

Specification For Approval

Date: 2018 / 11 / 02

File No.: 181102005

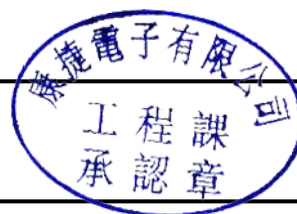
Version: 1.0

Customer : 美商定誼科技股份有限公司台灣分公司

Customer P/N : /

INVAX P/N : AN2450-5706RS

Description : Antenna Dipole



Cortec Checked By:

R D
2018.11.02
Kenny

Customer Approved By:



INVAX System Technology Corp.
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TEL:886-2-2788-5218 FAX:886-2-2783-1658
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Product Number: AN2450-5706RS

Product Name: Antenna Dipole



1. Revision History

Revision	Date	Change Notification	Description
1.0	2018.11.02	初版	

Product Number: AN2450-5706RS

Product Name: Antenna Dipole



2. Specification

Sample Photo	
	
A. Electrical Characteristics	
Frequency	2400 ~ 2500 MHz 5150 ~ 5850 MHz (Antenna)
V.S.W.R.	≤ 2.0 @ 2400 ~ 2500 MHz ≤ 2.5 @ 5150 ~ 5850 MHz The data is tested with 1M cable
Peak Gain	2.38 dBi @ 2400 ~ 2500 MHz 5.22 dBi @ 5150 ~ 5850 MHz
Radiation Pattern	Omni-Directional
Max Input Power	≥ 2 W
Polarization	Linear
Impedance	50 Ohm
B. Material & Mechanical Characteristics	
Material of Radiator	PCB
Material of Plastic	TPEE / ABS
Cable Type	RG-178U
Connector Type	SMA Male Reverse
C. Environmental	
Operation Temperature	- 40 °C ~ + 65 °C
Storage Temperature	- 40 °C ~ + 80 °C
Antenna Color Storage life	< 2 year

Product Number: AN2450-5706RS

Product Name: Antenna Dipole



3. Characteristics and Reliability Test

Test Items 測試項目		Test Condition and Procedure 測試方法	Requirements 要求	Result 結果
C1	V.S.W.R. 電壓駐波比	Set DUT on Network Analyzer; make individual calibration to test 設置網路分析儀參數進行測試	Directive DUT specification 符合待測物規範	PASS
C3	Antenna Gain 天線增益	Set DUT on Antenna Chamber; make individual calibration to test 設置天線暗室參數進行測試	Directive DUT specification 符合待測物規範	PASS
M1	Vibration 震動	GB / T2423.48-2008 Amplitude: 0.03 inch (1.5mm); Freq: 20 to 80 to 20 Hz 3 directions; 2 hours for each direction 振幅 1.5mm ; 頻率 20~80~20Hz ; 3 個方向各 2H	1. No Visual Damage 2. Frequency Tol.≤5% 無明顯外觀不良;頻率偏移≤5%	PASS
M2	Random Drop 跌落	GB / T2423.8-1995 Single : Height: 1.0 Meter; 3 directions; 1 time for each direction 單支天線, 高 1m ; 3 個方向各 1 次	1. No parts separated 、 fracture 2. Frequency Tol.≤5% 產品無脫落、斷裂;頻率偏移≤5%	PASS
		Packing : Height: 0.76 Meter; 1 corner, 3 edges, 6 surface 包裝: 高 0.76m , 一角、三棱、六面各一次		PASS
		Antenna+Machine:Height: 0.76 Meter; 1 corner, 3 edges, 6 surface.整機: 高 0.76m , 一角、三棱、六面各一次		N/A
M4	Pull Test 拉力	Holding with individual specification; force applied to axis of terminal .單獨定義產品端子拉力	1. Directive DUT specification 2. Frequency Tol.≤5% 符合待測物規範;頻率偏移≤5%	PASS
M5	Torque Test 扭力	Holding with individual specification; applied clockwise and counterclockwise to the axis of terminal 單獨定義產品端子之順時針及逆時針扭力	1. Directive DUT specification 2. Frequency Tol.≤ 5% 符合待測物規範;頻率偏移≤5%	PASS
M6	Dimension 尺寸	Inspection of dimension, color, material, package, surface process.检查尺寸,颜色,材料,包装,表面處理	Directive DUT specification 符合待測物規範	PASS
E3	Temperature and Humidity Chamber 恒溫恒濕	GB / T 2423.3-2006 Temp: 80°C / 12 H; -40°C / 12H RH: ≥ 90%; Time: 24H 溫度 80°C 測試 12H 轉-40°C 測試 12H; 濕度 ≥ 90% ; 時間 24H	After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol.≤5% 恢復 2H 后, 無明顯外觀不良;頻率偏移≤5%	PASS

Product Number: AN2450-5706RS

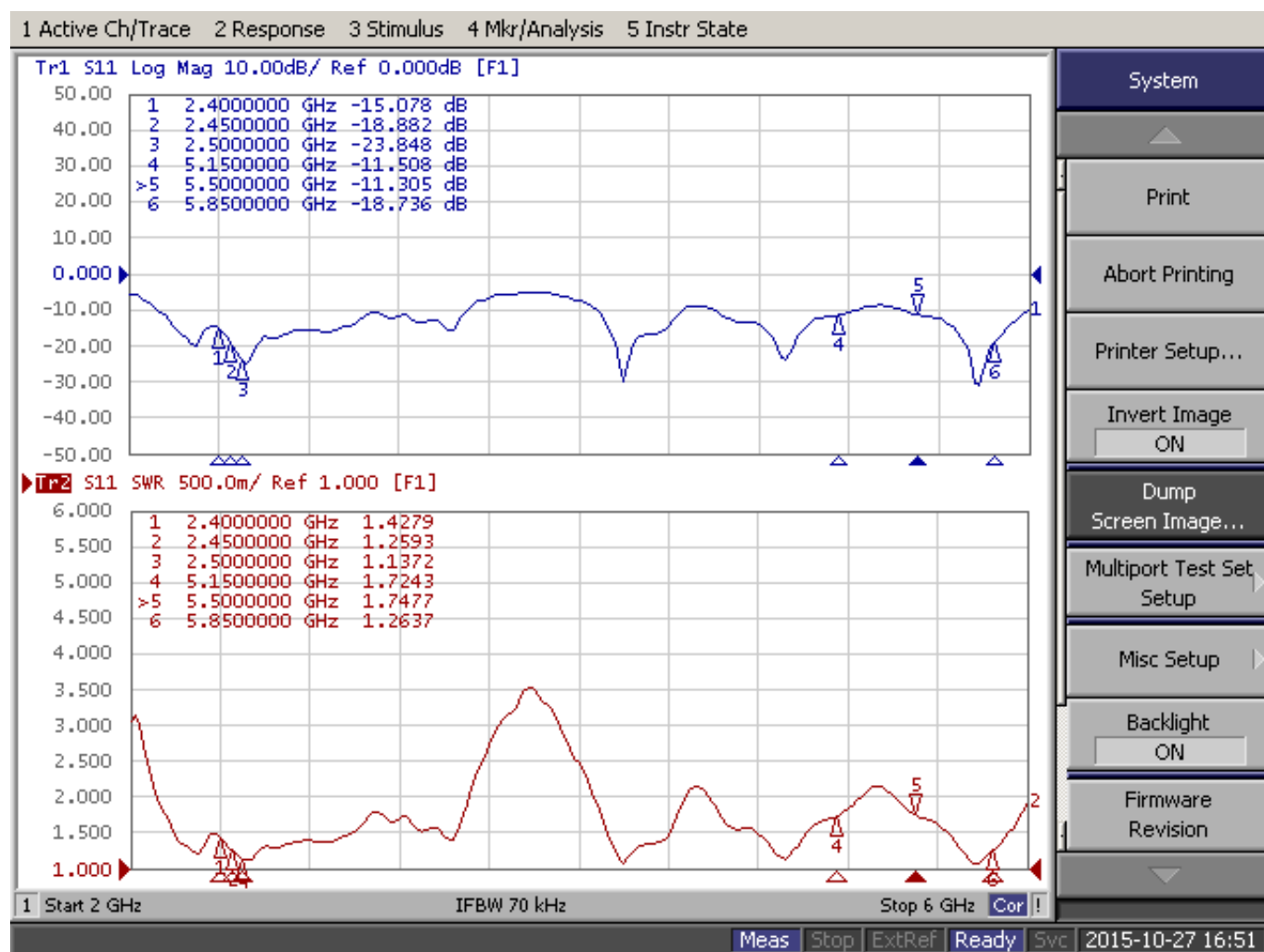
Product Name: Antenna Dipole



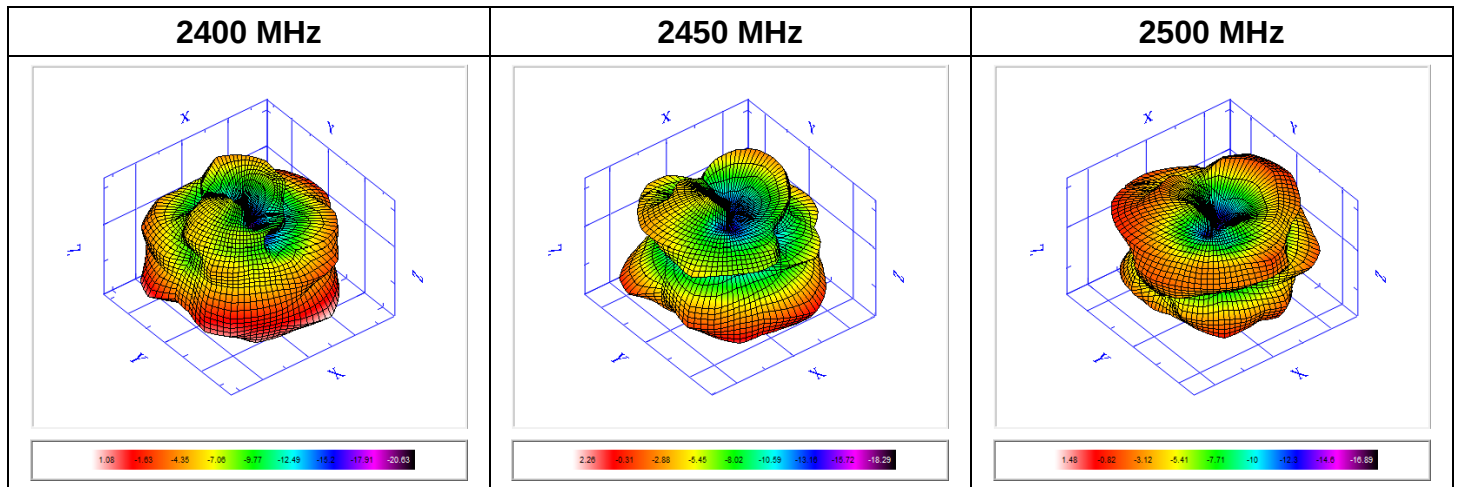
E5	Aging test 老化	GB /T 2423.2 - 2008 Temp: 80°C; Time: 24 hours 溫度 80°C , 測試 24H	After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol. ≤5% 無明顯外觀不良; 頻率偏移 ≤5%	PASS
R1	RoHS	With Reference to IEC 62321:2008 with flow chart 參考 IEC 62321 測試流程	Directive RoHS 2011/65/EU 符合 RoHS 2011/65/EU 標準	PASS
R2	PFOS	With Reference to USA EPA 3550C:1996 by LC/MS 參考 USA EPA 3550C 測試流程	Directive RoHS 2006/122/EC 符合 RoHS 2011/65/EU 標準	PASS

4. Antenna - S Parameter Test Data

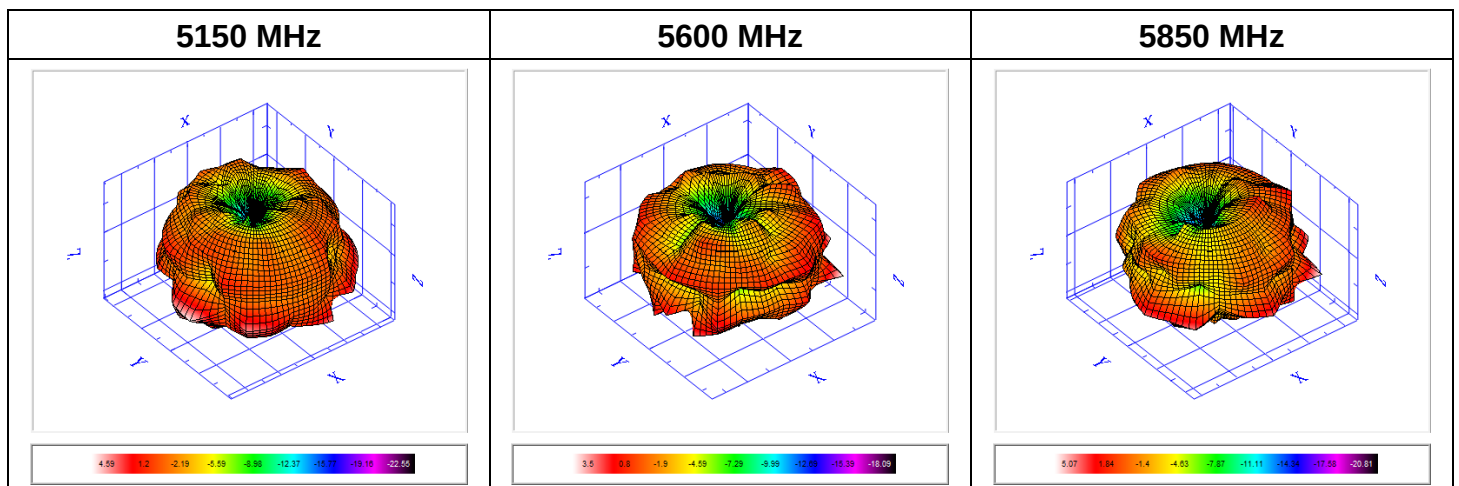
Antenna



Antenna



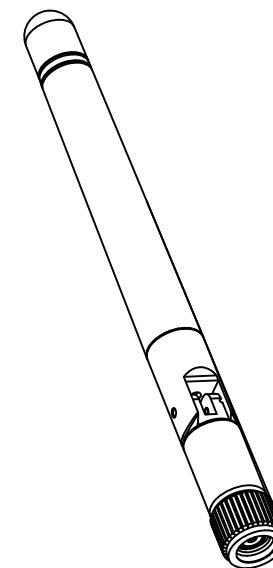
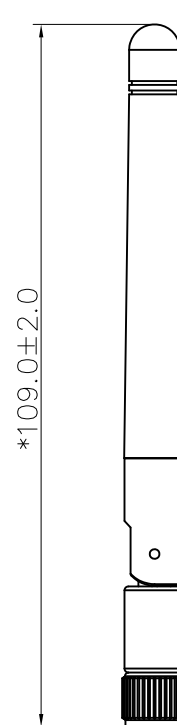
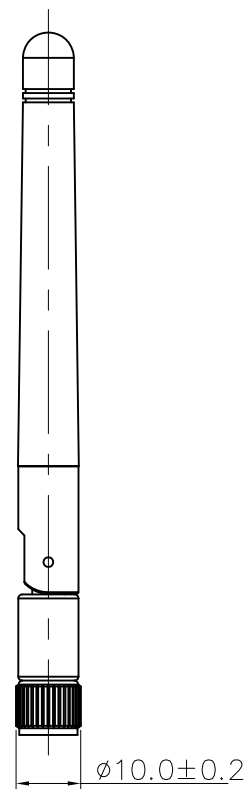
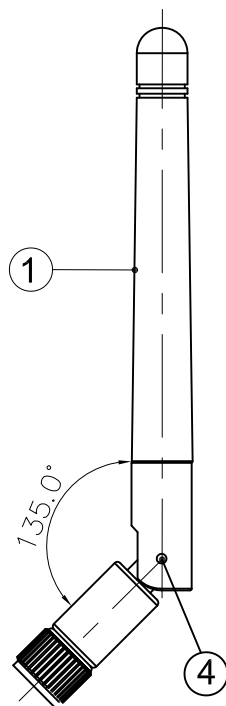
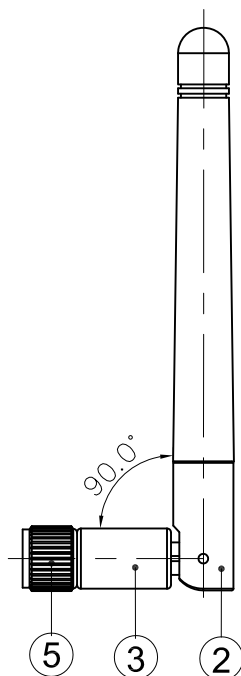
Frequency	2400	2410	2420	2430	2440	2450	2460	2470	2480	2490	2500
E-Total Peak Gain (dBi)	1.08	1.23	1.57	1.83	2.01	2.26	2.19	2.38	2.21	1.79	1.48
Efficiency (%)	36.72	33.74	32.5	32.15	30.66	33.82	34.98	36.61	38	37.68	38.19
Average Gain (dB)	-4.35	-4.72	-4.88	-4.93	-5.13	-4.71	-4.56	-4.36	-4.2	-4.24	-4.18



Frequency	5150	5250	5350	5470	5600	5725	5785	5800	5850
E-Total Peak Gain (dBi)	4.59	4.14	3.86	2.95	3.5	4.47	4.71	5.22	5.07
Efficiency (%)	72.58	69.25	58.59	60.95	66.37	66.83	66.2	68.17	72.39
Average Gain (dB)	-1.39	-1.6	-2.32	-2.15	-1.78	-1.75	-1.79	-1.66	-1.4

RoHS

Compatible



Note:

- 1.Take " * "is the important dimension.
- 2.Tolerance:Unmarked tolerance refer to the standard tolerance please.

5	SMA402-ZC8MRANT	SMA Male Reverse	Zn Alloy	Eletrodeposition	1
4	R-AN01-1213Z	Hinge Pin	C3604	Black	2
3	R-AN57-01	Body3	ABS	Black	1
2	AN5704-01B	Body2	ABS	Black	1
1	AN5701-03B	Body1	TPEE	Black	1
NO.	Part Number	Description	Material	Finish	Q'ty

SIGN	DATE	DESCRIPTION	APPROVER

Invax System Group.

Cortec

Cortec Technology Inc.

Http://www.invaxsystem.com
E-mail:info@invax.com.tw

Tel :886-2-27885218
Fax:886-2-27831658

TITLE: Antenna

PART NO.: AN2450-5706RS

CUSTOMER P/N: /

APP BY	CHK BY	RF BY	DES BY		Tolerance
Grant	Jack	SF	HC	UNITS: mm	X.X ±0.5
2015/03/03	2015/03/03	2015/03/03	2015/03/03	SCALE: 1/1	X.XX ±0.2
				REVISION: A	X° ±1

Part Number : AN2450-5706RS	Revision : A
Name: 2.4/5GHz Antenna	Customer : ALL

1.將天線放入吸塑罩
(每盤20PCS由圖二所示)

<圖二>

2.將裝好天線的吸塑罩疊加起來
在最頂層再加一吸塑罩蓋子
5層吸塑罩(100PCS)做爲一捆
用塑膠薄膜捆扎

3.將捆好的吸塑罩放進外箱
一箱放10捆即1000PCS產品
擺放要整齊

4.封箱，在側面貼一環保標貼。

吸塑罩蓋子

吸塑罩

RoHS Label

SGS 台灣網站 → http://twap.sgs.com/sgsrsts/chn/cheres_tw.asp
SGS 大陸網站 → http://rsts.cn.sgs.com/chn/cheres_cn.asp
SGS 韓國網站 → http://rohs.kr.sgs.com/sgsrsts/en/cheres_en.asp

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：AN2450-5706RS

序號	物料型號	物料各構成名稱	各構成物料的材料	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	AN5701-03	Body-1	TPEE	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	CANEC1804868301	2018.03.28	TPR/TPU/TPV/TPEE MIXT	SGS
2	AN5704-01B R-AN57-01	Body-3 Body-2	ABS	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0114071849p6 001	2017.12.01	POLYLAC® PA-757	TuvRheinland
3	R-AN01-1213Z	PIN	銅	35	31411	N.D.	N.D.			CANEC1809381105	2018.05.23	Brass Rod.	SGS
4	SMA402-ZC8MRANT	SMA Male Reverse	鋅合金	4	12	N.D.	N.D.	N.D.	N.D.	CANML1718176001	2017.09.15	Zinc Alloy 3#.	SGS
5	R-RG-178U	Cable RG178	FEP	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	NGBML1800155002	2018.01.17	聚全氟乙丙烯树脂.	SGS
6			PTFE	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	NGBML1800151702	2018.01.16	聚四氟乙烯分散树脂.	SGS
7			镀银铜	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	SHAEC1728677802	2018.01.04	镀银铜丝	SGS
9	R-504806PCB	PCB	FR4	N.D.	9	N.D.	N.D.	N.D.	N.D.	CANML1800543902	2018.01.10	FR-4.0环氧玻纤覆铜板	SGS

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. CANEC1804868301

Date: 28 Mar 2018

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DONGGUAN SPO CHEMICAL CO.,LTD

NO.1,2 STREET SHENGQIANGANG HUANGJIANG,DONGGUAN,GUANGDONG

The following sample(s) was/were submitted and identified on behalf of the clients as :
TPE/TPR/TPU/TPV/TPEE MIXTURE

SGS Job No. : CP18-012805 - GZ

Date of Sample Received : 22 Mar 2018

Testing Period : 22 Mar 2018 - 28 Mar 2018

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 sample(s), the results of Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs) and Phthalates such as Bis(2-ethylhexyl) phthalate (DEHP) , Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) , and Diisobutyl phthalate (DIBP) comply with the limits as set by RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.

Signed for and on behalf of
SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch

Violet Shi

Violet,Shi
Approved Signatory



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

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Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

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Test Report

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Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	CAN18-048683.001	White material

Remarks :

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

RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU

Test Method : With reference to IEC 62321-4:2013+A1:2017, IEC62321-5:2013, IEC62321-7-2:2017 , IEC 62321-6:2015 and IEC62321-8:2017, analyzed by ICP-OES , UV-Vis and 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	8	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
Dibromodiphenyl ether	-	mg/kg	5	ND
Tribromodiphenyl ether	-	mg/kg	5	ND
Tetrabromodiphenyl ether	-	mg/kg	5	ND
Pentabromodiphenyl ether	-	mg/kg	5	ND



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Guangzhou Branch Testing Center Chemical Laboratory

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<u>Test Item(s)</u>	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>001</u>
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
Dibutyl phthalate (DBP)	1000	mg/kg	50	ND
Butyl benzyl phthalate (BBP)	1000	mg/kg	50	ND
Bis (2-ethylhexyl) phthalate (DEHP)	1000	mg/kg	50	ND
Diisobutyl Phthalates (DIBP)	1000	mg/kg	50	ND

Notes :

- (1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.IEC 62321 series is equivalent to EN 62321 series
http://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP_ORG_ID,FSP_LANG_ID:1258637,25



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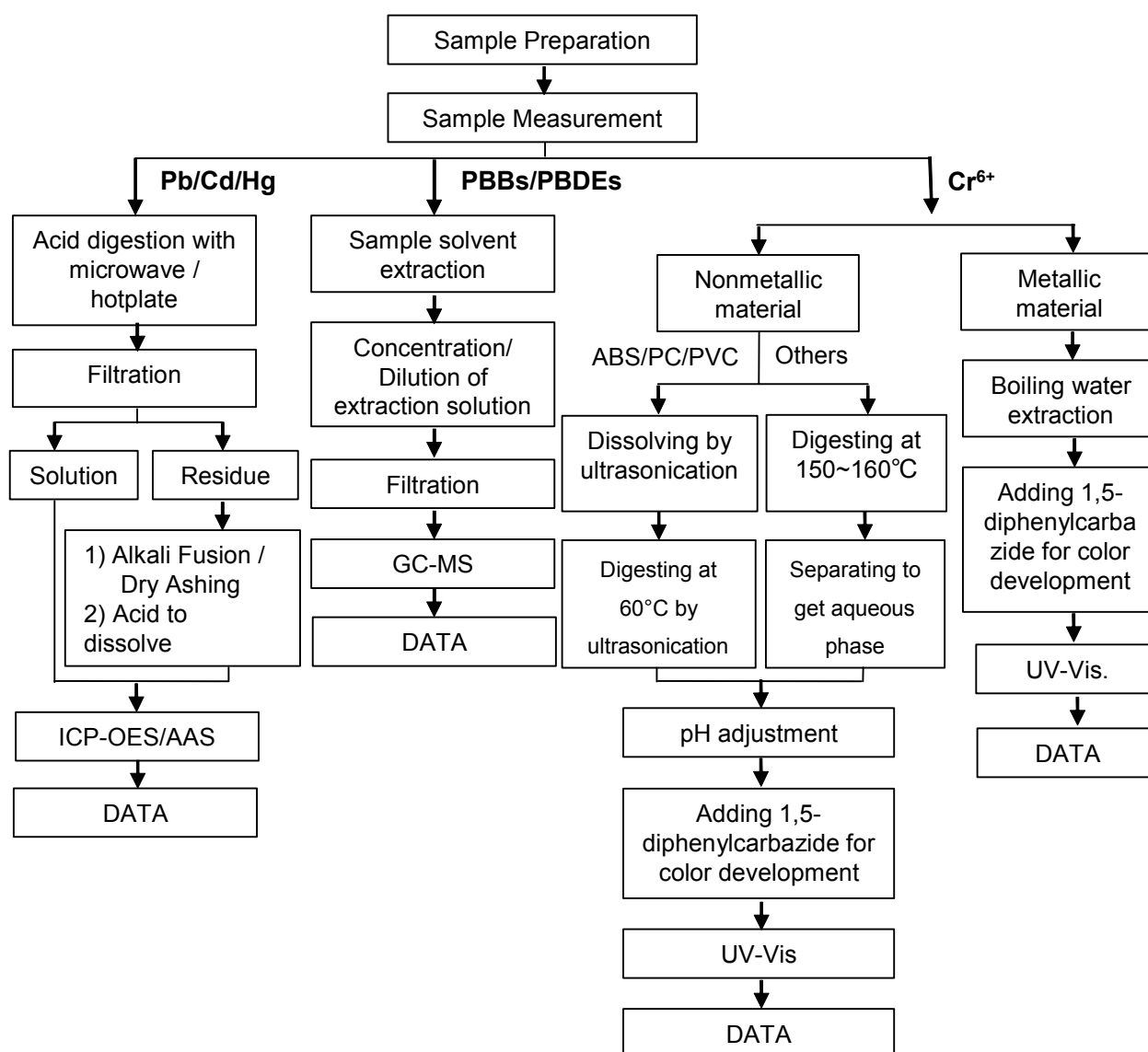
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ATTACHMENTS

Pb/Cd/Hg/Cr⁶⁺/PBBs/PBDEs Testing Flow Chart

- 1) Name of the person who made testing: Edith Zhang / Sunny Hu
- 2) Name of the person in charge of testing: Bella Wang / Qiong Liu
- 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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Sample photo:



SGS authenticate the photo on original report only

*** End of Report ***



Prüfbericht - Nr.: 0114071849p6 001 <i>Test Report No.:</i>			Seite 1 von 6 <i>Page 1 of 6</i>																				
Auftraggeber: Chi Mei Corporation <i>Client:</i> 59-1, San Chia, Jen Te, Tainan City 71702, Taiwan, R.O.C.																							
Gegenstand der Prüfung: ACRYLONITRILE-BUTADIENE-STYRENE COPOLYMER <i>Test Item:</i>																							
Bezeichnung: POLYLAC® PA-757 <i>Identification:</i>																							
Anlieferungszustand: apparent good <i>Delivery condition:</i>		Eingangsdatum: 2017-12-01 <i>Date of Receipt:</i>																					
Prüfart: TÜV Rheinland (Shanghai) Co., Ltd. <i>Testing location:</i>																							
Prüfgrundlage: According to RoHS (recast): Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment, 2011/65/EU last amended by (EU) 2015/863: Total Content of Lead, Cadmium, Mercury, Chromium VI, Polybrominated Biphenyls, Polybrominated Diphenyl Ethers; and Benzylbutyl phthalate (BBP), Dibutyl phthalate (DBP), Bis(2-ethylhexyl) phthalate (DEHP), Diisobutyl phthalate (DIBP) and Halogen (Fluorine, Chlorine, Bromine, Iodine) <i>Test specification:</i>																							
Prüfergebnis: The test results are the measurements, stated in the test report. <i>Test result:</i>																							
geprüft: tested by:  2018-01-02 Anne Chen /Coordinator kontrolliert: checked by:  2018-01-02 Carl Chang /Department Manager																							
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">Datum</th> <th style="width: 35%;">Name/Stellung</th> <th style="width: 20%;">Unterschrift</th> <th style="width: 15%;">Datum</th> <th style="width: 35%;">Name/Stellung</th> <th style="width: 20%;">Unterschrift</th> </tr> <tr> <th>Date</th> <th>Name/Position</th> <th>Signature</th> <th>Date</th> <th>Name/Position</th> <th>Signature</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>						Datum	Name/Stellung	Unterschrift	Datum	Name/Stellung	Unterschrift	Date	Name/Position	Signature	Date	Name/Position	Signature						
Datum	Name/Stellung	Unterschrift	Datum	Name/Stellung	Unterschrift																		
Date	Name/Position	Signature	Date	Name/Position	Signature																		
Sonstiges/ Other Aspects: Test period: 2017-12-01 – 2018-01-02																							
<table style="width: 100%;"> <tr> <td style="width: 50%;"> Abkürzungen: ok / P = entspricht Prüfgrundlage fail / F = entspricht nicht Prüfgrundlage n.a. / N = nicht anwendbar </td> <td style="width: 50%;"> Abbreviations: ok / P = passed fail / F = failed n.a. / N = not applicable </td> </tr> </table>						Abkürzungen: ok / P = entspricht Prüfgrundlage fail / F = entspricht nicht Prüfgrundlage n.a. / N = nicht anwendbar	Abbreviations: ok / P = passed fail / F = failed n.a. / N = not applicable																
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Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.</i>																							



Test Report No. : 0114071849p6 001
 Customer : Chi Mei Corporation
 Test Method : Total Cadmium, Lead, Mercury, Chromium
 - Ref. to IEC 62321-4:2013 and IEC 62321-5:2013
 Chromium (VI)
 - For Metal material - Ref. to IEC 62321-7-1:2015
 - For Plastic or Electronic material - Ref. to IEC 62321-7-2:2017
 - For Leather material - Ref. to ISO 17075:2007
 PBBs, PBDEs - Ref. to IEC 62321-6:2015

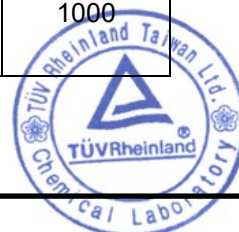
2018-01-02

Sample Material Lab.-No.		LoD	POLYLAC® PA-757 plastic/off white TCL171201-35
Cadmium (Cd)	mg/kg	2	n.d.
Lead (Pb)	mg/kg	2	n.d.
Mercury (Hg)	mg/kg	2	n.d.
Chromium VI (Cr VI)	mg/kg	2	n.d.
Sum of Polybrominated biphenyls (PBBs)	mg/kg	-	n.d.
Monobromobiphenyl	mg/kg	5	n.d.
Dibromobiphenyl	mg/kg	5	n.d.
Tribromobiphenyl	mg/kg	5	n.d.
Tetrabromobiphenyl	mg/kg	5	n.d.
Pentabromobiphenyl	mg/kg	5	n.d.
Hexabromobiphenyl	mg/kg	5	n.d.
Heptabromobiphenyl	mg/kg	5	n.d.
Octabromobiphenyl	mg/kg	5	n.d.
Nonabromobiphenyl	mg/kg	5	n.d.
Decabromobiphenyl	mg/kg	5	n.d.
Sum of Polybrominated diphenyl ethers (PBDEs)	mg/kg	-	n.d.
Monobromodiphenyl ether	mg/kg	5	n.d.
Dibromodiphenyl ether	mg/kg	5	n.d.
Tribromodiphenyl ether	mg/kg	5	n.d.
Tetrabromodiphenyl ether	mg/kg	5	n.d.
Pentabromodiphenyl ether	mg/kg	5	n.d.
Hexabromodiphenyl ether	mg/kg	5	n.d.
Heptabromodiphenyl ether	mg/kg	5	n.d.
Octabromodiphenyl ether	mg/kg	5	n.d.
Nonabromodiphenyl ether	mg/kg	5	n.d.
Decabromodiphenyl ether	mg/kg	5	n.d.

Notes:

- n.d. - not detected
- n.a. - not applicable
- LoD - Limit of Detection
- mg/kg is equal to ppm (parts per million)

	Cd	Cr(VI)	Pb	Hg	PBBs	PBDEs
Maximum permissible Limit acc. to 2011/65/EU (mg/kg)	100	1000	1000	1000	1000	1000



Test Report No. : 0114071849p6 001
 Customer : Chi Mei Corporation
 Test Method : BBP/DBP/DEHP/DIBP - Ref. to IEC 62321-8:2017
 Halogen - Following EN 14582; determination by I.C.

2018-01-02

Sample Material Lab.-No.	LoD	POLYLAC® PA-757 plastic/off white TCL171201-35
Benzylbutylphthalate (BBP) mg/kg	50	n.d.
Dibutylphthalate (DBP) mg/kg	50	n.d.
Diethylhexylphthalate (DEHP) mg/kg	50	n.d.
Diisobutylphthalate (DIBP) mg/kg	50	n.d.

	BBP	DBP	DEHP	DIBP
Maximum permissible Limit acc. to (EU) 2015/863 (mg/kg)	1000	1000	1000	1000

Sample Material Lab.-No.		LoD	POLYLAC® PA-757 plastic/off white TCL171201-35
Halogen	Unit	LoD	Result
Fluorine (F)	mg/kg	50	n.d.
Chlorine (Cl)	mg/kg	50	n.d.
Bromine (Br)	mg/kg	50	n.d.
Iodine (I)	mg/kg	50	n.d.

- n.d. - not detected
- n.a. - not applicable
- LoD - Limit of Detection
- mg/kg is equal to ppm (parts per million)

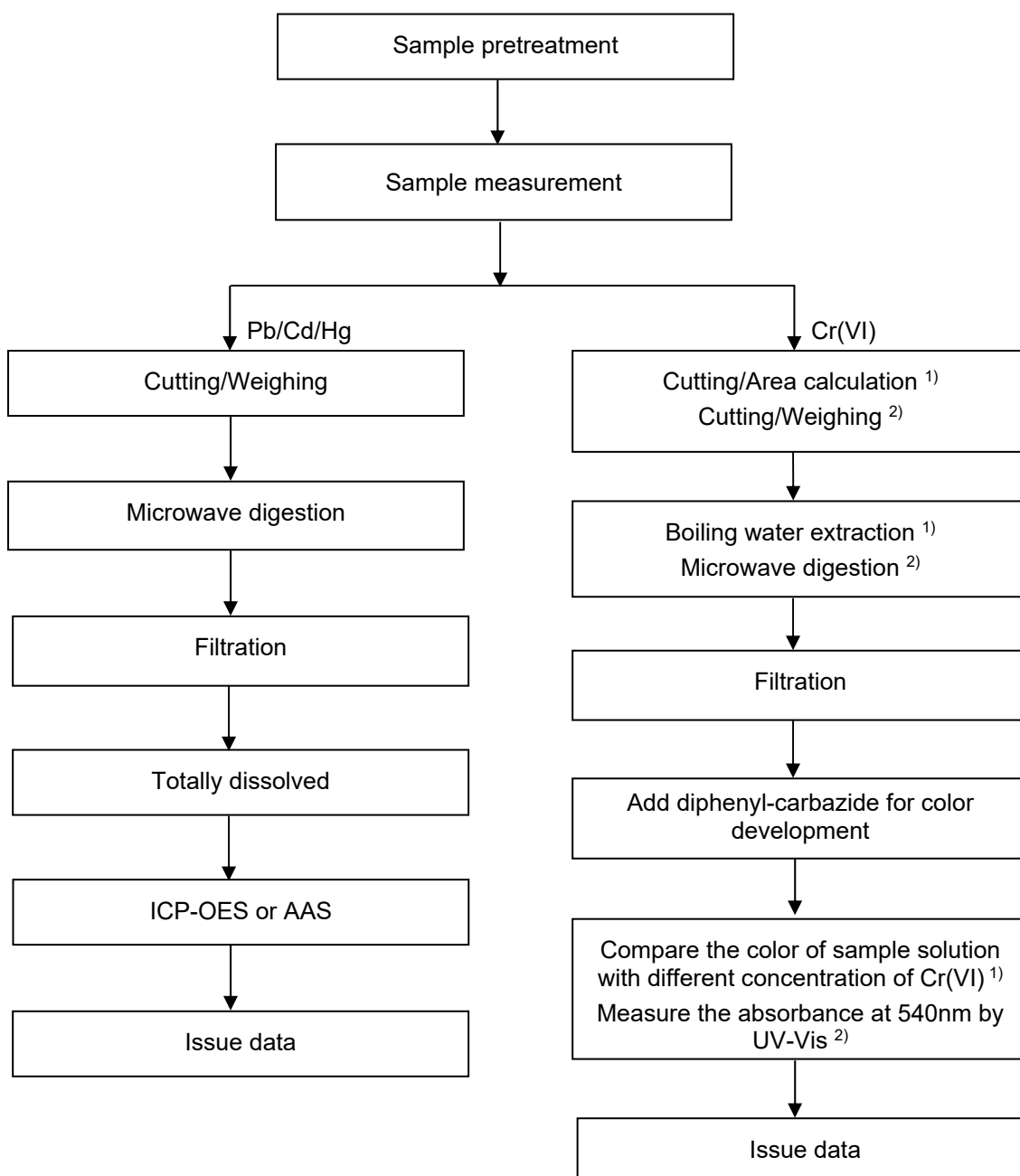
Test Sample


Test Report No. : 0114071849p6 001
Customer : Chi Mei Corporation

2018-01-02

Testing procedure:

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



Notes: ¹⁾ For metallic material
²⁾ For non-metallic material

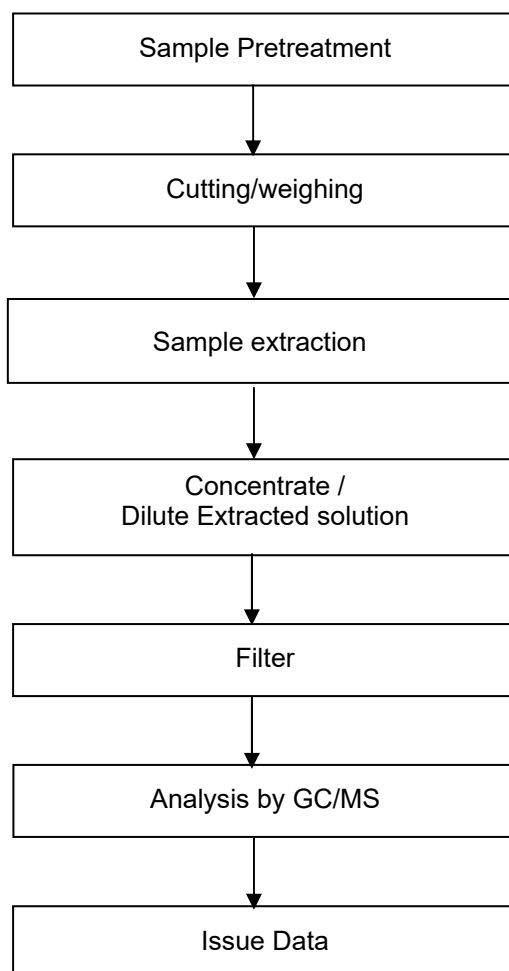


Test Report No. : 0114071849p6 001
Customer : Chi Mei Corporation

2018-01-02

Testing procedure:

RoHS (PBBs/PBDEs, DEHP/DBP/BBP/DIBP)

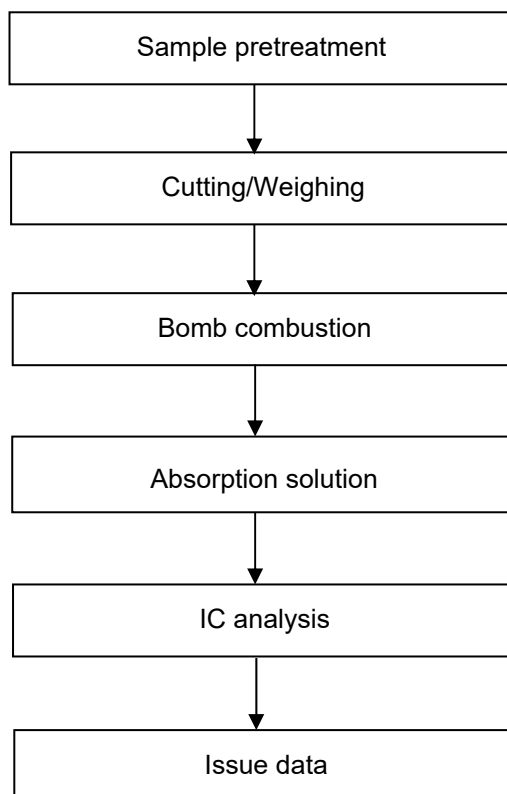


Test Report No. : 0114071849p6 001
Customer : Chi Mei Corporation

2018-01-02

Testing procedure:

Halogen



--- End of Test-Report ---



Test Report

No. CANEC1809381105

Date: 23 May 2018

Page 1 of 4

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NO.18,NORTH PARK ROAD,ECONOMIC & TECHNOLOGY DEVELOPMENT ZONE,SHISHAN
TOWN,NANHAI DISTRICT,FOSHAN CITY ,GUANGDONG PROVINCE
CHINA

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

SGS Job No. : CP18-024919 - GZ

Model No. : C3604

Date of Sample Received : 16 May 2018

Testing Period : 16 May 2018 - 21 May 2018

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 sample(s), the results of Lead, Mercury, Cadmium, Hexavalent chromium comply with the limits as set by RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.

Signed for and on behalf of
SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch



Merry Lv
Approved Signatory



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

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Test Report

No. CANEC1809381105

Date: 23 May 2018

Page 2 of 4

Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	CAN18-093811.003	Brassy metal rod

Remarks :

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

RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU

Test Method : With reference to IEC 62321-4:2013+A1:2017, IEC62321-5:2013, IEC 62321-7-1:2015, analyzed by ICP-OES and UV-Vis .

Test Item(s)	Limit	Unit	MDL	003
Cadmium (Cd)	100	mg/kg	2	35
Lead (Pb)	1,000	mg/kg	2	31411▲
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))▼	-	µg/cm ²	0.10	ND

Notes :

- (1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863. IEC 62321 series is equivalent to EN 62321 series
http://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP_ORG_ID,FSP_LANG_ID:1258637,25
- (2) ▼= a. The sample is positive for CrVI if the CrVI concentration is greater than 0.13 µg/cm². The sample coating is considered to contain CrVI
b. The sample is negative for CrVI if CrVI is ND (concentration less than 0.10 µg/cm²). The coating is considered a non-CrVI based coating
c. The result between 0.10 µg/cm² and 0.13 µg/cm² is considered to be inconclusive - unavoidable coating variations may influence the determination
Information on storage conditions and production date of the tested sample is unavailable and thus Cr(VI) results represent status of the sample at the time of testing.

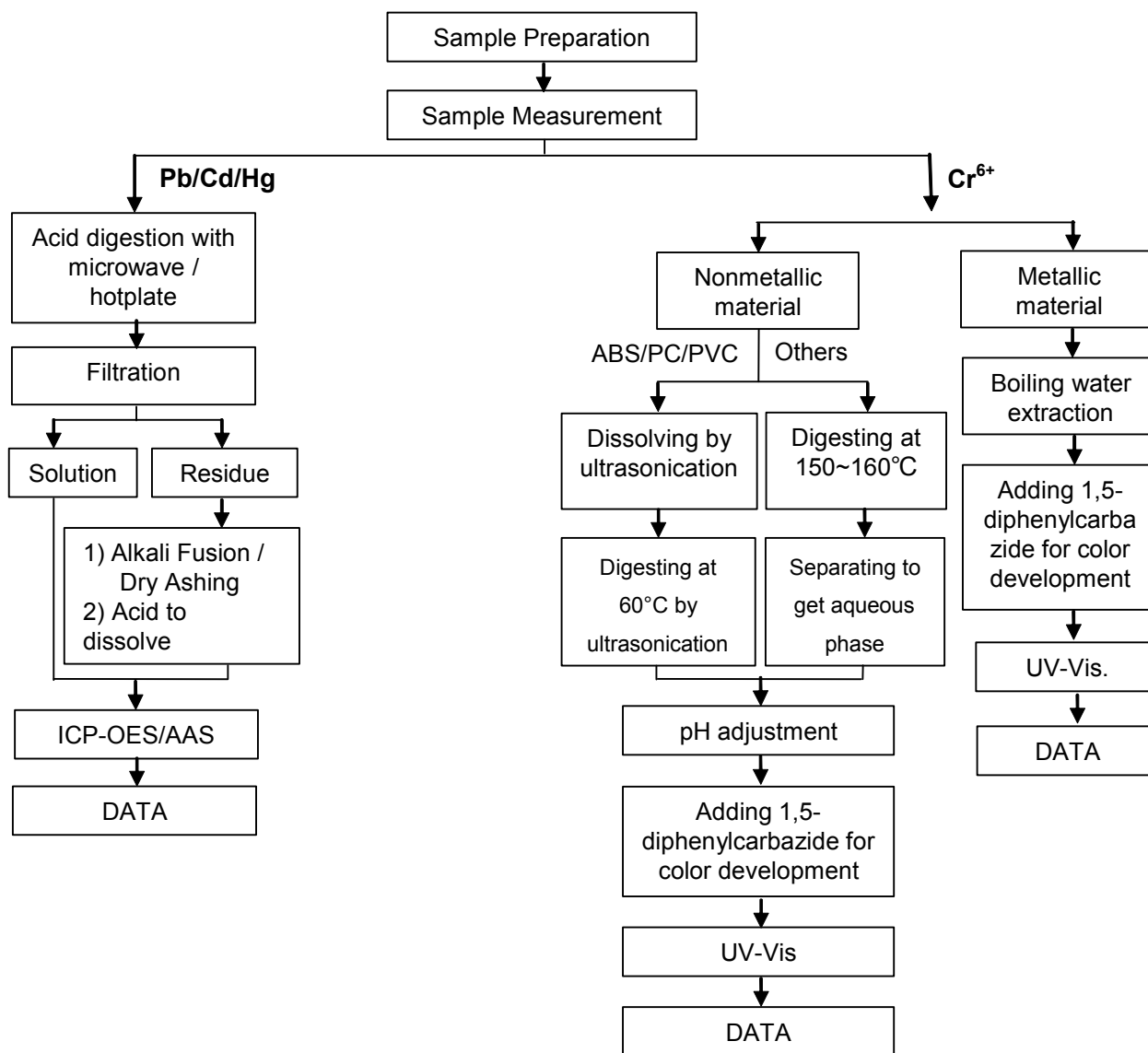
Remark▲: According to the declaration from the client, Lead (Pb) in specimen is exempted by EU RoHS directive 2011/65/EU based on [ANNEX III 6(c)]: Copper alloy containing up to 4 % lead by weight.



ATTACHMENTS

Pb/Cd/Hg/Cr⁶⁺ Testing Flow Chart

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



Test Report

No. CANEC1809381105

Date: 23 May 2018

Page 4 of 4

Sample photo:



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*** End of Report ***



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Test Report

No. CANML1718176001

Date: 15 Sep 2017

Page 1 of 3

DONGGUAN CITY HUMEN CHENGLIANG HARDWARE FACTORY
#2 BUILDING, MAXIANG INDUSTRIAL ZONE, HUAIDE, HUMEN TOWN, DONGGUAN CITY

The following sample(s) was/were submitted and identified on behalf of the clients as : Zinc Alloy 3#

SGS Job No. : SZIN1709012484PC - SZ

Tested Sample Info. : Zinc Alloy 3#

Client Ref. Info. : Zinc Alloy 5#, Zinc Alloy 8#

Date of Sample Received : 12 Sep 2017

Testing Period : 12 Sep 2017 - 15 Sep 2017

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 : When tested as specified, Migration of certain elements of the submitted sample(s) exceed the limit of the European Standard EN 71-3:2013+A1:2014.

Signed for and on behalf of
SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch

Echo

Echo Yeung
Approved Signatory



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Guangzhou Branch Testing Center Chemical Laboratory.

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Test Report

No. CANML1718176001

Date: 15 Sep 2017

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Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	CAN17-181760.001	Silvery metal

Remarks :

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

EN 71-3:2013+A1:2014 Migration of Certain Elements (Category III: Scrapped-off toy material)

Test Method : With reference to EN 71-3:2013+A1:2014. Analysis was performed by ICP-OES.

Test Item(s)	Limit	Unit	MDL	001
Soluble Aluminum(Al)	70,000	mg/kg	50	3735
Soluble Antimony (Sb)	560	mg/kg	10	ND
Soluble Arsenic (As)	47	mg/kg	10	ND
Soluble Barium (Ba)	18,750	mg/kg	50	ND
Soluble Boron(B)	15,000	mg/kg	50	ND
Soluble Cadmium (Cd)	17	mg/kg	5	ND
Soluble Chromium (III) (Cr (III))	460	mg/kg	5	ND
Soluble Chromium (VI) (Cr (VI))	0.2	mg/kg	0.18	ND
Soluble Cobalt(Co)	130	mg/kg	10	ND
Soluble Copper(Cu)	7,700	mg/kg	50	ND
Soluble Lead (Pb)	160	mg/kg	10	ND
Soluble Manganese(Mn)	15,000	mg/kg	50	ND
Soluble Mercury (Hg)	94	mg/kg	10	ND
Soluble Nickel(Ni)	930	mg/kg	10	ND
Soluble Organic Tin	12	mg/kg	-	ND
Soluble Selenium (Se)	460	mg/kg	10	ND
Soluble Strontium(Sr)	56,000	mg/kg	50	ND
Soluble Tin(Sn)	180,000	mg/kg	4.9	ND
Soluble Zinc (Zn)	46,000	mg/kg	50	56978#

Notes :



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Test Report

No. CANML1718176001

Date: 15 Sep 2017

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1. Soluble Chromium (III) = Soluble Total Chromium - Soluble Chromium (VI)
2. Confirmation test of soluble chromium (III) & chromium (VI) is not required in case of soluble chromium does not exceed their requirements as specified in EN 71-3:2013+A1:2014
3. Confirmation test of soluble organic tin is not required in case of soluble tin, after conversion, does not exceed the soluble organic tin requirement as specified in EN 71-3:2013+A1:2014.

Remark : "#" =exceeds the limit

Sample photo:



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测试报告

No. NGBML1800155002

日期: 2018年01月17日

第1页,共16页

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No. NGBML1800155002

日期: 2018年01月17日

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测试结果:

测试样品描述:

样品编号	SGS样品ID	描述
SN1	NGB18-001550.001	透明固体颗粒

备注:

- (1) 1 mg/kg = 0.0001%
- (2) MDL = 方法检测限
- (3) ND = 未检出 (< MDL)
- (4) "-" = 未规定

RoHS 指令2011/65/EU附录II的修正指令(EU) 2015/863

测试方法: 参考IEC 62321-4:2013+A1:2017, IEC 62321-5:2013, IEC 62321-7-2:2017, IEC 62321-6:2015和IEC 62321-8:2017, 采用ICP-OES,UV-Vis和GC-MS进行分析.

测试项目	限值	单位	MDL	001
镉(Cd)	100	mg/kg	2	ND
铅(Pb)	1000	mg/kg	2	ND
汞(Hg)	1000	mg/kg	2	ND
六价铬 (Cr(VI))	1000	mg/kg	8	ND
多溴联苯(PBBs)之和	1000	mg/kg	-	ND
一溴联苯	-	mg/kg	5	ND
二溴联苯	-	mg/kg	5	ND
三溴联苯	-	mg/kg	5	ND
四溴联苯	-	mg/kg	5	ND
五溴联苯	-	mg/kg	5	ND
六溴联苯	-	mg/kg	5	ND
七溴联苯	-	mg/kg	5	ND
八溴联苯	-	mg/kg	5	ND
九溴联苯	-	mg/kg	5	ND
十溴联苯	-	mg/kg	5	ND
多溴二苯醚之和(PBDEs)	1000	mg/kg	-	ND
一溴二苯醚	-	mg/kg	5	ND
二溴二苯醚	-	mg/kg	5	ND
三溴二苯醚	-	mg/kg	5	ND
四溴二苯醚	-	mg/kg	5	ND
五溴二苯醚	-	mg/kg	5	ND
六溴二苯醚	-	mg/kg	5	ND



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测试项目	限值	单位	MDL	001
七溴二苯醚	-	mg/kg	5	ND
八溴二苯醚	-	mg/kg	5	ND
九溴二苯醚	-	mg/kg	5	ND
十溴二苯醚	-	mg/kg	5	ND
邻苯二甲酸二丁酯 (DBP)	1000	mg/kg	50	ND
邻苯二甲酸丁苄酯(BBP)	1000	mg/kg	50	ND
邻苯二甲酸二(2-乙基己基)酯(DEHP)	1000	mg/kg	50	ND
邻苯二甲酸二异丁酯(DIBP)	1000	mg/kg	50	ND

备注:

(1) 最大允许极限值引用自RoHS指令(EU) 2015/863。

IEC 62321系列等同于 EN 62321系列

http://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP_ORG_ID,FSP_LANG_ID:1258637,25

红磷以磷计

测试方法: 参照US EPA 方法3052:1996测定, 采用ICP-OES进行分析。

测试项目	单位	MDL	001
红磷以磷计	mg/kg	20	ND

备注:

(1) 报告中的红磷含量是基于总磷的测试结果将所有总磷考虑为红磷。

卤素

测试方法: 参照EN 14582: 2016方法 测定, 采用 IC进行分析。

测试项目	单位	MDL	001
氟 (F)	mg/kg	50	>100000
氯 (Cl)	mg/kg	200	ND
溴 (Br)	mg/kg	50	ND
碘 (I)	mg/kg	50	ND

四溴双酚-A



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测试方法: 参照 US EPA 3540C: 1996方法测定, 采用GC-MS进行分析.

测试项目	单位	MDL	001
四溴双酚-A	mg/kg	10	ND

六溴环十二烷(HBCDD)

测试方法: 参照US EPA 3550C: 2007方法测定, 采用GC-MS进行分析.

测试项目	CAS NO.	单位	MDL	001
六溴环十二烷 (HBCDD)	25637-99-4, 3194- 55-6	mg/kg	10	ND

全氟辛烷磺酸 (PFOS)^和全氟辛酸(PFOA)

测试方法: 参照US EPA 3550C: 2007. 采用HPLC-MS测试.

测试项目	单位	MDL	001
全氟辛烷磺酸(PFOS)及衍生物^	mg/kg	10	ND
全氟辛酸 (PFOA)	mg/kg	10	ND

备注:

(1) ^=全氟辛烷磺酸(PFOS)及其衍生物包含全氟辛烷磺酸(PFOS)、全氟辛基磺酰胺(PFOSA)、2- (N-乙基全氟辛基磺酰胺) 乙醇(EtFOSE)、N-甲基全氟辛烷磺酰胺(MeFOSA)、N-乙基全氟辛烷磺酰胺(EtFOSA)和2- (N-甲基全氟辛基磺酰胺) 乙醇(MeFOSE)。

多环芳香烃(PAHs)

测试方法: 参考AfPS GS 2014:01 PAK方法测试, 采用 GC-MS进行分析.

测试项目	单位	MDL	001
苊烯(ANY)	mg/kg	0.1	ND
苊(蔡嵌戊烷)(ANA)	mg/kg	0.1	ND
芴(FLU)	mg/kg	0.1	ND
菲(PHE)	mg/kg	0.1	ND
蒽(ANT)	mg/kg	0.1	ND
荧蒽(FLT)	mg/kg	0.1	ND
芘(PYR)	mg/kg	0.1	ND



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测试项目	单位	MDL	001
苯并(a)芘 (BaP)	mg/kg	0.1	ND
苯并(e)芘(BeP)	mg/kg	0.1	ND
苯并(a)蒽(BaA)	mg/kg	0.1	ND
苯并(b)荧蒽(BbF)	mg/kg	0.1	ND
苯并(j)荧蒽(BjF)	mg/kg	0.1	ND
苯并(k)荧蒽 (BkF)	mg/kg	0.1	ND
屈(CHR)	mg/kg	0.1	ND
二苯并(a,h)蒽(DBA)	mg/kg	0.1	ND
苯并(g,h,i)花(二苯并(a,h)蒽)(BPE)	mg/kg	0.1	ND
茚并(1,2,3-c,d)芘(IPY)	mg/kg	0.1	ND
7项多环芳香烃总和[苊烯(ANY), 苊(苯并(a)荧蒽) (ANA), 苊 (FLU), 菲 (PHE), 芘 (PYR), 蒽 (ANT), 荧蒽 (FLT)]	mg/kg	-	ND
萘(NAP)	mg/kg	0.1	ND
18项多环芳香烃总和	mg/kg	-	ND



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AlPS(德国产品安全委员会):GS认证对多环芳香烃的要求

参数	1 类	2 类		3 类	
	设计意图为放入口中的材料或者玩具上与皮肤接触的材料(接触时间大于30秒)	未在1类规定中涵盖的材料,且可能与皮肤接触时间大于30秒的材料(长时间接触皮肤)或频繁接触皮肤		未在1和2类规定中涵盖的材料,且可能与皮肤接触的少于30秒的材料(短期接触皮肤)	
		2009/48/EC中适用的玩具	产品安全法涉及的其他产品	2009/48/EC中适用的玩具	产品安全法涉及的其他产品
苯并(a)芘 (BaP) mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
苯并(e)芘 (BeP) mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
苯并(a)蒽 (BaA) mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
苯并(b)荧蒽 (BbF) mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
苯并(j)荧蒽 (BjF) mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
苯并(k)荧蒽 mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
屈 (CHR) mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
二苯并(a,h)蒽 (DBA) mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
苯并(g,h,i)花(二苯嵌苯) (BPE)n mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
茚并(1,2,3-c,d)芘 (IPY) mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
萘烯(ANY), 萘(蒽嵌戊烷) (ANA), 芴 (FLU), 菲 (PHE), 芘 (PYR), 蒽 (ANT), 荧蒽 (FLT)之和 mg/kg	< 1 (总和)	< 5 (总和)	< 10 (总和)	< 20 (总和)	< 50 (总和)
萘 (NAP) mg/kg	< 1	< 2		< 10	
18 PAH之和	< 1	< 5	< 10	< 20	< 50

邻苯二甲酸盐(或酯)

测试方法: 参照EN 14372: 2004的方法测定, 采用GC-MS进行分析。



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测试项目	CAS NO.	单位	MDL	001
邻苯二甲酸二异壬酯 (DINP)	28553-12-0/ 68515-48-0	%	0.01	ND
邻苯二甲酸二正辛酯 (DNOP)	117-84-0	%	0.003	ND
邻苯二甲酸二异癸酯 (DIDP)	26761-40-0/ 68515-49-1	%	0.01	ND

备注:

(1) DINP, DNOP, DIDP参考信息: 1907/2006/EC Reach附录XVII的修正指令——552/2009/EC第52条

(前身为2005/84/EC)的要求:

- i) 不允许DINP, DNOP, DIDP质量浓度高于0.1%的可塑性物料用于可放入儿童口中的玩具和儿童护理品.
- ii) 当可放入儿童口中的玩具和儿童护理品中的可塑性物料含DINP, DNOP, DIDP质量浓度高于0.1%时,不得投放市场.

详细信息请参见Regulation (EC) No 552/2009

检测报告仅用于客户科研、教学、内部质量控制、产品研发等目的, 仅供内部参考。



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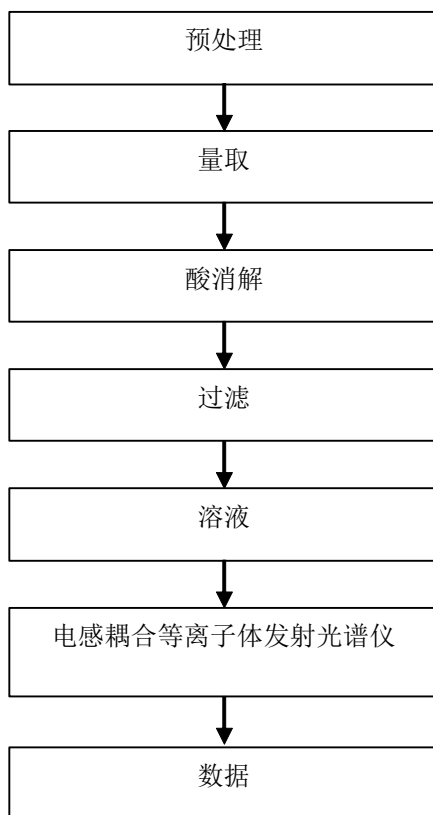
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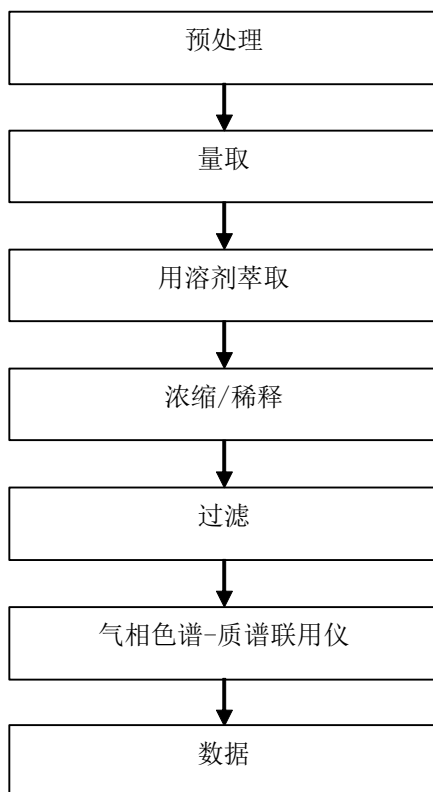
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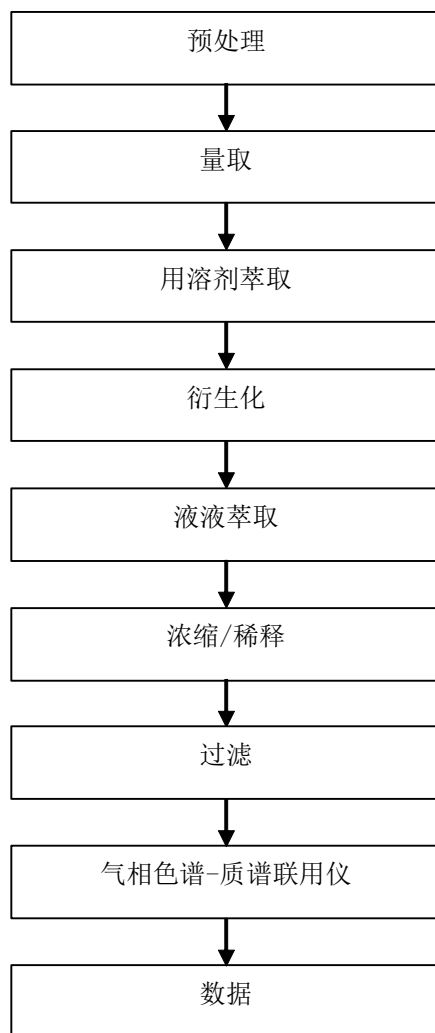
元素测试流程图



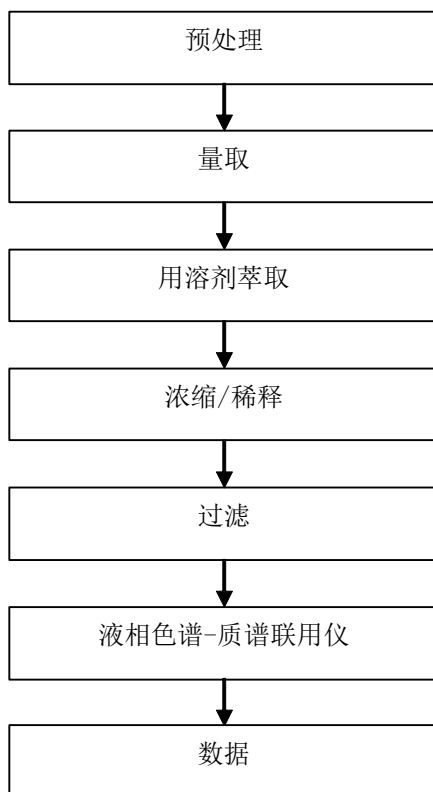
六溴环十二烷测试流程图



四溴双酚 A 测试流程图



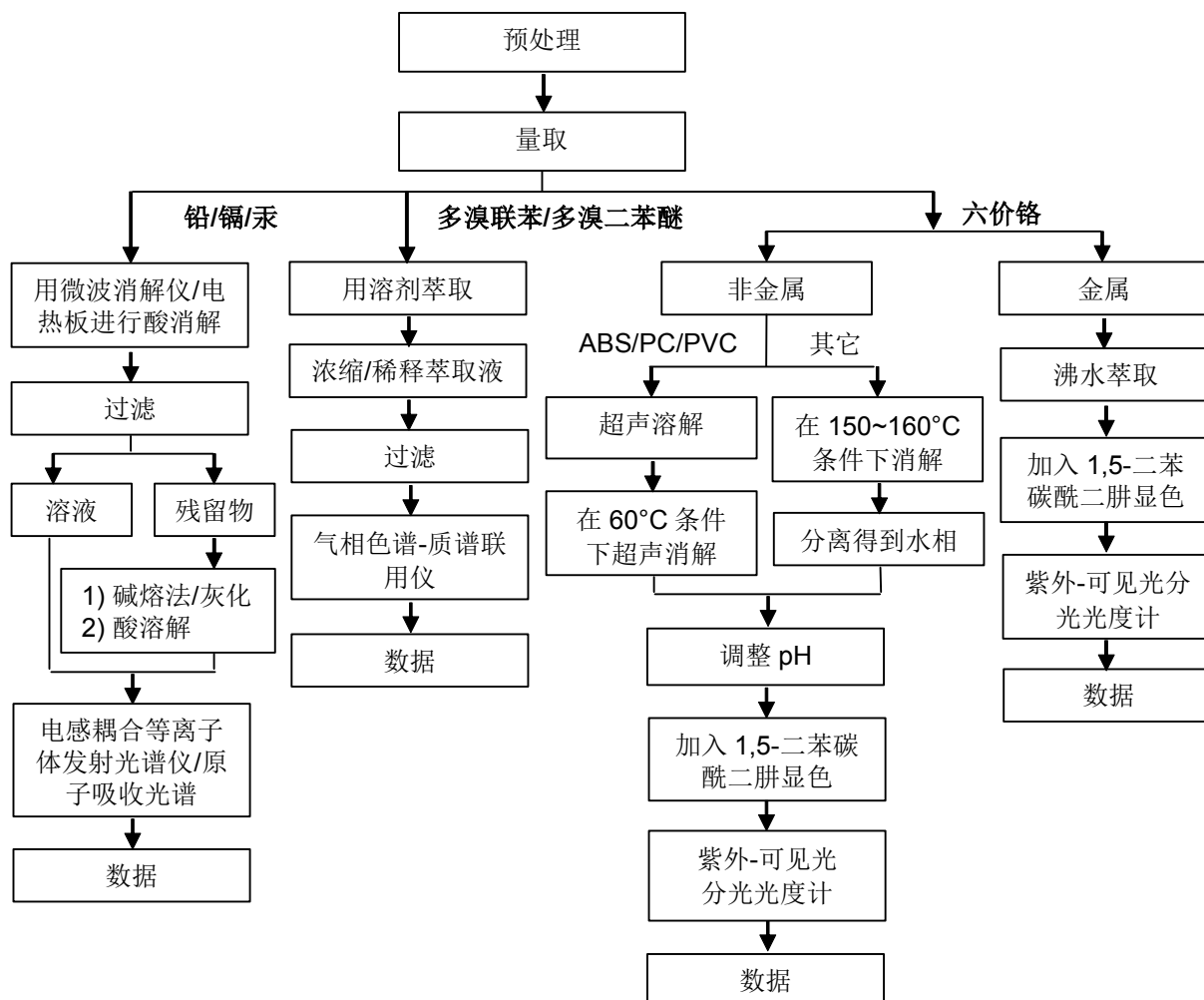
全氟辛烷磺酰基化合物/全氟辛酸测试流程图



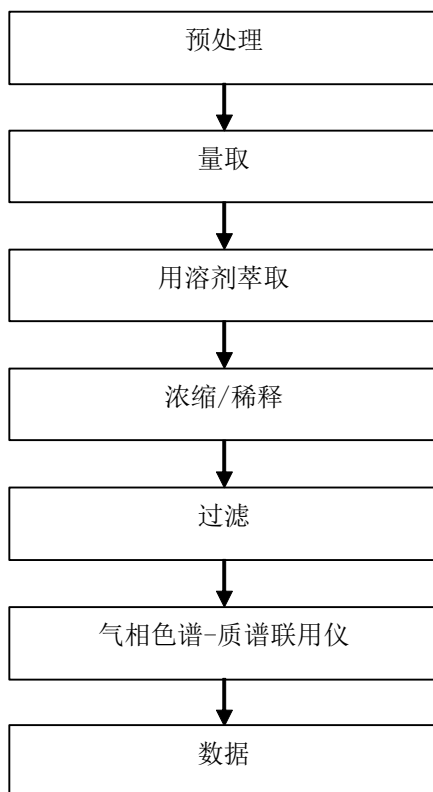
附件

Pb/Cd/Hg/Cr⁶⁺/PBBs/PBDEs 测试流程图

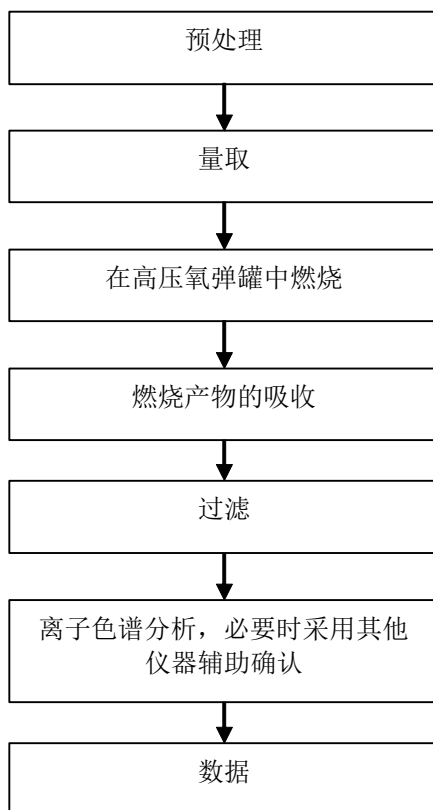
1) 样品按照下述流程被完全消解（六价铬和多溴联苯/多溴二苯醚测试除外）。



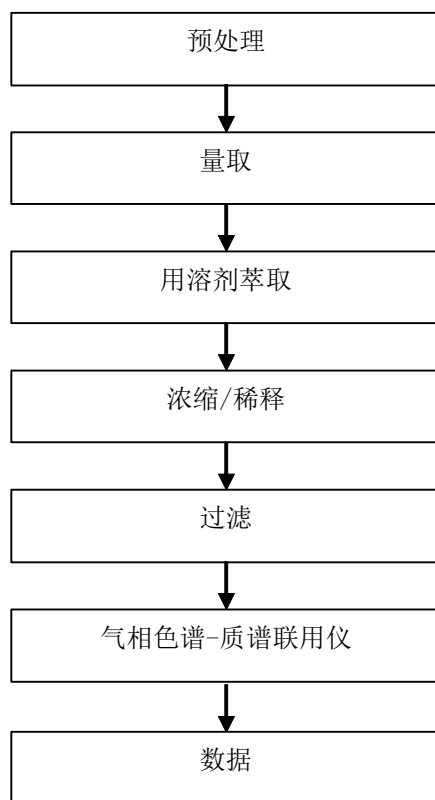
邻苯测试流程图



卤素测试流程图



多环芳香烃测试流程图



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中国·浙江·宁波市国家高新区凌云路1177号凌云产业园4号楼西1-5层 邮编: 315040 t HL (86-574)89070271 t ML (86-574)89070242 e sgs.china@sgs.com

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测试报告

No. NGBML1800151702

日期: 2018年01月16日

第1页,共8页

浙江巨化股份有限公司
浙江省衢州市柯城区巨化

以下测试之样品是由申请者所提供及确认: 聚四氟乙烯分散树脂

SGS工作编号: NBIN1801000444PC - NB
样品接收日期: 2018年01月10日
测试周期: 2018年01月10日 - 2018年01月16日
测试要求: 根据客户要求测试
测试方法: 请参见下一页
测试结果: 请参见下一页

通标标准技术服务有限公司宁波分公司
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李覃刚

Tony Li 李覃刚
批准签署人

本报告是编号为NGBML1800151701报告的中文版本



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SGS-CSTC Standards Technical Services Co., Ltd.
Ningbo Branch Chemical Laboratory

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测试报告

No. NGBML1800151702

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第2页,共8页

测试结果:

测试样品描述:

样品编号	SGS样品ID	描述
SN1	NGB18-001517.001	白色粉末

备注:

- (1) 1 mg/kg = 0.0001%
- (2) MDL = 方法检测限
- (3) ND = 未检出 (< MDL)
- (4) "-" = 未规定

RoHS 指令2011/65/EU附录II的修正指令(EU) 2015/863

测试方法: 参考IEC 62321-4:2013+A1:2017, IEC 62321-5:2013, IEC 62321-7-2:2017, IEC 62321-6:2015和IEC 62321-8:2017, 采用ICP-OES,UV-Vis和GC-MS进行分析.

测试项目	限值	单位	MDL	001
镉(Cd)	100	mg/kg	2	ND
铅(Pb)	1000	mg/kg	2	ND
汞(Hg)	1000	mg/kg	2	ND
六价铬 (Cr(VI))	1000	mg/kg	8	ND
多溴联苯(PBBs)之和	1000	mg/kg	-	ND
一溴联苯	-	mg/kg	5	ND
二溴联苯	-	mg/kg	5	ND
三溴联苯	-	mg/kg	5	ND
四溴联苯	-	mg/kg	5	ND
五溴联苯	-	mg/kg	5	ND
六溴联苯	-	mg/kg	5	ND
七溴联苯	-	mg/kg	5	ND
八溴联苯	-	mg/kg	5	ND
九溴联苯	-	mg/kg	5	ND
十溴联苯	-	mg/kg	5	ND
多溴二苯醚之和(PBDEs)	1000	mg/kg	-	ND
一溴二苯醚	-	mg/kg	5	ND
二溴二苯醚	-	mg/kg	5	ND
三溴二苯醚	-	mg/kg	5	ND
四溴二苯醚	-	mg/kg	5	ND
五溴二苯醚	-	mg/kg	5	ND
六溴二苯醚	-	mg/kg	5	ND



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测试报告

No. NGBML1800151702

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测试项目	限值	单位	MDL	001
七溴二苯醚	-	mg/kg	5	ND
八溴二苯醚	-	mg/kg	5	ND
九溴二苯醚	-	mg/kg	5	ND
十溴二苯醚	-	mg/kg	5	ND
邻苯二甲酸二丁酯 (DBP)	1000	mg/kg	50	ND
邻苯二甲酸丁苄酯(BBP)	1000	mg/kg	50	ND
邻苯二甲酸二(2-乙基己基)酯(DEHP)	1000	mg/kg	50	ND
邻苯二甲酸二异丁酯(DIBP)	1000	mg/kg	50	ND

备注:

(1) 最大允许极限值引用自RoHS指令(EU) 2015/863。

IEC 62321系列等同于 EN 62321系列

http://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP_ORG_ID,FSP_LANG_ID:1258637,25

六溴环十二烷(HBCDD)

测试方法: 参照US EPA 3550C: 2007方法测定, 采用GC-MS进行分析.

测试项目	CAS NO.	单位	MDL	001
六溴环十二烷 (HBCDD)	25637-99-4,	mg/kg	10	ND

全氟辛烷磺酸 (PFOS)^和全氟辛酸(PFOA)

测试方法: 参照US EPA 3550C: 2007. 采用HPLC-MS测试.

测试项目	单位	MDL	001
全氟辛烷磺酸(PFOS)及衍生物^	mg/kg	10	ND
全氟辛酸 (PFOA)	mg/kg	10	ND

备注:

(1) ^= PFOS包含全氟辛烷磺酸(PFOS), 全氟辛基磺酰胺(PFOSA), 2-(N-乙基全氟辛基磺酰胺)乙醇(EtFOSE), N-甲基全氟辛烷磺酰胺(MeFOSA), N-乙基全氟辛烷磺酰胺(EtFOSA)和2-(N-甲基全氟辛基磺酰胺)乙醇(MeFOSE)。

检测报告仅用于客户科研、教学、内部质量控制、产品研发等目的, 仅供内部参考。



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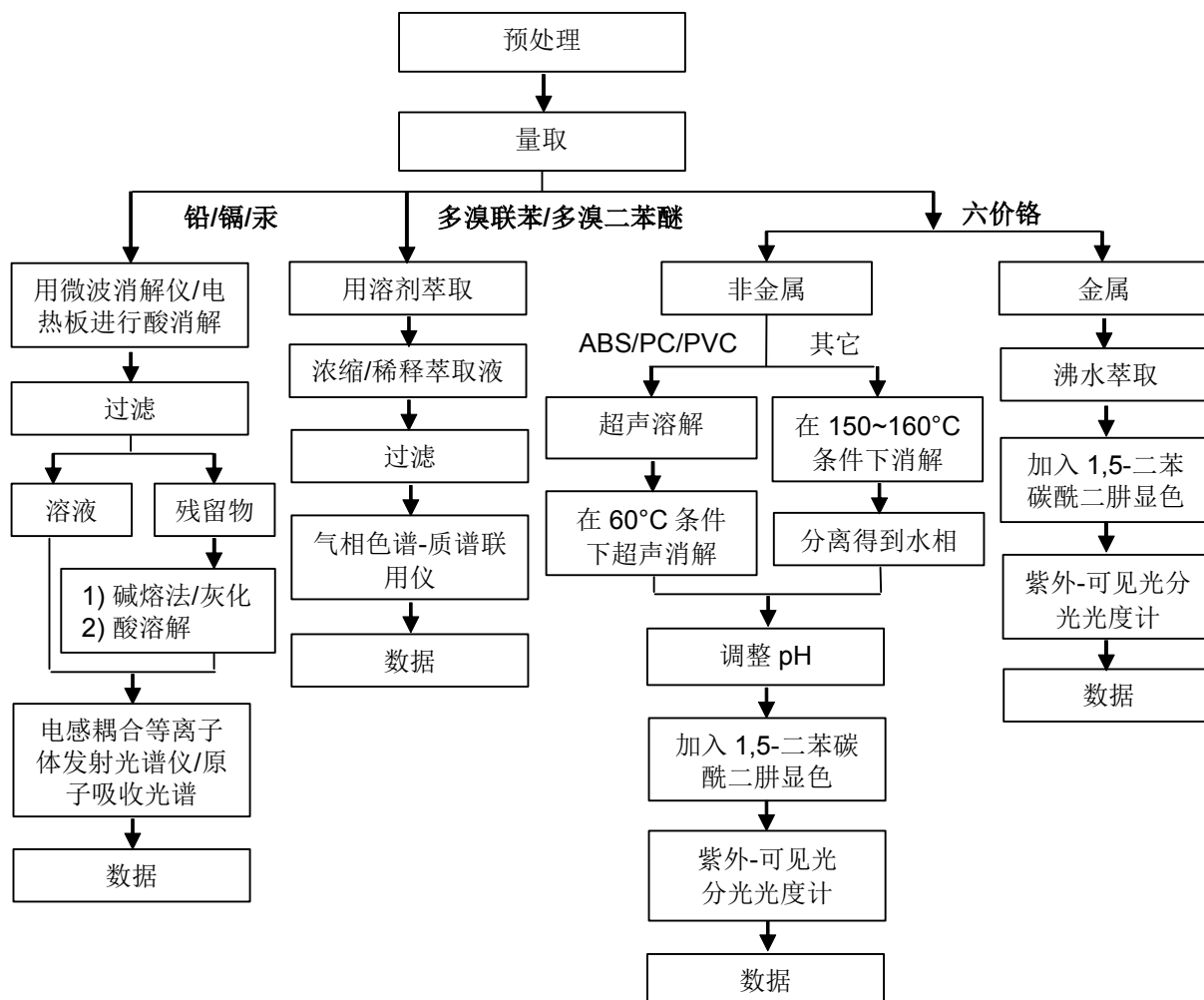
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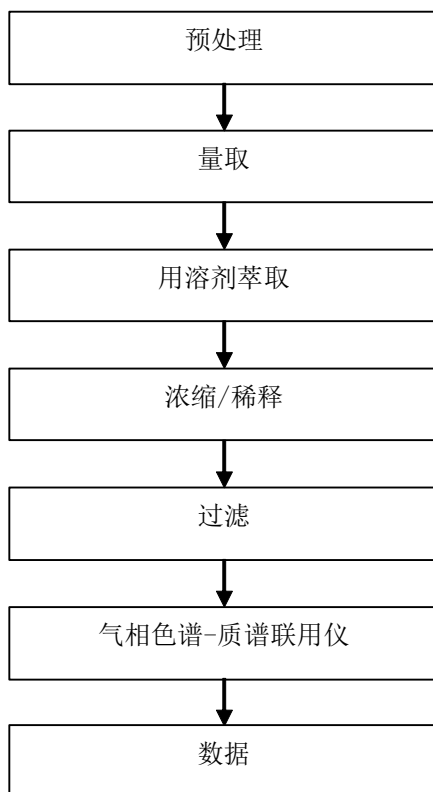
附件

Pb/Cd/Hg/Cr⁶⁺/PBBs/PBDEs 测试流程图

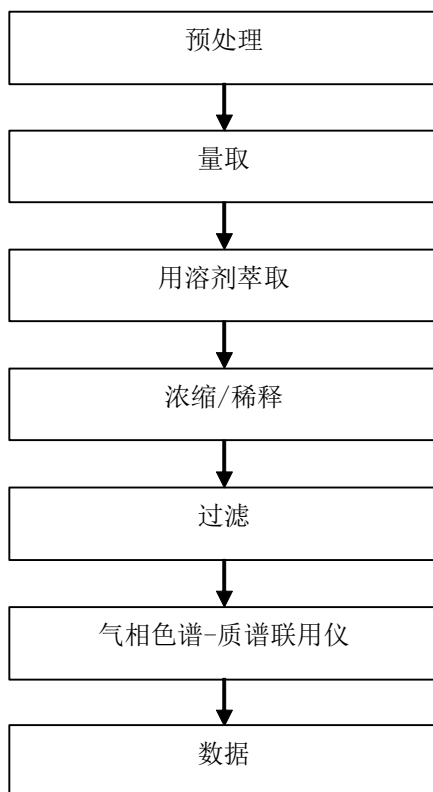
1) 样品按照下述流程被完全消解（六价铬和多溴联苯/多溴二苯醚测试除外）。



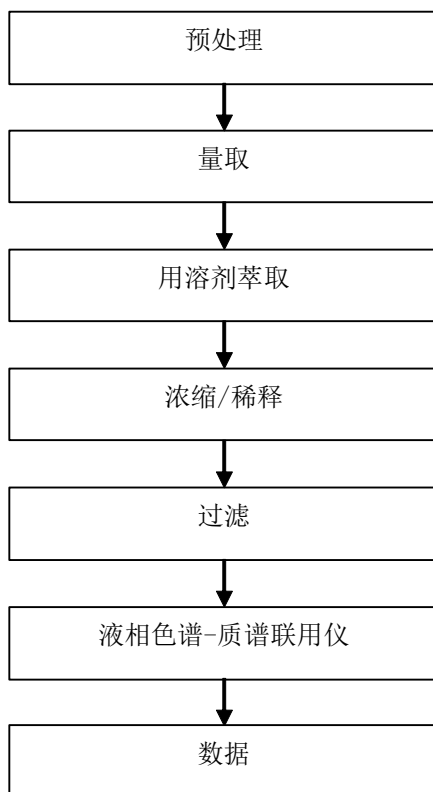
邻苯测试流程图



六溴环十二烷测试流程图



全氟辛烷磺酰基化合物/全氟辛酸测试流程图



测试报告

No. NGBML1800151702

日期: 2018年01月16日

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样品照片:



此照片仅限于随SGS正本报告使用

*** 报告完 ***



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Ningbo Branch Chemical Laboratory

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测试报告

No. SHAEC1728677802

日期: 2018年01月04日 第1页,共5页

上海添创线缆科技发展有限公司

上海金山区亭林工业区亭华路333号

以下测试之样品是由申请者所提供及确认: 镀银铜丝

SGS工作编号: SP17-043910 - SH

样品接收日期: 2017年12月28日

测试周期: 2017年12月28日 - 2018年01月04日

测试要求: 根据客户要求测试

测试方法: 请参见下一页

测试结果: 请参见下一页

结论: 基于所送样品进行的测试, 镉、铅、汞、六价铬、多溴联苯(PBBs)、多溴二苯醚(PBDEs)的测试结果符合欧盟RoHS指令2011/65/EU附录II的修正指令(EU) 2015/863的限值要求。

通标标准技术服务(上海)有限公司
授权签名

马广媛

Marry Ma 马广媛
批准签署人

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测试报告

No. SHAEC1728677802

日期: 2018年01月04日 第2页,共5页

测试结果:

测试样品描述:

样品编号	SGS样品ID	描述
SN1	SHA17-286778.001	银色金属丝

备注:

- (1) 1 mg/kg = 0.0001%
- (2) MDL = 方法检测限
- (3) ND = 未检出 (< MDL)
- (4) "-" = 未规定

RoHS指令2011/65/EU附录II的修正指令(EU) 2015/863

测试方法: 参考IEC 62321-4:2013+AMD1:2017, IEC 62321-5:2013, IEC 62321-7-1:2015和IEC 62321-6:2015, 采用ICP-OES, AAS,UV-Vis和GC-MS进行分析。

测试项目	限值	单位	MDL	001
镉 (Cd)	100	mg/kg	2	ND
铅(Pb)	1000	mg/kg	2	ND
汞 (Hg)	1000	mg/kg	2	ND
六价铬(Cr(VI))▼	-	µg/cm²	0.10	ND
多溴联苯之和(PBBs)	1000	mg/kg	-	ND
一溴联苯	-	mg/kg	5	ND
二溴联苯	-	mg/kg	5	ND
三溴联苯	-	mg/kg	5	ND
四溴联苯	-	mg/kg	5	ND
五溴联苯	-	mg/kg	5	ND
六溴联苯	-	mg/kg	5	ND
七溴联苯	-	mg/kg	5	ND
八溴联苯	-	mg/kg	5	ND
九溴联苯	-	mg/kg	5	ND
十溴联苯	-	mg/kg	5	ND
多溴二苯醚之和(PBDEs)	1000	mg/kg	-	ND
一溴二苯醚	-	mg/kg	5	ND
二溴二苯醚	-	mg/kg	5	ND
三溴二苯醚	-	mg/kg	5	ND
四溴二苯醚	-	mg/kg	5	ND



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测试报告

No. SHAEC1728677802

日期: 2018年01月04日 第3页,共5页

测试项目	限值	单位	MDL	001
五溴二苯醚	-	mg/kg	5	ND
六溴二苯醚	-	mg/kg	5	ND
七溴二苯醚	-	mg/kg	5	ND
八溴二苯醚	-	mg/kg	5	ND
九溴二苯醚	-	mg/kg	5	ND
十溴二苯醚	-	mg/kg	5	ND

备注:

(1) 最大允许极限值引用自RoHS指令(EU) 2015/863。

IEC 62321 系列等同于 EN 62321 系列

http://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP_ORG_ID,FSP_LANG_ID:1258637,25

(2) ▼ = a. 当六价格的浓度高于0.13 µg/cm²时, 样品为阳性, 即含有六价格;

b. 当六价格的浓度为ND(低于0.10 µg/cm²)时, 样品为阴性, 即未检测到六价格;

c. 当六价格的浓度介于0.10 µg/cm²与0.13 µg/cm²之间时, 无法直接判定是否检测到六价格, 因不同个体的样品表面差异可能会影响测定结果;

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

检测报告仅用于客户科研、教学、内部质量控制、产品研发等目的, 仅供内部参考。



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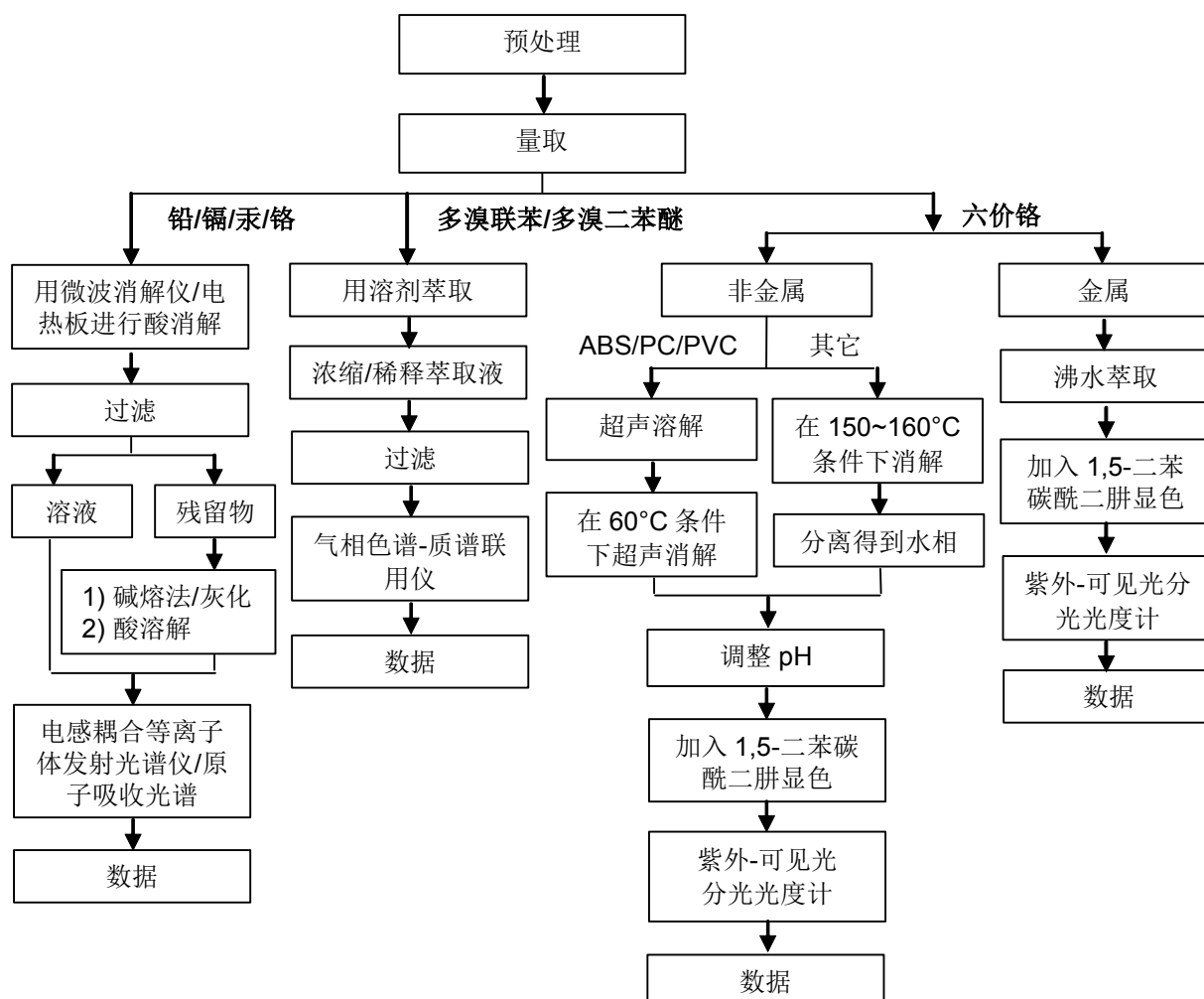
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附件

Pb/Cd/Hg/Cr⁶⁺/PBBs/PBDEs 测试流程图

- 1) 分析人员: 金叶/徐刚/杨小龙 /宋珂静
- 2) 项目负责人: 施青/黄婷/徐亮/王晓艳
- 3) 样品按照下述流程被完全消解 (六价铬和多溴联苯/多溴二苯醚测试除外)。



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测试报告

No. SHAEC1728677802

日期: 2018年01月04日 第5页,共5页

样品照片:



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测试报告

No. CANML1800543902

日期: 2018年01月10日 第1页,共6页

金安国纪科技（杭州）有限公司
国际层压板材有限公司
金安国纪科技（珠海）有限公司
中国浙江杭州临安区青山湖街道大康路188号
中国广东珠海金湾区三灶镇琴石路8号

以下测试之样品是由申请者所提供及确认：FR-4.0环氧玻纤覆铜板

SGS工作编号： GZIN1801001152PC - GZ
内部编号： GZIN1801001123PS
样品接收日期： 2018年01月08日
测试周期： 2018年01月08日 - 2018年01月10日
测试要求： 根据客户要求测试
测试方法： 请参见下一页
测试结果： 请参见下一页
结论： 基于所送样品进行的测试，镉、铅、汞、六价铬、多溴联苯(PBBs)、多溴二苯醚(PBDEs)、邻苯二甲酸酯（如邻苯二甲酸二丁酯 (DBP)、邻苯二甲酸丁苄酯(BBP)、邻苯二甲酸二(2-乙基己基)酯(DEHP)和邻苯二甲酸二异丁酯(DIBP)）的测试结果符合欧盟RoHS指令2011/65/EU附录II的修正指令(EU) 2015/863的限值要求。

通标标准技术服务有限公司广州分公司
授权签名

杨谷毅

Echo Yeung杨谷毅
批准签署人

备注：本报告是编号为CANML1800543901报告的中文版本。



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

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测试报告

No. CANML1800543902

日期: 2018年01月10日 第2页,共6页

测试结果:

测试样品描述:

样品编号	SGS样品ID	描述
SN1	CAN18-005439.001	双面覆铜箔层压板

备注:

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

RoHS指令2011/65/EU附录II的修正指令(EU) 2015/863

测试方法: 参考IEC 62321-4:2013+A1:2017, IEC 62321-5:2013, IEC 62321-7-2:2017, IEC 62321-6:2015 和 IEC 62321-8:2017, 采用 ICP-OES, UV-Vis 和 GC-MS 进行分析。

测试项目	限值	单位	MDL	001
镉 (Cd)	100	mg/kg	2	ND
铅 (Pb)	1,000	mg/kg	2	9
汞 (Hg)	1,000	mg/kg	2	ND
六价铬(Cr(VI))	1,000	mg/kg	8	ND
多溴联苯之和(PBBs)	1,000	mg/kg	-	ND
一溴联苯	-	mg/kg	5	ND
二溴联苯	-	mg/kg	5	ND
三溴联苯	-	mg/kg	5	ND
四溴联苯	-	mg/kg	5	ND
五溴联苯	-	mg/kg	5	ND
六溴联苯	-	mg/kg	5	ND
七溴联苯	-	mg/kg	5	ND
八溴联苯	-	mg/kg	5	ND
九溴联苯	-	mg/kg	5	ND
十溴联苯	-	mg/kg	5	ND
多溴二苯醚之和(PBDEs)	1,000	mg/kg	-	ND
一溴二苯醚	-	mg/kg	5	ND
二溴二苯醚	-	mg/kg	5	ND
三溴二苯醚	-	mg/kg	5	ND
四溴二苯醚	-	mg/kg	5	ND
五溴二苯醚	-	mg/kg	5	ND



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测试报告

No. CANML1800543902

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测试项目	限值	单位	MDL	001
六溴二苯醚	-	mg/kg	5	ND
七溴二苯醚	-	mg/kg	5	ND
八溴二苯醚	-	mg/kg	5	ND
九溴二苯醚	-	mg/kg	5	ND
十溴二苯醚	-	mg/kg	5	ND
邻苯二甲酸二丁酯 (DBP)	1000	mg/kg	50	ND
邻苯二甲酸丁苄酯(BBP)	1000	mg/kg	50	ND
邻苯二甲酸二(2-乙基己基)酯(DEHP)	1000	mg/kg	50	ND
邻苯二甲酸二异丁酯(DIBP)	1000	mg/kg	50	ND

备注:

(1)最大允许极限值引用自RoHS指令(EU) 2015/863。IEC 62321系列等同于 EN 62321系列
http://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP_ORG_ID,FSP_LANG_ID:1258637,25



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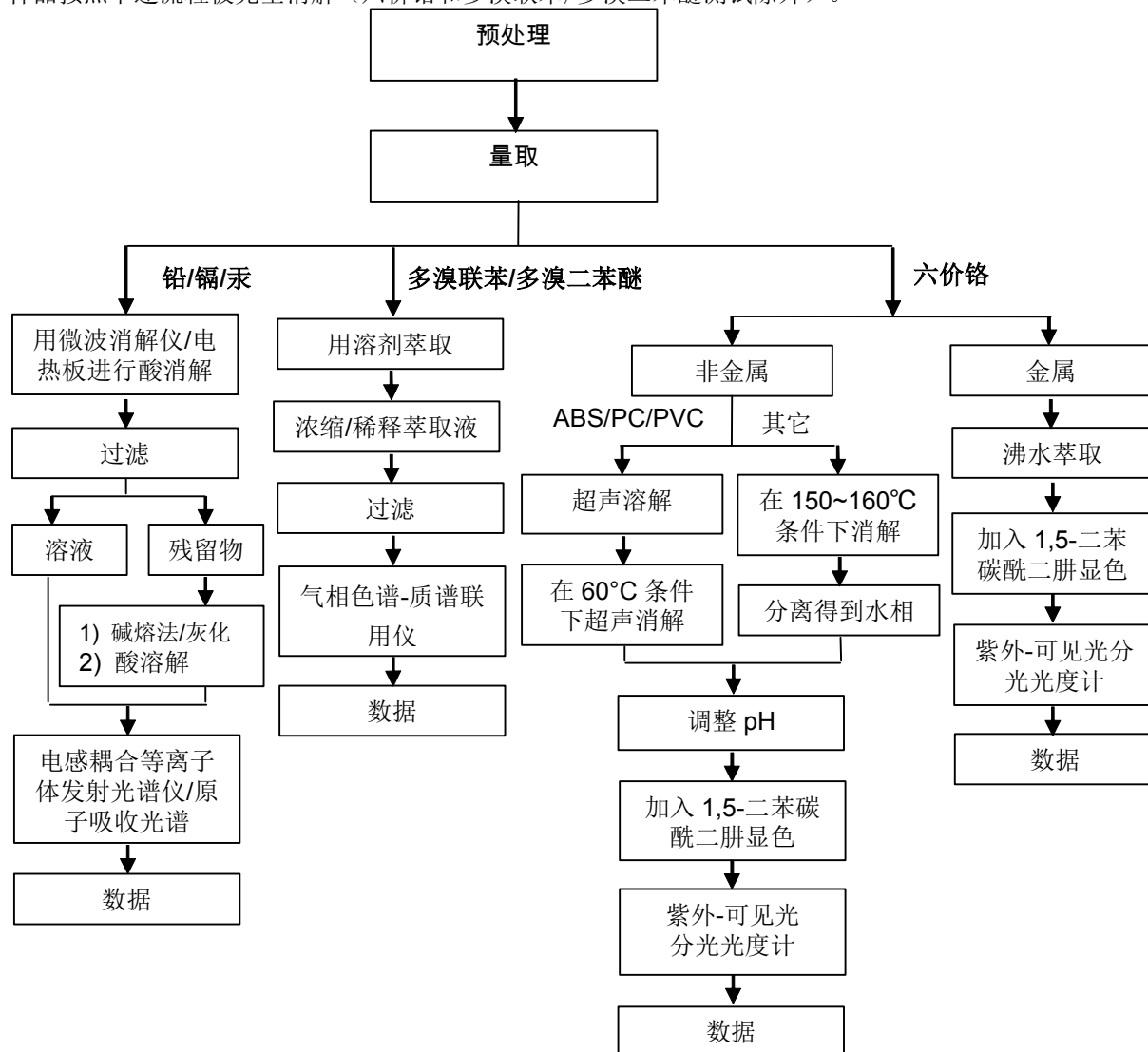
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附件

Pb/Cd/Hg/Cr⁶⁺/PBBs/PBDEs 测试流程图

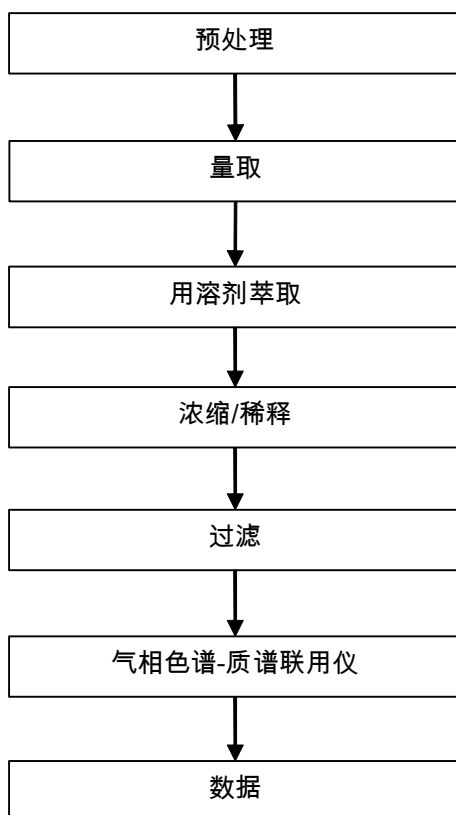
- 1) 分析人员: 张梓路 / 胡香云
- 2) 项目负责人: 汪丹 / 刘琼
- 3) 样品按照下述流程被完全消解(六价铬和多溴联苯/多溴二苯醚测试除外)。



附件

Phthalates 测试流程图

- 1) 分析人员：胡香云
- 2) 项目负责人：刘琼



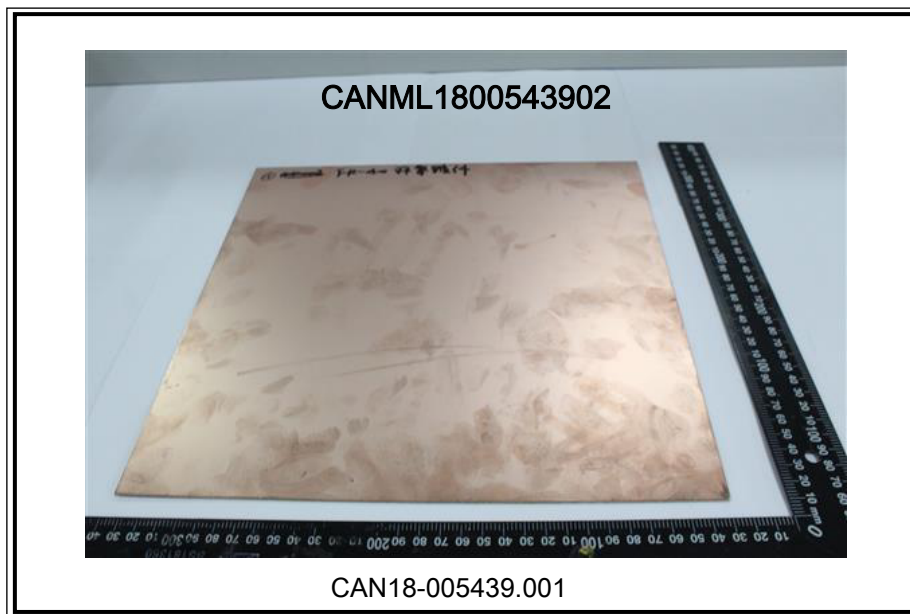
测试报告

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