Dibromodiphenyl ether	N.D.	5 mg/kg
三溴二苯醚 Tribromodiphenyl ether	N.D.	5 mg/kg
四溴二苯醚 Tetrabromodiphenyl ether	N.D.	5 mg/kg
五溴二苯醚 Pentabromodiphenyl ether	N.D.	5 mg/kg
六溴二苯醚 Hexabromodiphenyl ether	N.D.	5 mg/kg
七溴二苯醚 Heptabromodiphenyl ether	N.D.	5 mg/kg
八溴二苯醚 Octabromodiphenyl ether	N.D.	5 mg/kg
九溴二苯醚 Nonabromodiphenyl ether	N.D.	5 mg/kg
十溴二苯醚 Decabromodiphenyl ether	N.D.	5 mg/kg

测试项目 Test Item(s)	结果 Result	方法检测限 MDL
六溴环十二烷(HBCDD) Hexabromocyclododecane (HBCDD)	N.D.	5 mg/kg

测试项目 Tested Item(s)	结果 Result	方法检测限 MDL
邻苯二甲酸酯 Phthalates		
邻苯二甲酸二正丁酯(DBP) Dibutyl phthalate(DBP) CAS#:84-74-2	N.D.	50 mg/kg
邻苯二甲酸丁基苄酯(BBP) Benzylbutyl phthalate(BBP) CAS#:85-68-7	N.D.	50 mg/kg
邻苯二甲酸二(2-乙基己基)酯(DEHP) Bis(2-ethyl(hexyl)) phthalate (DEHP) CAS#:117-81-7	N.D.	50 mg/kg

测试样品/部位描述 银白色金属丝
Tested Sample/Part Description Silvery white metal wire

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注释: 对于检测铅, 镉, 汞之样品已完全溶解。

-N.D. = 未检出 (小于方法检测限)

-mg/kg= ppm = 百万分之几

-阴性表示不含有六价铬, 即由表面积为50cm²的样品所萃取出来的溶液中的六价铬的浓度小于0.02mg/kg

Note: The sample(s) had been dissolved totally tested for Lead, Cadmium, Mercury.

-MDL = Method Detection Limit

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

-mg/kg = ppm = parts per million

-Negative = Absence of Cr(VI) , the detected Cr(VI) concentration in the boiling water extraction solution is less than 0.02 mg/kg with 50cm² sample surface area used.

备注: 报告编号中“E”表示此报告为中英文对照版本。

Remark: The end sign of report number E represents the bilingual version.

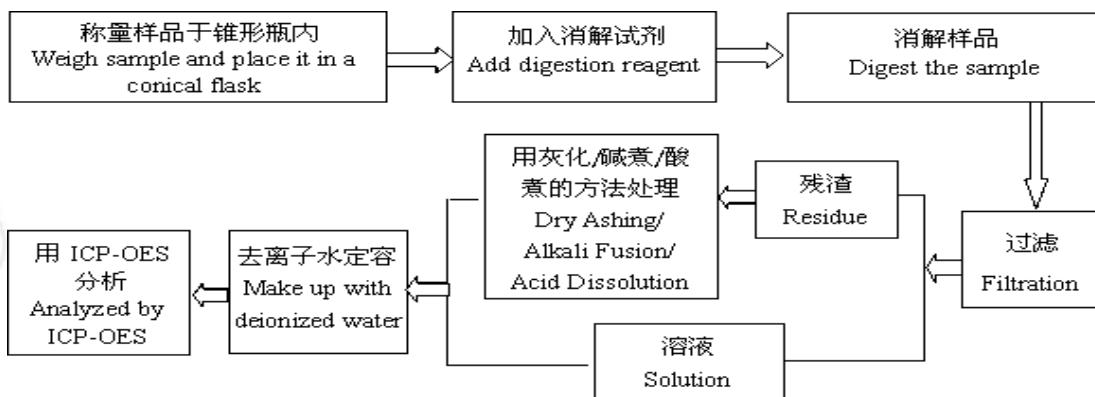
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Report No. RHS05F011891004E

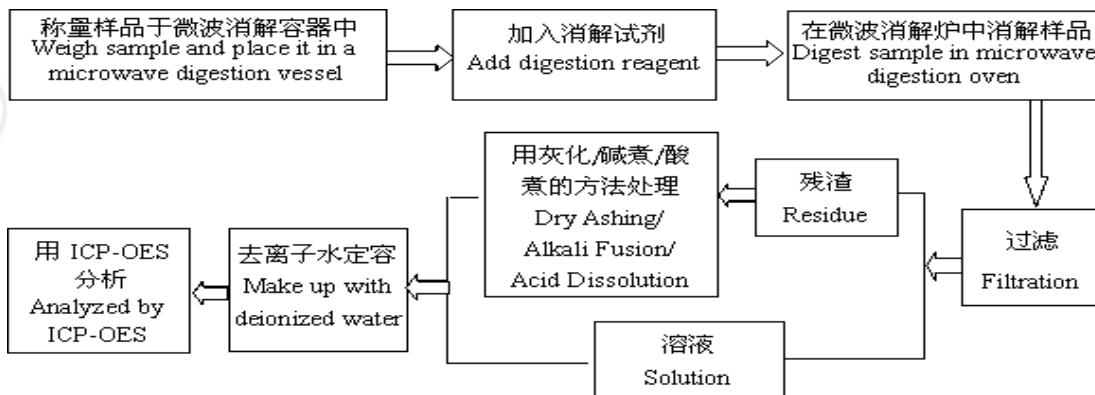
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检测流程 Test Process

1. 铅(Pb), 镉(Cd) Lead(Pb), Cadmium(Cd)



2. 汞(Hg) Mercury(Hg)

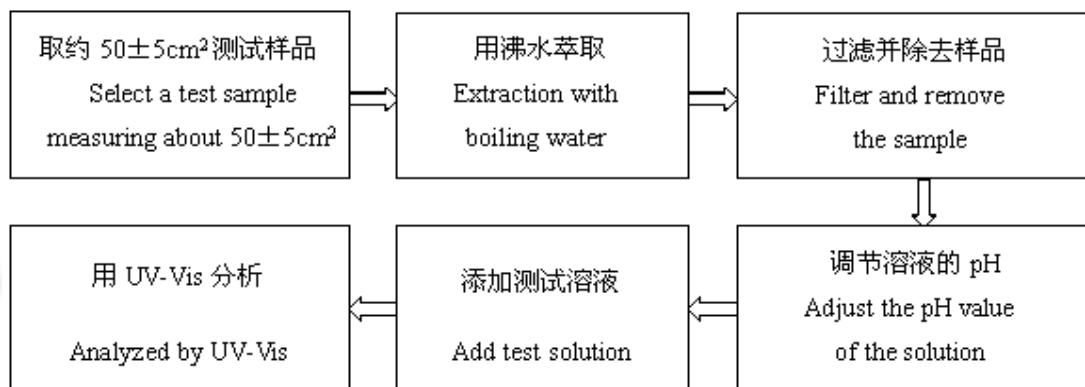


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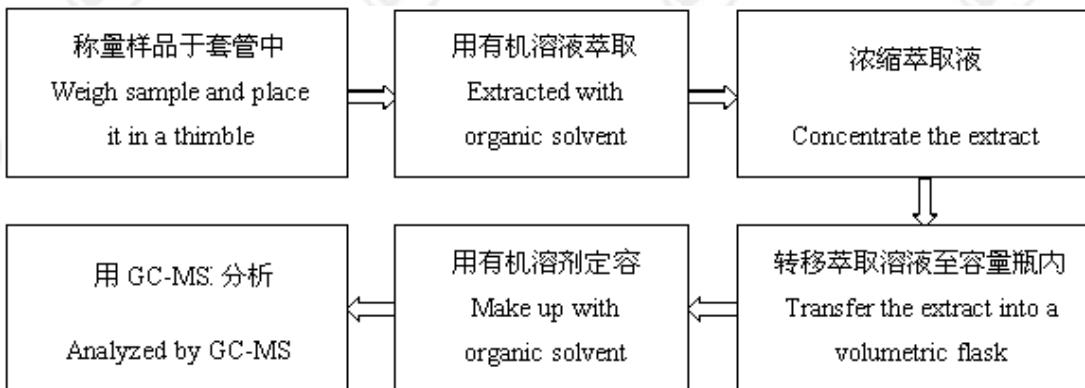
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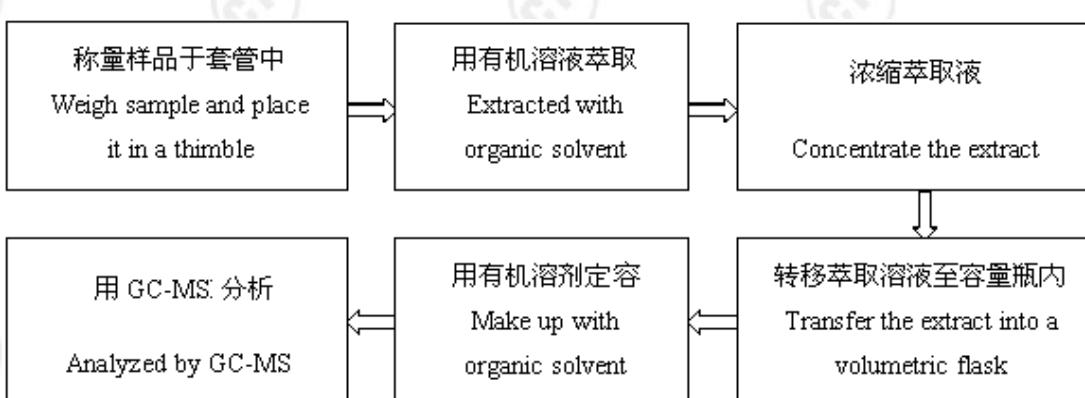
3. 六价铬(Cr(VI)) Hexavalent Chromium (Cr(VI))



4. 邻苯二甲酸酯 Phthalates



5. 多溴联苯(PBBs), 多溴二苯醚(PBDEs) Polybrominated Biphenyls (PBBs), Polybrominated Diphenyl Ethers (PBDEs)

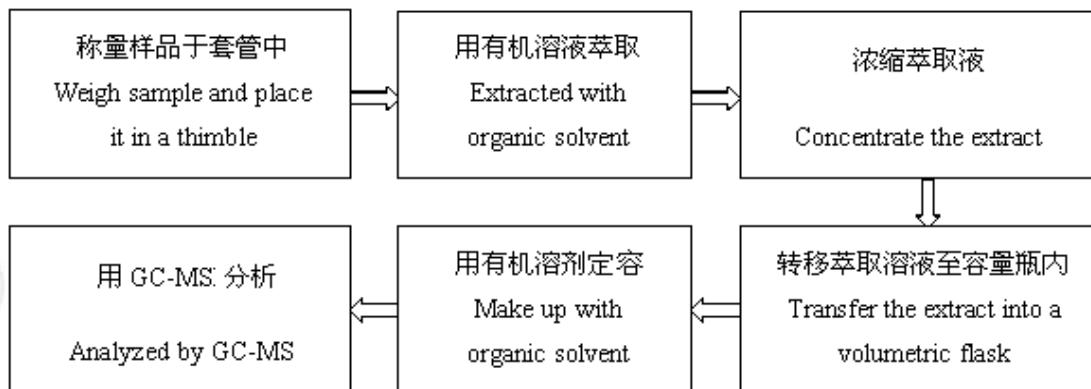


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6. 六溴环十二烷(HBCDD) Hexabromocyclododecane (HBCDD)



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Report No. RHS05F011891004E

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样品图片 Photo(s) of the sample(s)



报告结束
*** End of report ***

检测报告无批准人签字及“报告专用章”无效，本报告检测结果仅对受测样品负责。未经CTI书面同意，不得部分复制本报告。

The test report is effective only with both signature and specialized stamp. The result(s) shown in this report refer only to the sample(s) tested. Without written approval of CTI, this report can't be reproduced except in full.

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报告编号 Report No. RHS05F011891003E
RHS05F011891003E

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申请单位 Applicant 苏州市华诺线缆科技有限公司
SUZHOU HUANUO CABLE TECHNOLOGY CO., LTD
地址 Address 苏州市相城区太平镇太平大街
TAIPING STREET TAIPING TOWN XIANGCHENG, SUZHOU

以下测试之样品及样品信息由申请者提供并确认

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

样品名称 Sample Name	电线电缆料 Wire and cable materials
样品型号 Part No.	镀锡铜丝 Tinned copper wire
样品接收日期 Sample Received Date	2013.08.22 Aug. 22, 2013
样品检测日期 Testing Period	2013.08.22-2013.08.26 Aug. 22, 2013 to Aug. 26, 2013
检测要求 Test Requested	根据客户要求, 对所提交样品中的六溴环十二烷(HBCDD), 铅(Pb), 镉(Cd), 汞(Hg), 六价铬(Cr(VI)), 多溴联苯(PBBs), 多溴二苯醚(PBDEs), 邻苯二甲酸酯进行测试。 As specified by client, to test Hexabromocyclododecane (HBCDD), Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium (Cr(VI)), Polybrominated Biphenyls (PBBs), Polybrominated Diphenyl Ethers (PBDEs), Phthalates in the submitted sample(s).

检测依据/检测结果
Test Method/Test Result(s)

请参见下页。
Please refer to the following page(s).

主 检
Tested by
批 准
Approved by

Chen Lijuan
Su Hongwei

Su Hongwei
Senior Laboratory Manager

审 核
Reviewed by
日 期
Date

Zhong Yijun
2013.08.26

No. 1102121596



深圳市华测检测技术股份有限公司上海分公司
Centre Testing International Corporation Shanghai Branch No.1996, New Jinqiao Road, Pudong District, Shanghai, China

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检测依据 Test Method

测试项目 Test Item(s)	测试方法 Test Method	测试仪器 Measured Equipment(s)
铅(Pb) Lead(Pb)	IEC 62321:2008 Ed.1 Sec.9	ICP-OES
镉(Cd) Cadmium(Cd)	IEC 62321:2008 Ed.1 Sec.9	ICP-OES
汞(Hg) Mercury(Hg)	IEC 62321:2008 Ed.1 Sec.7	ICP-OES
六价铬(Cr(VI)) Hexavalent Chromium (Cr(VI))	IEC 62321:2008 Ed.1 Annex B	UV-Vis
多溴联苯(PBBS) Polybrominated Biphenyls (PBBS)	IEC 62321:2008 Ed.1 Annex A	GC-MS
多溴二苯醚(PBDEs) Polybrominated Diphenyl Ethers (PBDEs)	IEC 62321:2008 Ed.1 Annex A	GC-MS
六溴环十二烷(HBCDD) Hexabromocyclododecane (HBCDD)	参考US EPA 3550C: 2007 Refer to US EPA 3550C:2007	GC-MS
邻苯二甲酸酯 Phthalates	参考EN 14372: 2004(E) Refer to EN 14372:2004(E)	GC-MS

检测结果 Test Result(s)

测试项目 Test Item(s)	结果 Result	方法检测限 MDL
铅(Pb) Lead(Pb)	N.D.	2 mg/kg
镉(Cd) Cadmium (Cd)	N.D.	2 mg/kg
汞(Hg) Mercury(Hg)	N.D.	2 mg/kg
六价铬(Cr(VI)) Hexavalent Chromium (Cr(VI))	阴性 Negative	/

测试项目 Test Item(s)	结果 Result	方法检测限 MDL
多溴联苯(PBBS) Polybrominated Biphenyls (PBBS)		
一溴联苯 Monobromobiphenyl	N.D.	5 mg/kg
二溴联苯 Dibromobiphenyl	N.D.	5 mg/kg
三溴联苯 Tribromobiphenyl	N.D.	5 mg/kg
四溴联苯 Tetrabromobiphenyl	N.D.	5 mg/kg
五溴联苯 Pentabromobiphenyl	N.D.	5 mg/kg
六溴联苯 Hexabromobiphenyl	N.D.	5 mg/kg
七溴联苯 Heptabromobiphenyl	N.D.	5 mg/kg
八溴联苯 Octabromobiphenyl	N.D.	5 mg/kg

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九溴联苯 Nonabromobiphenyl	N.D.	5 mg/kg
十溴联苯 Decabromobiphenyl	N.D.	5 mg/kg

测试项目 Test Item(s)	结果 Result	方法检测限 MDL
多溴二苯醚(PBDEs) Polybrominated Diphenyl Ethers (PBDEs)		
一溴二苯醚 Monobromodiphenyl ether	N.D.	5 mg/kg
二溴二苯醚 Dibromodiphenyl ether	N.D.	5 mg/kg
三溴二苯醚 Tribromodiphenyl ether	N.D.	5 mg/kg
四溴二苯醚 Tetrabromodiphenyl ether	N.D.	5 mg/kg
五溴二苯醚 Pentabromodiphenyl ether	N.D.	5 mg/kg
六溴二苯醚 Hexabromodiphenyl ether	N.D.	5 mg/kg
七溴二苯醚 Heptabromodiphenyl ether	N.D.	5 mg/kg
八溴二苯醚 Octabromodiphenyl ether	N.D.	5 mg/kg
九溴二苯醚 Nonabromodiphenyl ether	N.D.	5 mg/kg
十溴二苯醚 Decabromodiphenyl ether	N.D.	5 mg/kg

测试项目 Test Item(s)	结果 Result	方法检测限 MDL
六溴环十二烷(HBCDD) Hexabromocyclododecane (HBCDD)	N.D.	5 mg/kg

测试项目 Tested Item(s)	结果 Result	方法检测限 MDL
邻苯二甲酸酯 Phthalates		
邻苯二甲酸二正丁酯(DBP) Dibutyl phthalate(DBP) CAS#:84-74-2	N.D.	50 mg/kg
邻苯二甲酸丁基苄酯(BBP) Benzylbutyl phthalate(BBP) CAS#:85-68-7	N.D.	50 mg/kg
邻苯二甲酸二(2-乙基己基)酯(DEHP) Bis(2-ethyl(hexyl)) phthalate (DEHP) CAS#:117-81-7	N.D.	50 mg/kg

测试样品/部位描述
 Tested Sample/Part Description

银色金属丝
 Silvery metal wire

检测报告 Test Report

报告编号 RHS05F011891003E
Report No. RHS05F011891003E

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Page 4 of 8

注释: 对于检测铅, 镉, 汞之样品已完全溶解。
-N.D. = 未检出 (小于方法检测限)
-mg/kg= ppm = 百万分之几

-阴性表示不含有六价铬, 即由表面积为50cm²的样品所萃取出来的溶液中的六价铬的浓度小于0.02mg/kg

Note: **The sample(s) had been dissolved totally tested for Lead, Cadmium, Mercury.**

-MDL = Method Detection Limit
-N.D. = Not Detected (<MDL)
-mg/kg = ppm = parts per million
-Negative = Absence of Cr(VI) , the detected Cr(VI) concentration in the boiling water extraction solution is less than 0.02 mg/kg with 50cm² sample surface area used.

备注: 报告编号中“E”表示此报告为中英文对照版本。

Remark: The end sign of report number E represents the bilingual version.

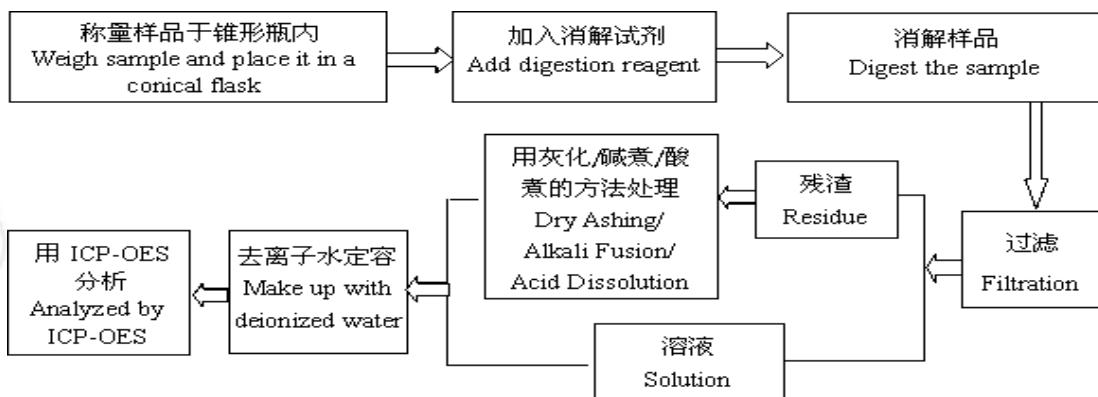
检测报告 Test Report

报告编号 RHS05F011891003E
Report No. RHS05F011891003E

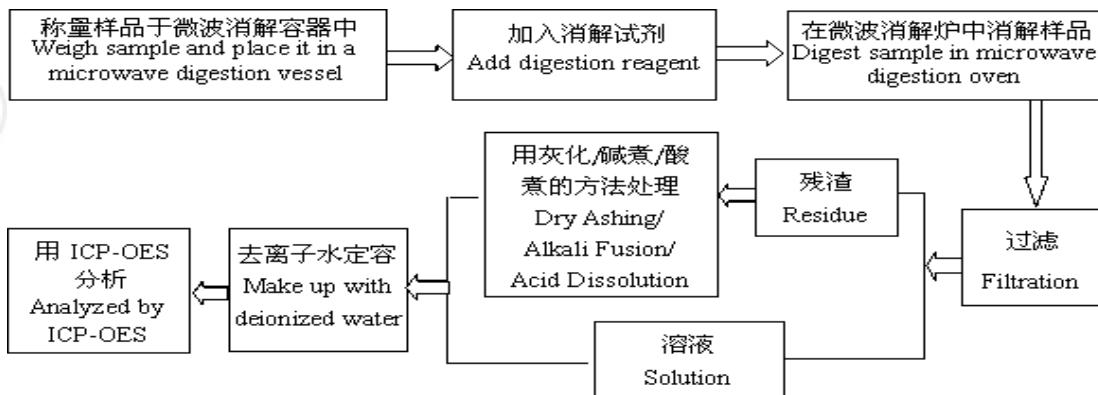
第 5 页 共 8 页
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检测流程 Test Process

1. 铅(Pb), 镉(Cd)
Lead(Pb), Cadmium(Cd)



2. 汞(Hg)
Mercury(Hg)

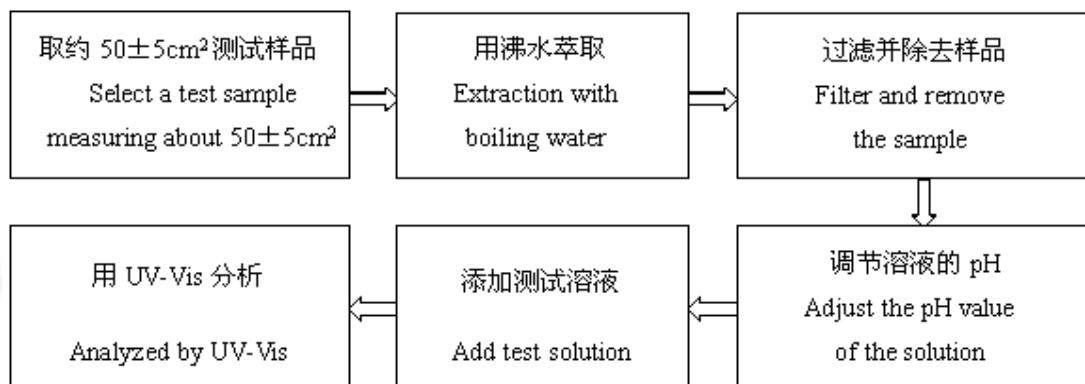


检测报告 Test Report

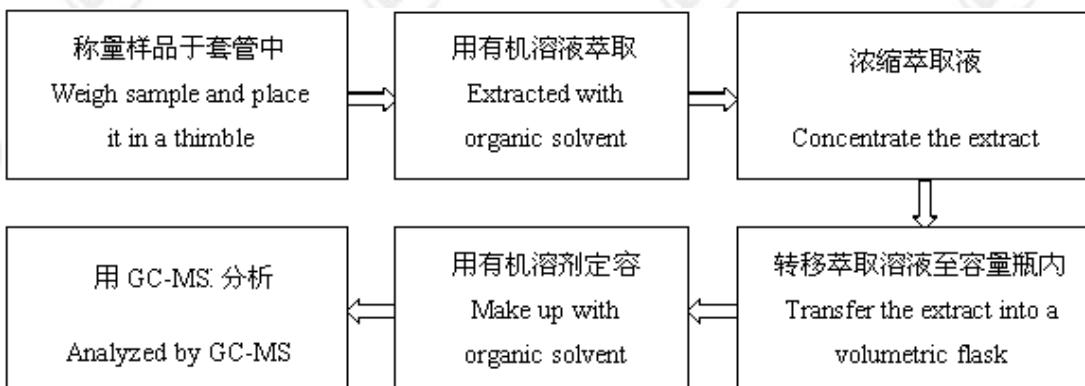
报告编号 RHS05F011891003E
Report No. RHS05F011891003E

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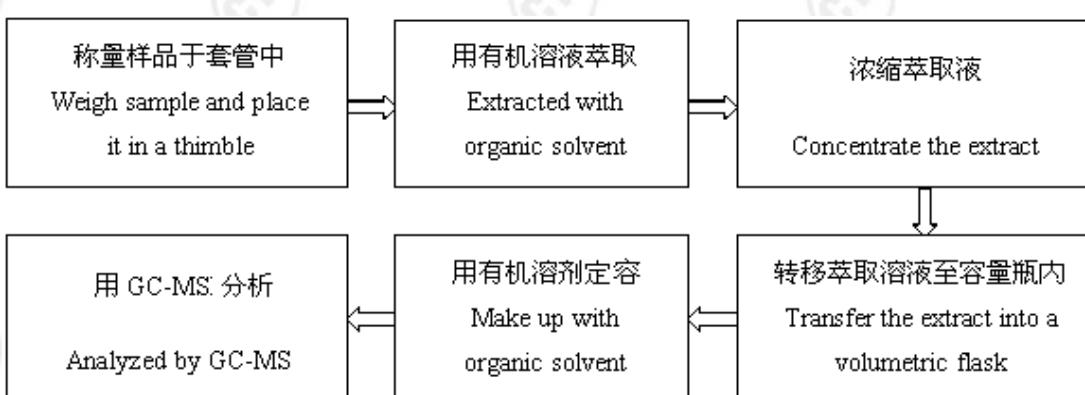
3. 六价铬(Cr(VI)) Hexavalent Chromium (Cr(VI))



4. 邻苯二甲酸酯 Phthalates



5. 多溴联苯(PBBs), 多溴二苯醚(PBDEs) Polybrominated Biphenyls (PBBs), Polybrominated Diphenyl Ethers (PBDEs)

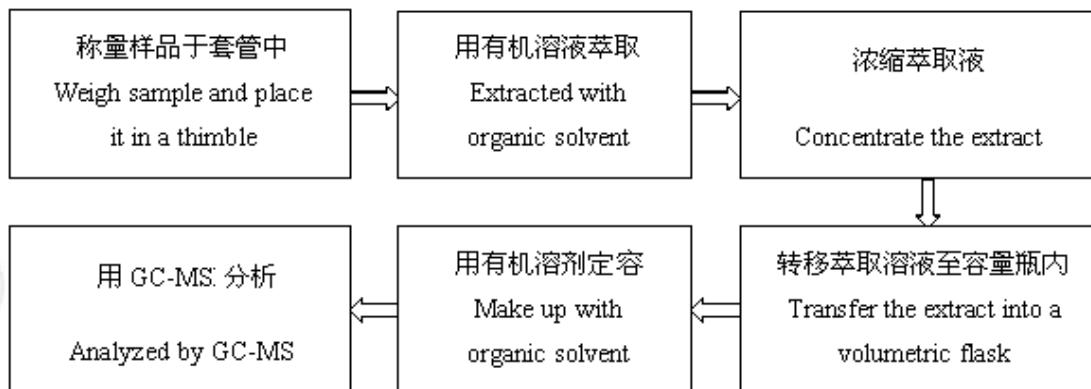


检测报告 Test Report

报告编号 RHS05F011891003E
Report No. RHS05F011891003E

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6. 六溴环十二烷(HBCDD) Hexabromocyclododecane (HBCDD)



检测报告 Test Report

报告编号 RHS05F011891003E
Report No. RHS05F011891003E

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Page 8 of 8

样品图片 Photo(s) of the sample(s)



报告结束
*** End of report ***

检测报告无批准人签字及“报告专用章”无效，本报告检测结果仅对受测样品负责。未经CTI书面同意，不得部分复制本报告。

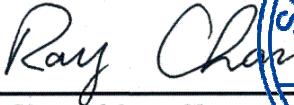
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POLYPLASTICS TAIWAN CO., LTD.
NO.13, JIANYE RD., DALIAO DIST., KAOHSIUNG CITY 831, TAIWAN (R.O.C.)

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

Sample Description : PBT
Style/Item No. : 315NF ED3002 / Lot No.1874090
Color : ED3002
Sample Receiving Date : 2013/07/08
Testing Period : 2013/07/08 TO 2013/07/15
Sample Submitted By : POLYPLASTICS TAIWAN CO., LTD.

Test Result(s) : Please refer to next page(s).


Ray Chang / Asst. Manager
Signed for and on behalf of
SGS Taiwan Limited



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Test Result(s)

PART NAME NO.1 : ED3002 PBT

Test Item (s):	Unit	Method	MDL	Result
				No.1
Cadmium (Cd)	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.
Lead (Pb)	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	6.47
Mercury (Hg)	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.
Hexavalent Chromium Cr(VI) by alkaline extraction	mg/kg	With reference to IEC 62321: 2008 and performed by UV-VIS.	2	n.d.
Sum of PBBs	mg/kg	With reference to IEC 62321: 2008 and performed by GC/MS.	-	n.d.
Monobromobiphenyl			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.
Sum of PBDEs	mg/kg	With reference to IEC 62321: 2008 and performed by GC/MS.	-	n.d.
Monobromodiphenyl 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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SGS Taiwan Ltd.

台灣檢驗科技股份有限公司

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Test Item (s):	Unit	Method	MDL	Result
				No.1
Halogen				
Halogen-Fluorine (F) (CAS No.: 014762-94-8)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC.	50	731
Halogen-Chlorine (Cl) (CAS No.: 022537-15-1)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC.	50	n.d.
Halogen-Bromine (Br) (CAS No.: 010097-32-2)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC.	50	n.d.
Halogen-Iodine (I) (CAS No.: 014362-44-8)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC.	50	n.d.

Note : 1. mg/kg = ppm ; 0.1wt% = 1000ppm

2. n.d. = Not Detected

3. MDL = Method Detection Limit

4. "-" = Not Regulated

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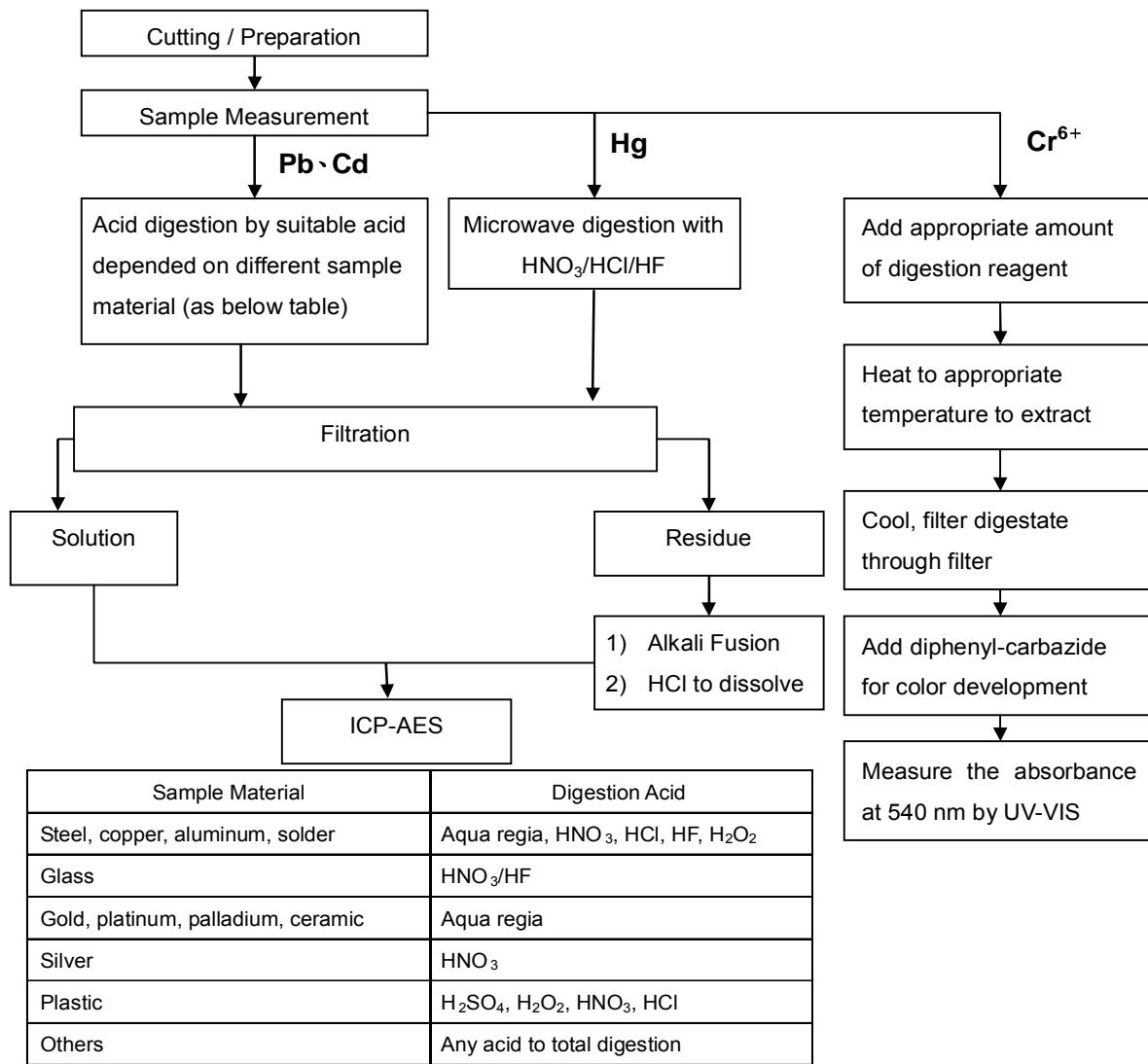
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- 1) These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr⁶⁺ test method excluded)
- 2) Name of the person who made measurement: Alex Chang
- 3) Name of the person in charge of measurement: Ray Chang



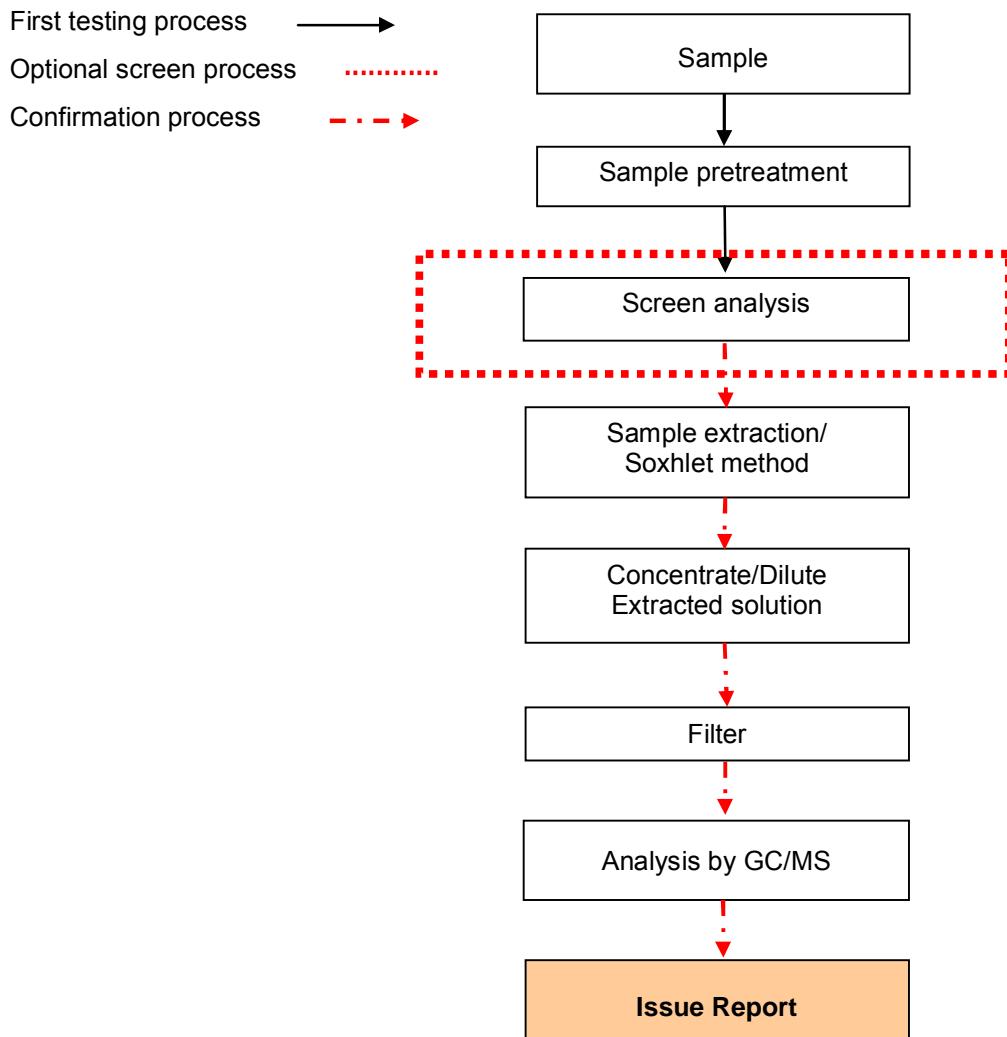
Note :** (1) For non-metallic material, add alkaline digestion reagent and heat to 90~95 °C.
 (2) For metallic material, add pure water and heat to boiling.

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PBB/PBDE analytical FLOW CHART

- 1) Name of the person who made measurement: Anson Tsao
- 2) Name of the person in charge of measurement: Ray Chang

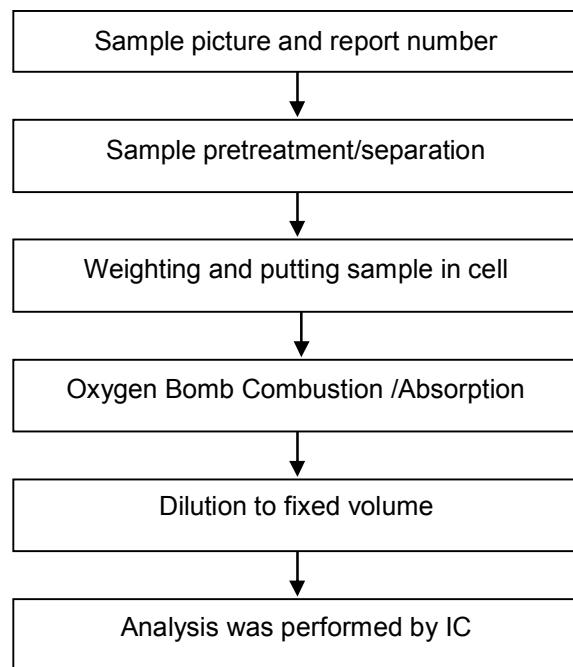


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Analytical flow chart of halogen content

- 1) Name of the person who made measurement: Jean Hung
- 2) Name of the person in charge of measurement: Ray Chang

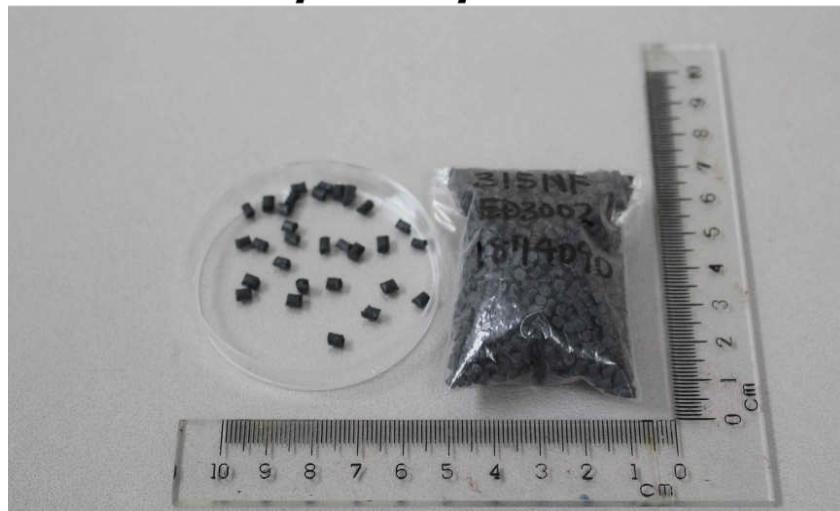


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* The tested sample / part is marked by an arrow if it's shown on the photo. *

KA/2013/70363



** End of Report **

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検査報告書

報告書No.JP/2012/110811

日付:2012年12月5日

1 頁 全 4 頁

三菱電機メテックス株式会社

神奈川県相模原市中央区宮下1-1-57

THE FOLLOWING SAMPLE(S) WAS/WERE SUBMITTED AND IDENTIFIED BY/ON BEHALF OF THE CLIENT AS:
以下のサンプルは顧客により提供され、顧客に代わって確認を行いました:

サンプル名 : C5210R 製造ロット番号:12246

御社オーダーNo. :

サンプル受領日 : 2012/11/22

分析期間 : 2012/11/22 – 2012/12/04

TEST REQUESTED
分析項目 : SELECTED TEST(S) AS REQUESTED BY CLIENT.
分析項目は顧客の要求によります。

TEST METHOD(S)
分析方法 : WITH REFERENCE TO IEC62321 EDITION 1.0 2008-12 FOR RoHS 6 SUBSTANCES.
OTHER CHEMICALS WERE TESTED BY EACH APPROPRIATE METHOD.
RoHS6物質の分析はIEC62321第1.0版(2008年12月)を参照しました。
それ以外の化学物質についてはそれぞれに最適な方法で分析を行いました。

TEST RESULT(S)
分析結果 : PLEASE REFER TO THE NEXT PAGE(S).
以下のページをご参照願います。

大内 幸弘



品質管理者 / 大内 幸弘
SGSジャパン株式会社
ケミカルラボラトリー

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検査報告書

報告書No.JP/2012/110811

日付:2012年12月5日

2 頁 全 4 頁

三菱電機メテックス株式会社

神奈川県相模原市中央区宮下1-1-57

分析結果

項目	単位	結果	前処理	機器/場所	MDL
カドミウム(Cd)	mg/kg	検出せず	IEC62321 第1版 8,9,10章	ICP-OES	2
鉛(Pb)	mg/kg	検出せず	IEC62321 第1版 8,9,10章	ICP-OES	2
水銀(Hg)	mg/kg	検出せず	IEC62321 第1版 7章	ICP-OES	2
六価クロム(Cr(VI))	μ g/cm ²	検出せず	IEC62321 第1版 付属文書B	UV/VIS	0.01

補足: mg/kg = ppm, MDL(Method Detection Limit) = 方法下限値

注釈: Cr(VI)分析はサンプル表面積:12cm²を使用しました。

ご参考: 六価クロムの方法下限値はサンプル重量より2(ppm)に換算されます。

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JP

検査報告書

報告書No.JP/2012/110811

日付:2012年12月5日

3 頁 全 4 頁

三菱電機メテックス株式会社

神奈川県相模原市中央区宮下1-1-57

分析フローチャート MEASUREMENT FLOW CHART

1)酸分解前処理において試料を完全分解しています。

The sample was dissolved/ decomposed totally by acid pre-conditioning method according to below flow chart.

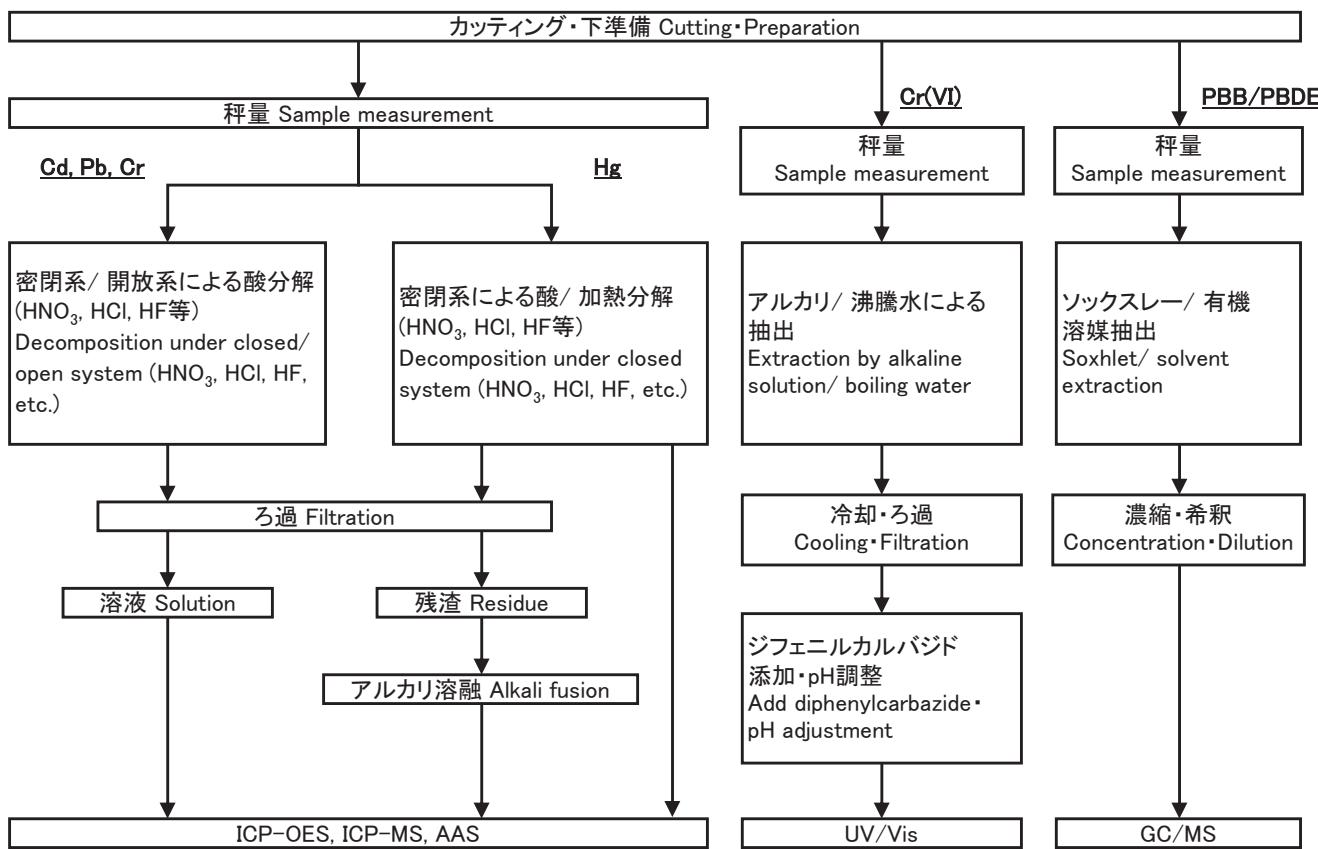
2)Cd, Pb, Hg, Cr, Cr(VI)

分析担当者 Name of the person in charge of measurement: 野田 晴美 Harumi Noda

3)PBB/PBDE

分析担当者 Name of the person in charge of measurement: 大谷 真由美 Mayumi Otani

4)分析責任者 Name of the person responsible for measurement: 大谷 真由美 Mayumi Otani



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サンプル画像



*** 以上 ***

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检测报告 Test Report

报告编号 RLSHF001373050001
Report No. RLSHF001373050001

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申请单位 昆山同心表面科技有限公司
Applicant KUNSHAN TONGXIN SURFACE SCIENCE AND TECHNOLOGY CO., LTD.
地址 昆山市紫竹路 1698 号
Address NO. 1698 ZI ZHU ROAD KUN SHAN CITY

以下测试之样品及样品信息由申请者提供并确认

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

样品名称 Sample Name	镀金层 Gold coating
样品接收日期 Sample Received Date	2013.02.21
样品检测日期	Feb.21,2013
Testing Period	2013.02.21-2013.02.25
检测要求 Test Requested	根据客户要求, 对所提交样品中的铅(Pb), 镉(Cd), 汞(Hg), 六价铬(Cr(VI)), 全氟辛烷磺酸(PFOS)进行测试。 As specified by client, to test Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium (Cr(VI)), Perfluorooctane Sulfonates(PFOS) in the submitted sample(s).

主 检
Tested by Verna Chen. 核
批 准
Approved by Joy Su 期
Joy Su
Senior Laboratory Manager

Reviewed by Weney Zhang
Date 2013.02.25
No. 94221285



深圳市华测检测技术股份有限公司上海分公司

Centre Testing International (Shenzhen) Co., Ltd. Shanghai Branch No.1996, New Jinqiao Road, Pudong District, Shanghai

上海市浦东新区新金桥路 1996 号

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检测依据 Test Method

测试项目 Tested Item(s)	测试方法 Test Method	测试仪器 Measured Equipment(s)	方法检测限 M.D.L.
铅(Pb) Lead	参考 IEC 62321:2008 Ed.1 * Refer to IEC 62321:2008 Ed.1 *	ICP-OES	2mg/kg
镉(Cd) Cadmium	参考 IEC 62321:2008 Ed.1 * Refer to IEC 62321:2008 Ed.1 *	ICP-OES	2mg/kg
汞(Hg) Mercury	参考 IEC 62321:2008 Ed.1 * Refer to IEC 62321:2008 Ed.1 *	ICP-OES	2mg/kg
六价铬(Cr(VI)) Hexavalent Chromium	IEC 62321:2008 Ed.1 Annex B	UV-Vis	/
全氟辛烷磺酸(PFOS) Perfluorooctane Sulfonates	参考 US EPA 3550C:2007 Refer to US EPA 3550C:2007	LC-MS-MS	0.5μg/m ²

检测结果 Test Result(s)

测试项目 Tested Item(s)	结果 Result
铅 Lead (Pb)	N.D.
镉 Cadmium (Cd)	N.D.
汞 Mercury (Hg)	N.D.
六价铬 Hexavalent Chromium (Cr(VI))	Negative

测试项目 Tested Item(s)	结果 Result
全氟辛烷磺酸(PFOS) Perfluorooctane Sulfonates(PFOS)	N.D.

测试样品/部位描述 金色镀层
Tested Sample/Part Description Golden plating

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注释: -N.D. = 未检出 (小于方法检测限).

-mg/kg=ppm=百万分之几.

-*=镀层采用合适的酸液退镀, 退镀液经 ICP-OES 测试.

-Negative 表示阴性. 阴性=不含有六价铬, 即由表面积为 50cm² 的样品所萃取出来的溶液中的六价铬的浓度小于 0.02mg/kg。

Note: -M.D.L. = Method Detection Limit

-N.D. = Not Detected (<M.D.L.)

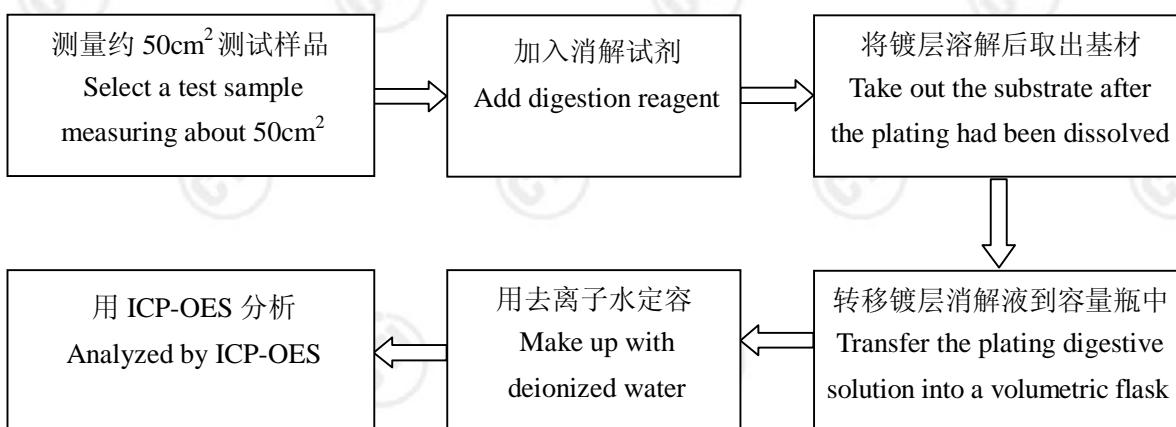
-mg/kg= ppm =parts per million

-*=Appropriate acid is used for deplating, and the solution is analyzed by ICP -OES.

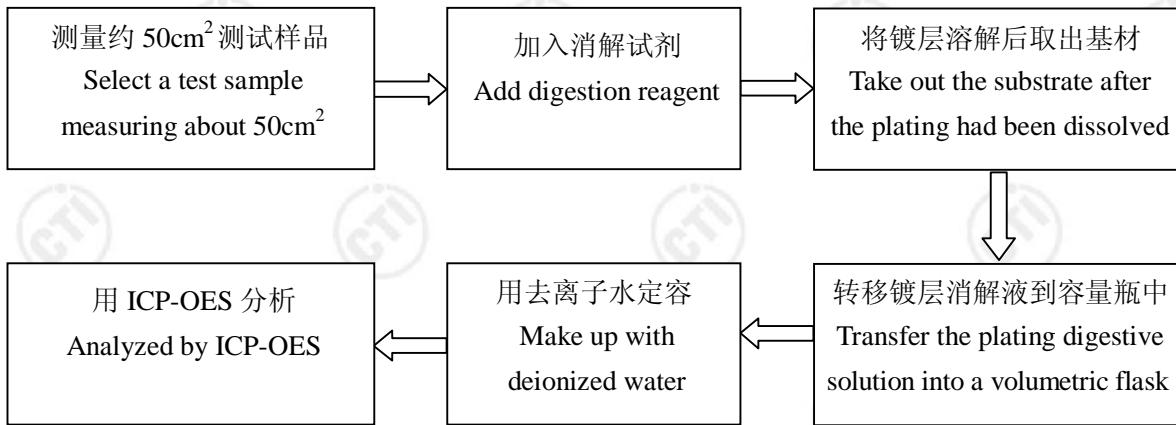
-Negative = Absence of Cr (VI). The Cr (VI) concentration detected in the boiling water extraction solution is less than 0.02 mg/kg with 50cm² sample surface area used.

检测流程 Test Process

1. 铅(Pb), 镉(Cd) Lead(Pb), Cadmium(Cd)



2. 汞(Hg) Mercury(Hg)

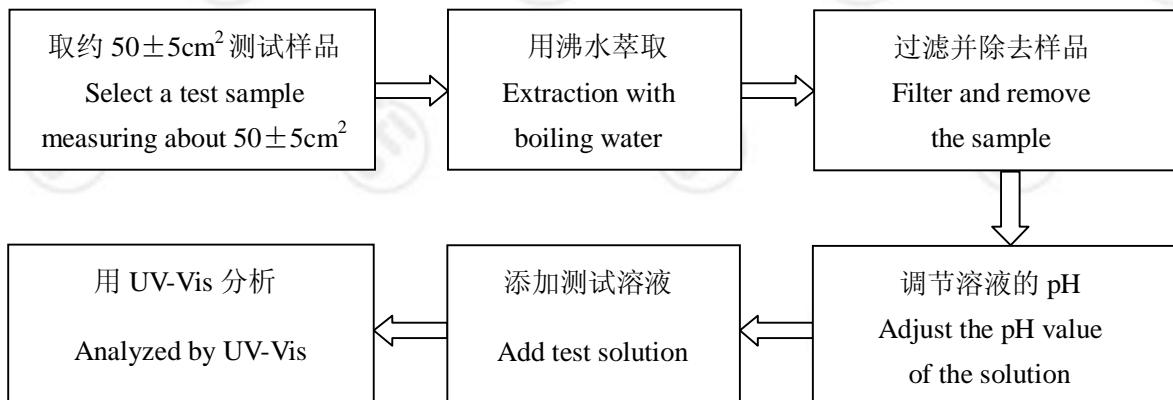


检测报告 Test Report

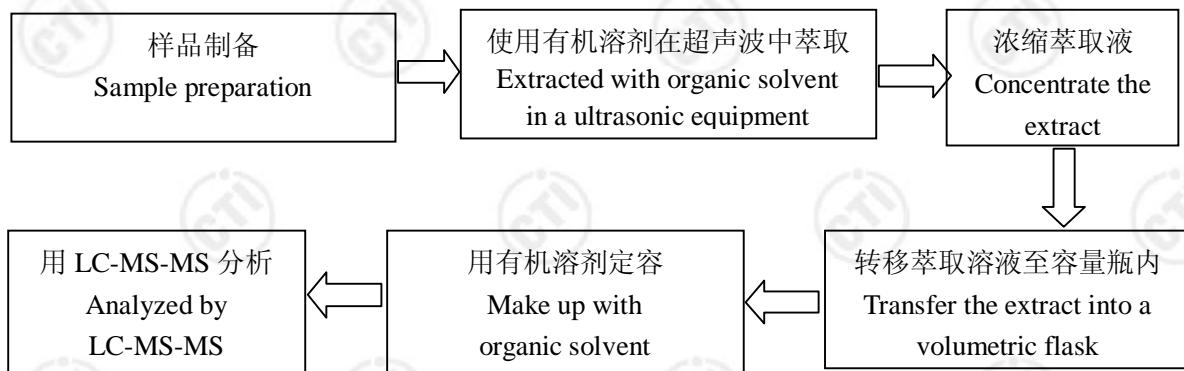
报告编号 RLSHF001373050001
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3. 六价铬(Cr(VI)) Hexavalent Chromium (Cr(VI))



4. 全氟辛烷磺酸(PFOS) Perfluorooctane Sulfonates(PFOS)



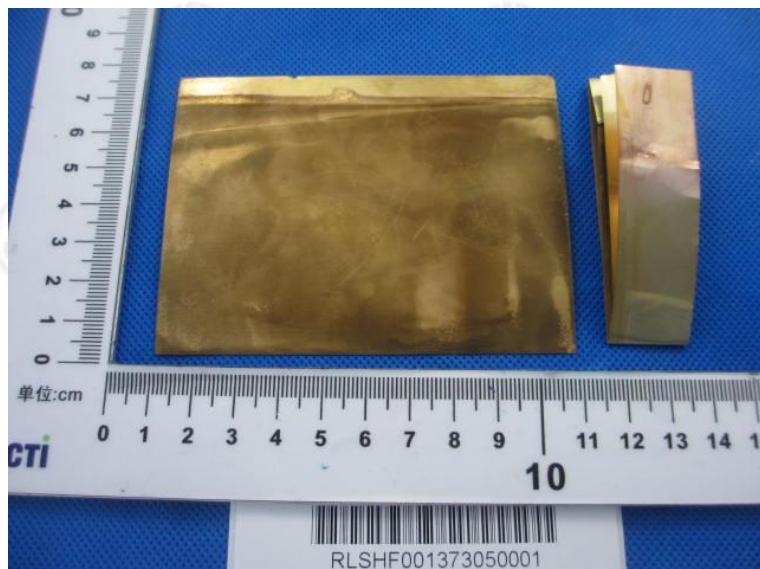
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样品照片

Photo of the sample



*** 报告结束 ***

***End of report ***

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