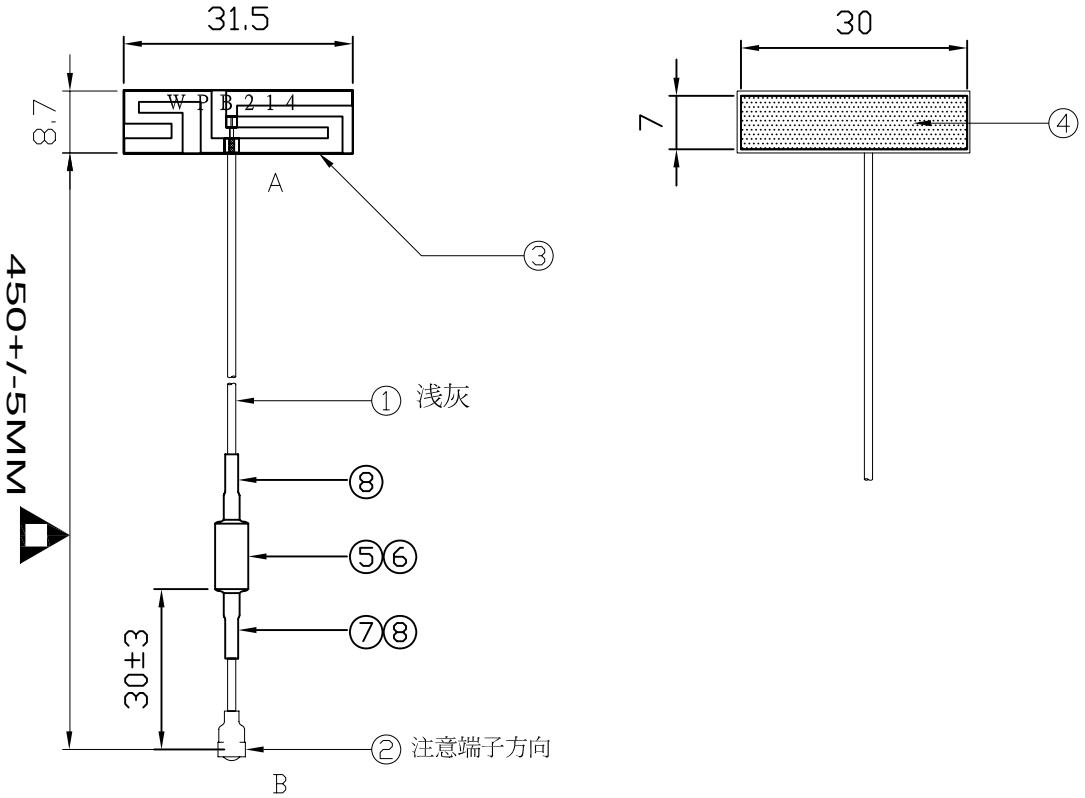
SPECIFICATION

1.	Description	: ANTENNA
2.	Customer	: Hansong(NanJing)Technology Ltd
3.	Model No.	: RC12WFI0288A1
4.	Part No.	: 45-2-000320
5.	Standard	: WIFI
6.	Antenna Profile	: PCB ANTENNA
7.	Lead Length	: L:450MM
8.	Electrical Characteristics	
	Operating Frequency	: 2.4--5.8Ghz
	VSWR /Gain	: 2.0 Max/ 2DBI
	Impedance	: 50 Ohm nominal
9.	Mechanical Characteristics	
	Connector	: MHF-13-CON
	Core	: 4*10*2 MM
10.	Raw Material	
	Coaxial Cable	: Coaxial cable Mini 1.13 GREY

变更内容履历简述 REVISIONS DESCRIPTION	版次 REV.	年月日 DATE	變更切換方式	作成
1				
2				
3				



加工注意项：
1. 天線組立依據天線組立作業指導書規定製作。
依據QC管理工程圖，執行品質管制。

双面背胶

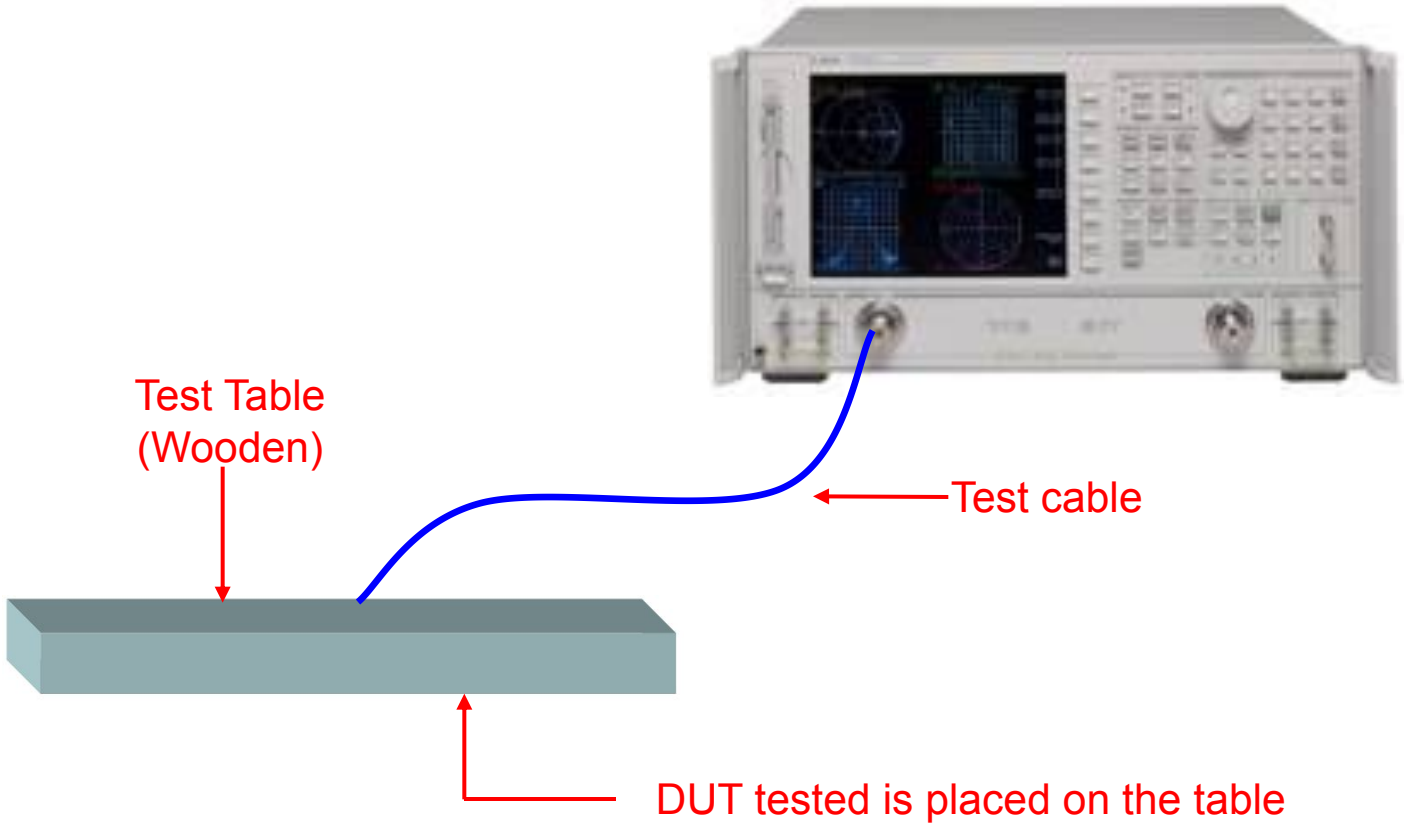
NO.	材料名稱	廠商	零件規格		顏色	切斷尺寸& 備註	用量
8	熱縮套管		CB 无卤套管 2.5 黑	HF	黑		2
7	熱縮套管		CB 无卤套管 1.5 黑	HF	黑		1
6	熱縮套管		CB 无卤套管 4.0 黑	HF	黑		1
5	铁粉芯		F5B RH 4*10*2	HF	黑		1
4	双面背胶		SONY G9000 7*30	HF			1
3	PCB		WPB214	HF	黑		1
2	MHF Connector		MHF-13-CON	HF	金		1
1	MINI 1.13 Coaxial Cable		MINI RG OD:1.13 浅灰	HF	浅灰		1

第3角法	圖面不用實測				部品番號	45-2-000320		
單位: mm	作成	檢圖	確認	核准	品名	MINI 1.13 GY 2.4G-5.8G L:450MM		
比例: FREE	Alei	Hellen	Roy	David	产品分类	■ A成品	□ B半成品	□ C样品
2018.07.11					公司番號	RC12WFI0288A1		

Test Environment and Equipments

S-Parameter test

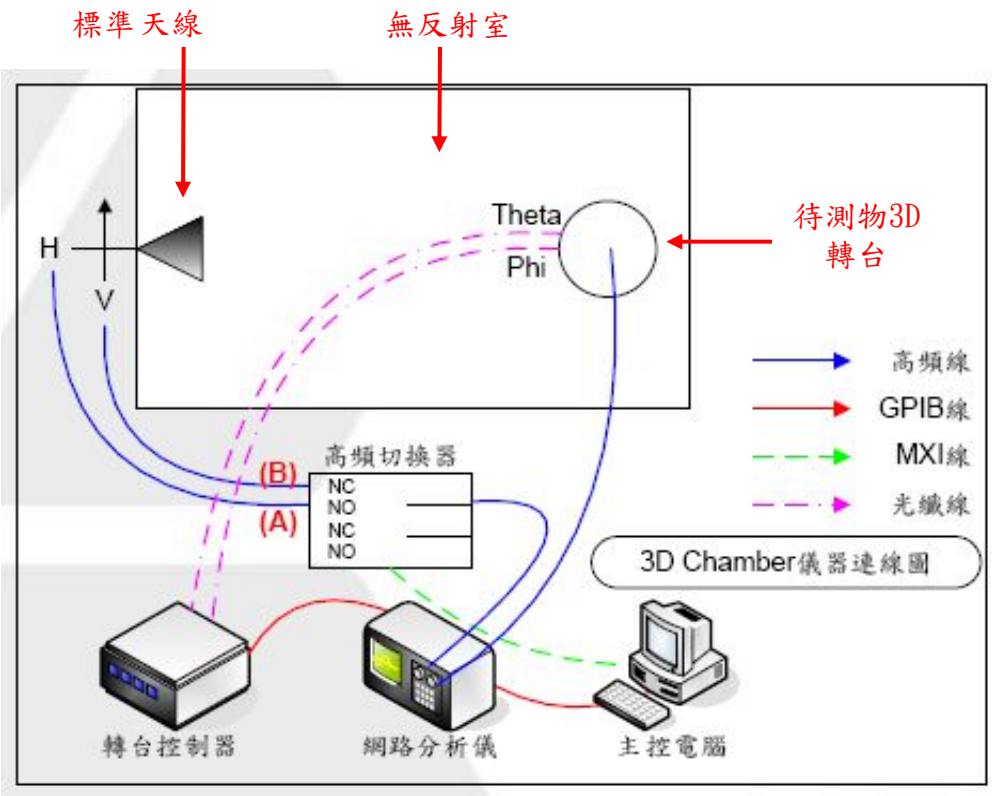
- Network Analyzer(
- Testing range from

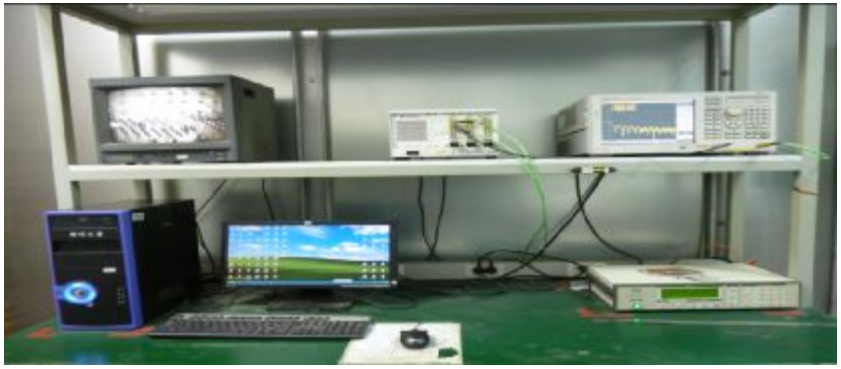


Test Environment and Equipments

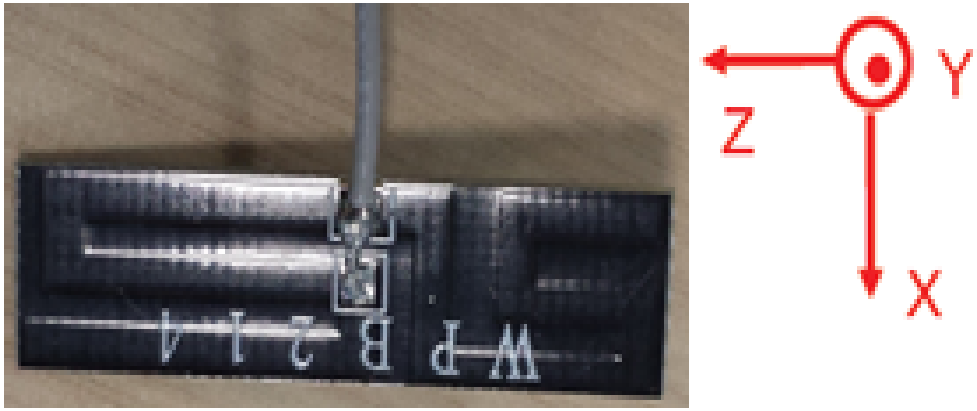
The Gain, Efficiency,Directivity and 2D/3D Pattern

- Testing range from 100MHz to 6GHz
- Chamber Room Size: L*W*H=9*4.7*4.7 M

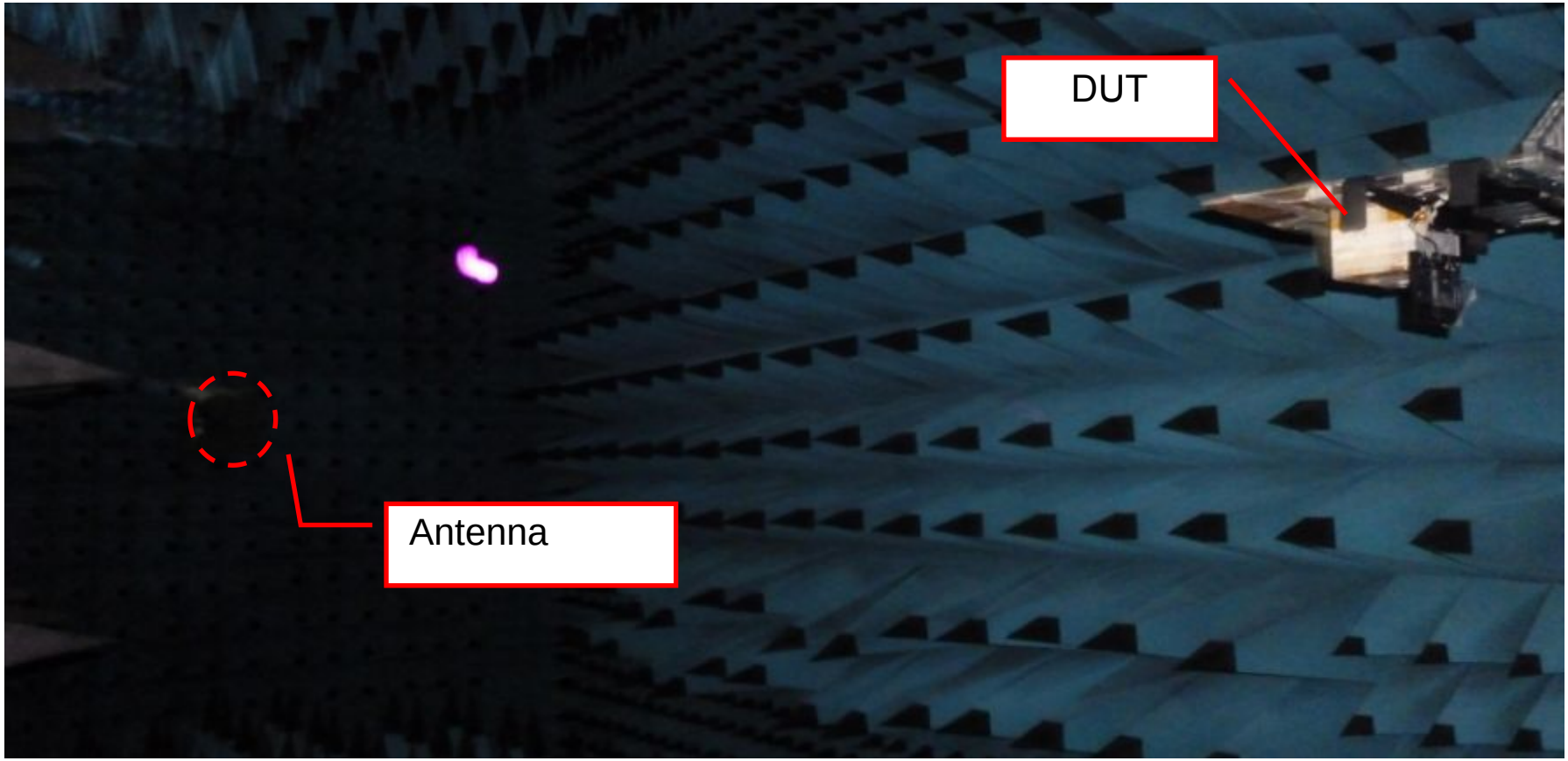


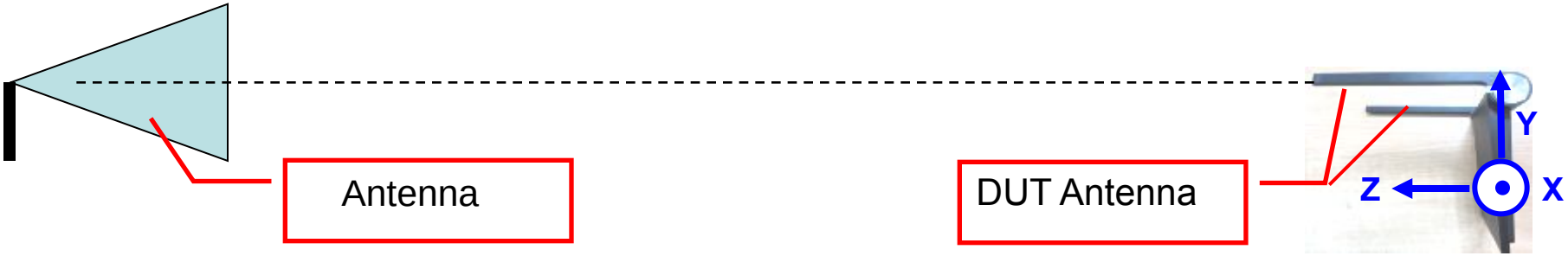


Antenna Dimensions

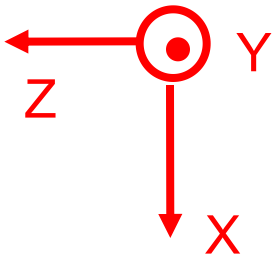


Antenna Measurement

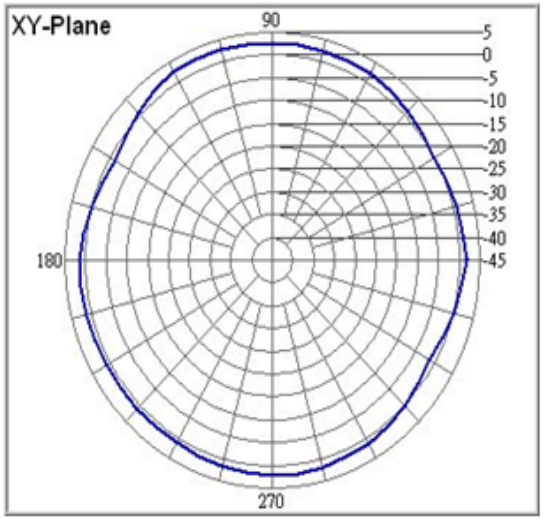


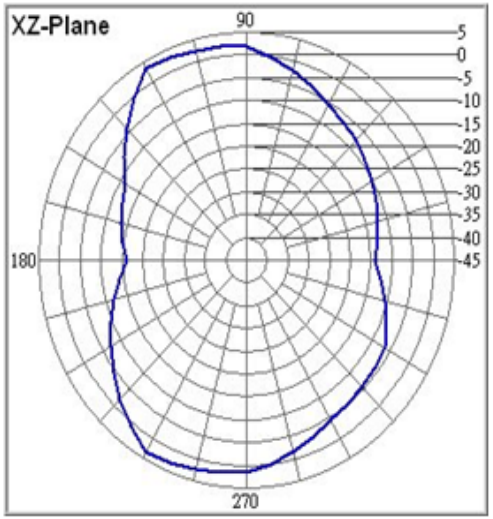


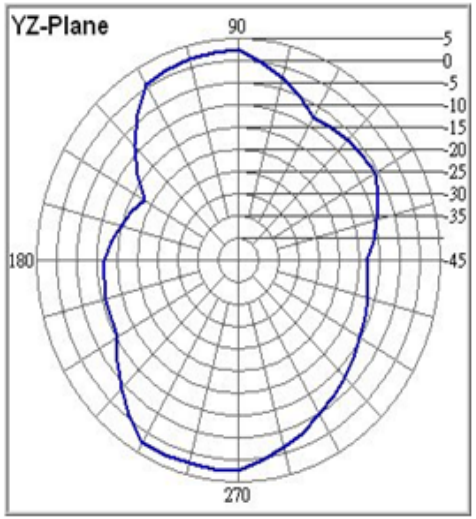
Test Result:2D Radiation Pattern



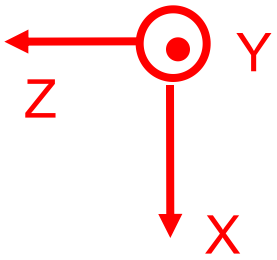
2450Mhz



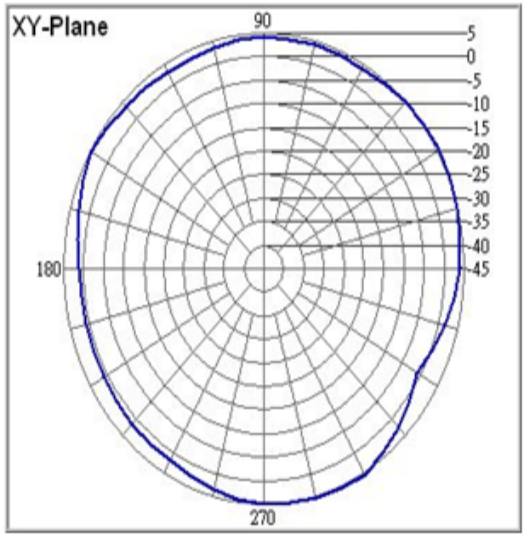


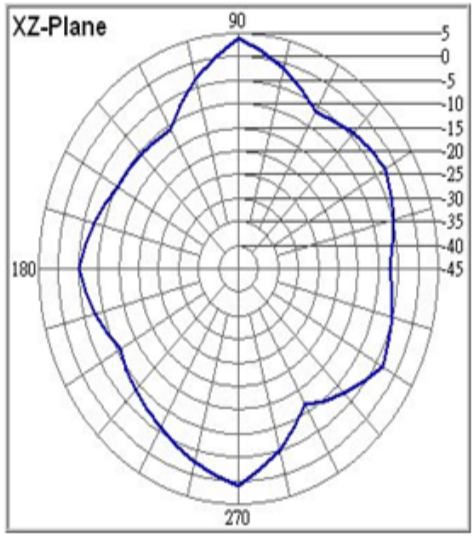


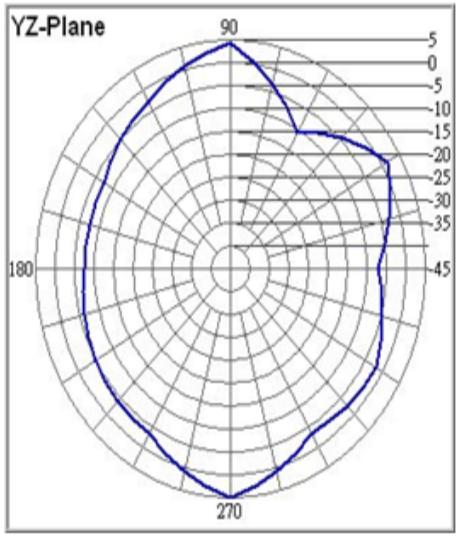
Test Result:2D Radiation Pattern

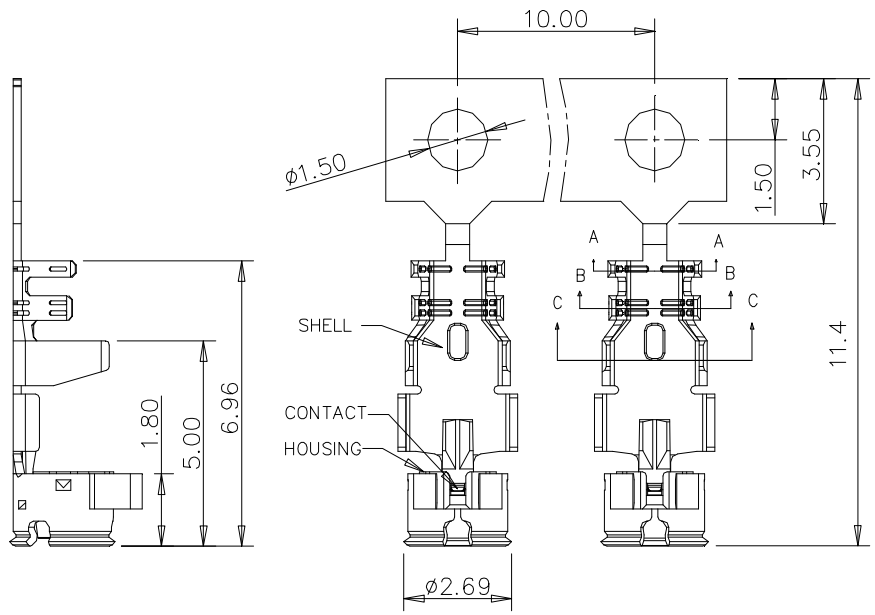


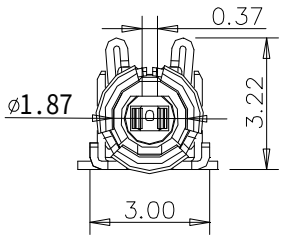
5470Mhz

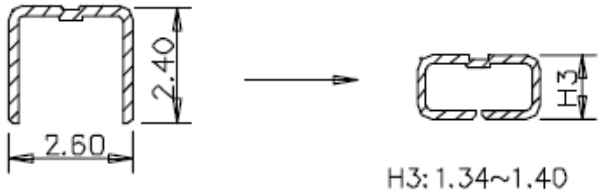








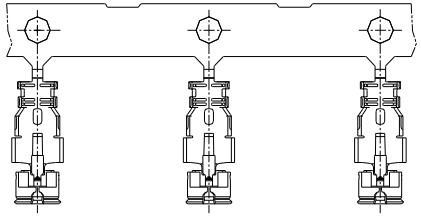


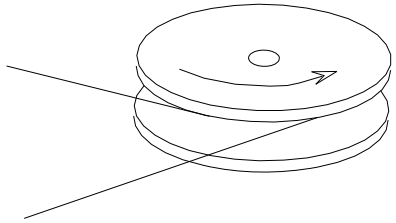
BEFORE CRIMPING	AFTER CRIMPING
SECTION A–A	H1: 1.15~1.35
SECTION B–B	H2: 1.06~1.14
 SECTION C–C	H3: 1.34~1.40

APPLICABLE COAXIAL: AWG #32(ø1.13).

NO	NAME	MATERIAL	DESCRIBTION
3	SHELL	COPPER ALLOY	GOLD PLATED OVER NI
2	CONTACT	COPPER ALLOY	GOLD PLATED OVER NI
1	HOUSING	PA66	UL94–0

UNITS: mm		PART NO.: ABR–CAB–047–001	NAME: RF 1.13 CONNECTOR
X.±	X°±		
.X± 0.2	.X°±	APPD: Ding Liu	DWG NO.: MHF-13-CON-02
.XX±0.10	.XX°±	CHKD: Hai Hu	SCALE: NONE / SHEET: 1/1 / REV.: A0
.XXX±	.XXX°±	DR: L L. Wei	





PACKAGE DIRECTION

NOTES:

1. PERFORMANCE

1-1. ELECTRICAL CHARACTERISTICS;

1-1-1.VOLTAGE RATING: 60V AC/DC

1-1-2.CURRENT VS. TEP. RISE: 0.3A AC/DC,30°C RISE Max;

1-1-3.CONTACT RESISTANCE : INITIAL 20 MILLIOHMS Max;
AFTER ENVIRONMENTAL : 25 MILLIOHMS Max;

1-1-4.INSULATION RESISTANCE: 500 MEGOHMS Min.

1-1-5.DIELECTRIC WITHSTANDING VOLTAGE : 200V AC/Minute

1-1-6.VSWR : 1.5Max AT 6GHz

1-2. MECHANICAL CHARACTERISTICS;:

1-2-1.MATING FORCE AND UNMATING FORCE,SEE ITEM
MATING FORCE: 3.5Kgf Max.
UNMATING FORCE: 0.5Kgf Min.

1-2-2.DURABILITY: 30 TIMES

1-3. ENVIRONMENT CHARACTERISTICS;

1-3-1.OPERATING TEMPERATURE : -30°C TO +80°C;

1-3-2.STORAGE TEMPERATURE : -45°C TO +85°C;

2. CABLE RETENTION FORCE:1.5Kgf Min

3. HARMFUL MATERIAL CONTROL PLEASE FOLLOW RoHS COMPLIANT.

TOLERANCE(UNLESS SPECIFIED)		UNITS mm
0.±	0.°±	MAT'L
.0± 0.20	.0°±	SEE NOTES
.00± 0.10	.00°±	FINISH
.000±	.000°±	
		Q'TY

THE RIGHT OF THIS DRAWING IS RESERVED BY LINKAGE CO. LTD

NAME(INTENDED USE) CUSTOMER			
PART NO.:	TITLE: RF 1.13 CONNECTOR		
APPD: SUN	DWG NO.: MHF-13-CON-02		
CHKD:	SCALE	SHEET	REV.
DR: X.H Wu	1:1	2/2	A

客户/Customer:_____

客户料号/ Customer P/N:_____

规　格　书

Specification

50Ω(FEP)绝缘射频电缆

50Ω FEP Insulated Coaxial Cable

YD113 系列

YD113 SERIES

编制/Signed by: lai cool

编制日期/ Date: 25th November 2010

1. 适用范围:

Scope

本规格书制定了 50Ω FEP 绝缘射频电缆 YD113 系列的结构和电气特性.

This specification covers the construction and the electrical properties of YD113 series of 50Ω FEP Insulation Coaxial Cable.

2. 结构/Construction: 单位/Unit:mm

项目/Item		详细资料/Details
导体/Conductor	材料/Material	镀锡铜线/Tinned Copper Wire
	构成(根/mm) Composition(No./mm)	7/0.083
	标称直径/NOM.O.D	0. 24±0.03
绝缘层 /Insulation	材料/Material	聚全氟乙丙烯（自然色）/FEP(Natural)
	标称绝缘厚度/Nom.Thick.（mm）	0.23
	标称外径/NOM.O.D	0.695±0.03
屏蔽层/Shield	材料/Material	镀锡铜线/Tinned annealed copper wire
	构成/Composition	0.05单线编织/Single Braid of 0.05
护套/Jacket	材料/Material	聚全氟乙丙烯/FEP
	标称护套厚度/ Nom.Thick（mm）	0.10
	标称外径/Nom.O.D（mm）	1.13±0.05
	颜色/Color	按与客户确认的颜色/According to corresponding have approved by the suppliers and customers

3.电气特性(20℃时)/Electrical Properties(at 20℃)

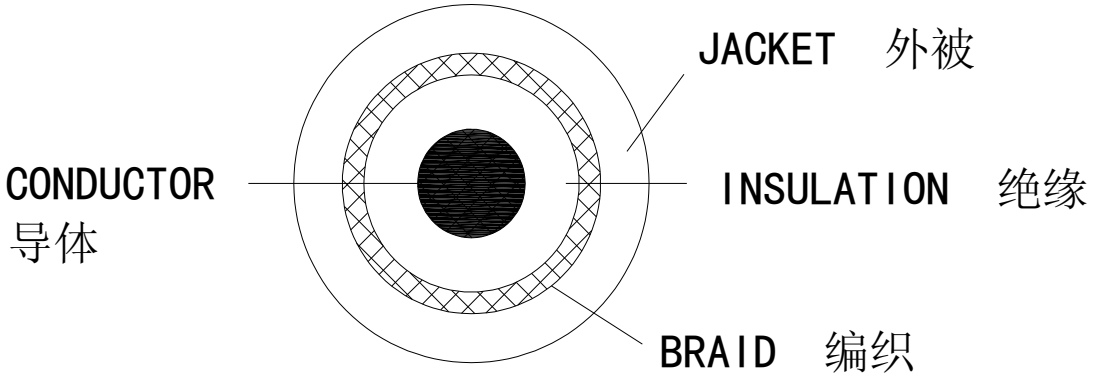
项目/Item	单位/Unit	详细资料/Details
导体电阻/Conductor Resistance	Ω/km	Max.560
绝缘电阻/Insulation Resistance	MΩ.km	Min.200
耐压强度/Dielectric Strength	V(AC)/min	1000
静电容/Capacitance	pF/m	98
特性阻抗/Characteristic Impedance	Ω	50±2.0

衰减/Attenuation	dB/m	1GHz	2.20
		2GHz	3.15
		3GHz	3.90
		4GHz	4.60
		5GHz	5.20
		6GHz	5.70
驻波比/Standing wave(0-6GHz)	/	≤1.35	

4.包装 Packing

标准单位包装长度为 1000 米/盘,每盘最多允许 5 个接头,接头最短长度 20 米,在搬运过程中不能损坏包装.

Standard unit length of finished cable shall be 1000m on reel, frequency of joint max.5/reel, the mini length is 20m. The finished cable shall be packed not be damaged during transportation



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本产品有时不适合车载用途的情况也有,所以使用前请先和本公司业务部门进行商谈.

This product is not suitable for automobile application in some cases.Please contact with our sales department before you use this product.

****

规格书完

End of specification

Test Report

Report No. ECL01J064462016

Applicant JIANGSU YUANDA OF CABLE TECHNOLOGY CO.,LTD/JIANGYIN YUANDA ELECTRIC MATERIAL CO.,LTD

Address HANGKONG ROAD NO.5 JIANHU COUNTY YANCHENG CITY JIANGSU PROVINCE/1339# XICHENG ROAD,QINGYANG TOWN,JIANGYIN CITY,JIANGSU PROVINCE

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

No.	Sample Name	Client Reference Information	Material
1	Coaxial cable	RF0.81,RF1.13,RF1.32,RF1.37,RG142,RG174,RG178,RG179,RG180,RG187,RG188,RG316,RG316D,RG195,RG196,RG302,RG303,RG179D,RG223,RG304,RG393,RG400,RG402,RG405,SFF-50,SFF-75	Silvery metal wire
2			Colorless transparent plastic
3			Silvery metal wire
4			Gray jacket

Sample Received Date Oct. 14, 2017

Testing Period Oct. 14, 2017 to Oct. 18, 2017

Test Requested As specified by client, to test Lead (Pb), Cadmium (Cd), Mercury (Hg), Hexavalent Chromium(Cr(VI)), Polybrominated Biphenyls(PBBs), Polybrominated Diphenyl Ethers(PBDEs), Phthalates(DBP, BBP, DEHP, DIBP), Fluorine(F), Chlorine(Cl), Bromine(Br), Iodine(I), Antimony(Sb), Hexabromocyclododecane (HBCDD), Tetrabromobisphenol-A(TBBP-A), Perfluorooctane Sulfonates(PFOS), Perfluorooctanoic Acid(PFOA) in the submitted sample(s).

Test Method Please refer to the following page(s).

Test Result(s) Please refer to the following page(s).

Tested by Henry Reviewed by Liu yin yin

Approved by Su Hongwei Date Oct. 18, 2017

Su Hongwei
Senior Laboratory Manager

No. R293034556

Test Report

Test Method

Tested Item(s)	Test Method	Measured Equipment(s)
Lead(Pb)	IEC 62321-5:2013 Ed.1.0	ICP-OES
Cadmium(Cd)	IEC 62321-5:2013 Ed.1.0	ICP-OES
Mercury(Hg)	IEC 62321-4:2013 Ed.1.0	ICP-OES
Hexavalent Chromium(Cr(VI))	IEC 62321-7-2:2017 and/ or determination of Total Chromium by IEC 62321-5:2013 Ed.1.0	UV-Vis/ICP-OES
	IEC 62321-7-1:2015	UV-Vis
Polybrominated Biphenyls(PBBs)	IEC 62321-6:2015	GC-MS
Polybrominated Diphenyl Ethers (PBDEs)	IEC 62321-6:2015	GC-MS
Phthalates(DBP, BBP, DEHP, DIBP)	IEC 62321-8:2017	GC-MS
Fluorine (F)	Refer to EN 14582:2016	IC
Chlorine (Cl)	Refer to EN 14582:2016	IC
Bromine (Br)	Refer to EN 14582:2016	IC
Iodine (I)	Refer to EN 14582:2016	IC
Hexabromocyclododecane (HBCDD)	Refer to US EPA 3550C:2007&US EPA 8270D:2014	GC-MS
Tetrabromobisphenol-A (TBBP-A)	Refer to US EPA 3550C:2007 & US EPA 8321B:2007	LC-MS-MS
Perfluorooctanoic Acid (PFOA)	Refer to US EPA 3550C:2007 & US EPA 8321B:2007	LC-MS-MS
Perfluorooctane Sulfonates (PFOS)	Refer to US EPA 3550C:2007 & US EPA 8321B:2007	LC-MS-MS
Antimony (Sb)	Refer to US EPA 3052:1996 & US EPA 6010D:2014	ICP-OES

Test Report

Report No. ECL01J064462016

Test Result(s)

Tested Item(s)	Result				MDL
	1	2	3	4	
Lead(Pb)	N.D.	N.D.	N.D.	N.D.	2 mg/kg
Cadmium(Cd)	N.D.	N.D.	N.D.	N.D.	2 mg/kg
Mercury(Hg)	N.D.	N.D.	N.D.	N.D.	2 mg/kg
Hexavalent Chromium(Cr(VI))	—	N.D.	—	N.D.	8 mg/kg
	N.D.▼	—	N.D.▼	—	0.10μg/cm^2(LOQ)
Polybrominated Biphenyls(PBBs)					
Monobromobiphenyl	—	N.D.	—	N.D.	5 mg/kg
Dibromobiphenyl	—	N.D.	—	N.D.	5 mg/kg
Tribromobiphenyl	—	N.D.	—	N.D.	5 mg/kg
Tetrabromobiphenyl	—	N.D.	—	N.D.	5 mg/kg
Pentabromobiphenyl	—	N.D.	—	N.D.	5 mg/kg
Hexabromobiphenyl	—	N.D.	—	N.D.	5 mg/kg
Heptabromobiphenyl	—	N.D.	—	N.D.	5 mg/kg
Octabromobiphenyl	—	N.D.	—	N.D.	5 mg/kg
Nonabromobiphenyl	—	N.D.	—	N.D.	5 mg/kg
Decabromobiphenyl	—	N.D.	—	N.D.	5 mg/kg
Polybrominated Diphenyl Ethers(PBDEs)					
Monobromodiphenyl ether	—	N.D.	—	N.D.	5 mg/kg
Dibromodiphenyl ether	—	N.D.	—	N.D.	5 mg/kg
Tribromodiphenyl ether	—	N.D.	—	N.D.	5 mg/kg
Tetrabromodiphenyl ether	—	N.D.	—	N.D.	5 mg/kg
Pentabromodiphenyl ether	—	N.D.	—	N.D.	5 mg/kg
Hexabromodiphenyl ether	—	N.D.	—	N.D.	5 mg/kg
Heptabromodiphenyl ether	—	N.D.	—	N.D.	5 mg/kg
Octabromodiphenyl ether	—	N.D.	—	N.D.	5 mg/kg
Nonabromodiphenyl ether	—	N.D.	—	N.D.	5 mg/kg
Decabromodiphenyl ether	—	N.D.	—	N.D.	5 mg/kg

Test Report

Tested Item(s)	Result		MDL
	2	4	
Phthalates			
Dibutyl phthalate(DBP) CAS#:84-74-2	N.D.	N.D.	50 mg/kg
Benzylbutyl phthalate(BBP) CAS#:85-68-7	N.D.	N.D.	50 mg/kg
Di-2-ethylhexyl phthalate(DEHP) CAS#:117-81-7	N.D.	N.D.	50 mg/kg
Diisobutyl phthalate(DIBP) CAS#:84-69-5	N.D.	N.D.	50 mg/kg

Tested Item(s)	Result		MDL
	2	4	
Halogen			
Fluorine (F)	380626 mg/kg*	419247mg/kg*	10mg/kg
Chlorine (Cl)	N.D.	N.D.	10mg/kg
Bromine (Br)	N.D.	N.D.	10mg/kg
Iodine (I)	N.D.	N.D.	10mg/kg

Tested Item(s)	Result		MDL
	2	4	
Hexabromocyclododecane (HBCDD)	N.D.	N.D.	5mg/kg
Tetrabromobisphenol-A (TBBP-A)	N.D.	N.D.	5mg/kg
Perfluorooctanoic Acid (PFOA)	N.D.	N.D.	5mg/kg
Perfluorooctane Sulfonates(PFOS)	N.D.	N.D.	5mg/kg
Antimony (Sb)	N.D.	N.D.	5mg/kg

Test Report

Tested Sample/Part Description

1. Silvery metal wire
2. Colorless transparent plastic wire jacket
3. Silvery metal net
4. Grey plastic wire jacket

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

-MDL = Method Detection Limit

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

-mg/kg = ppm = parts per million

-LOQ = Limit of Quantification, The LOQ of Hexavalent chromium is 0.10 μg/cm^2

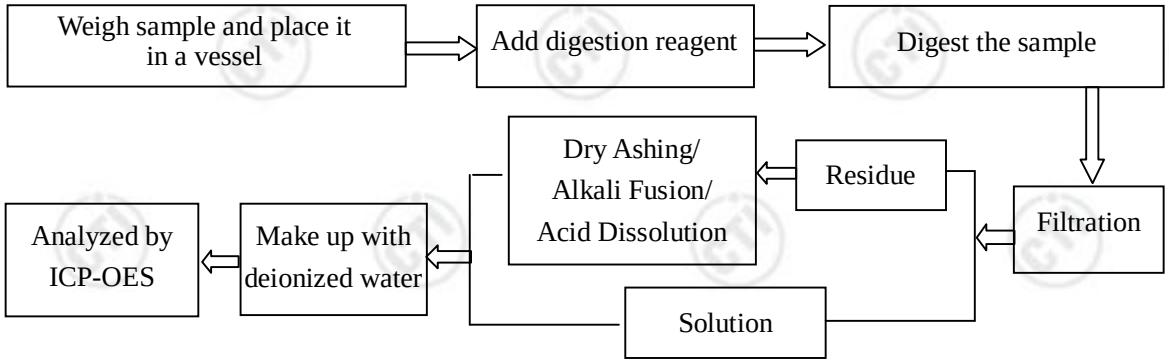
-▼The sample is negativefor Cr(VI) − The Cr(VI) concentration is below 0.10μg/cm^2. The coating is considered a non-Cr(VI) based coating.

-*= Testing results are only used for reference.

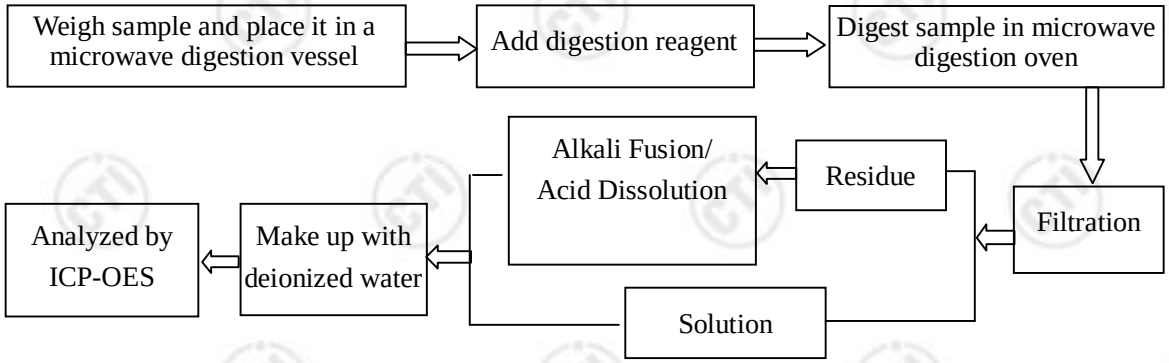
Test Report

Test Process

1. Lead(Pb), Cadmium(Cd), Chromium(Cr)

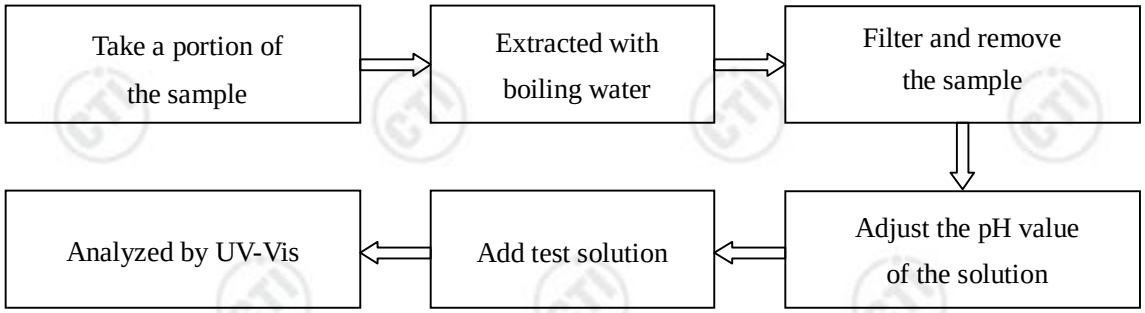


2. Mercury(Hg)

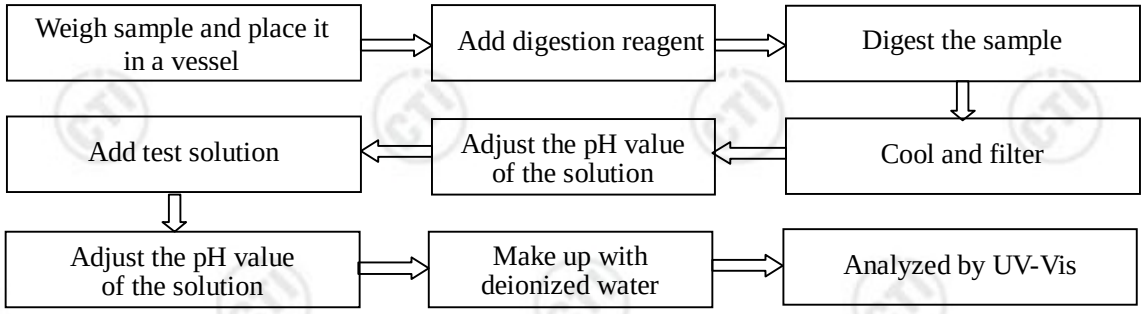


3. Hexavalent Chromium (Cr(VI))

(1) IEC 62321-7-1:2015

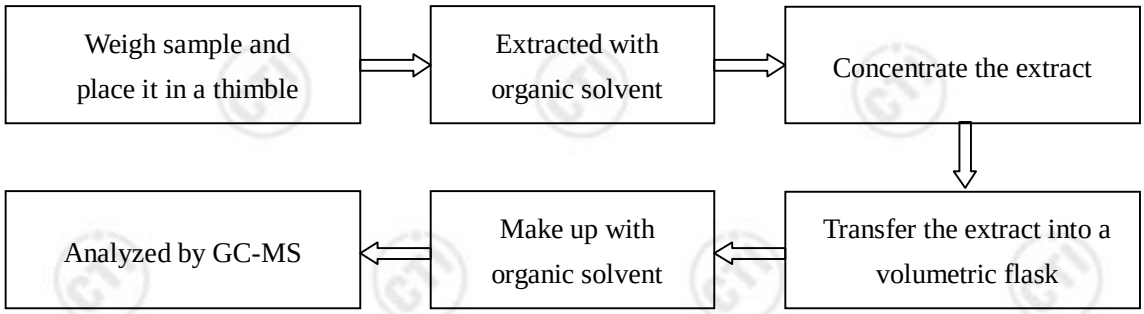


(2) IEC 62321-7-2:2017

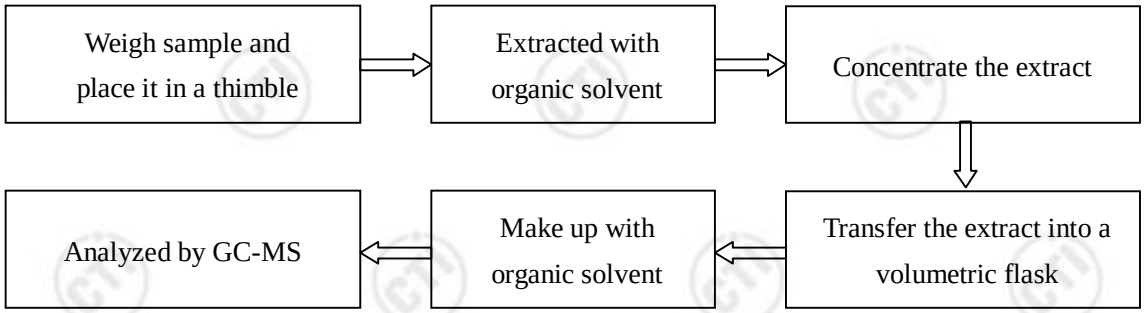


Test Report

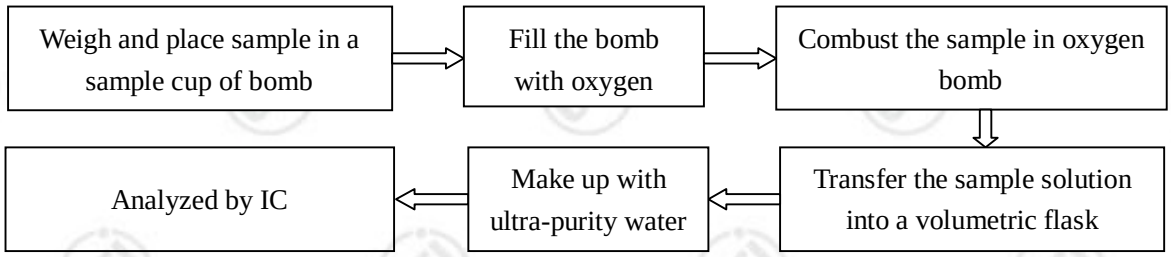
4. Polybrominated Biphenyls(PBBs), Polybrominated Diphenyl Ethers(PBDEs)



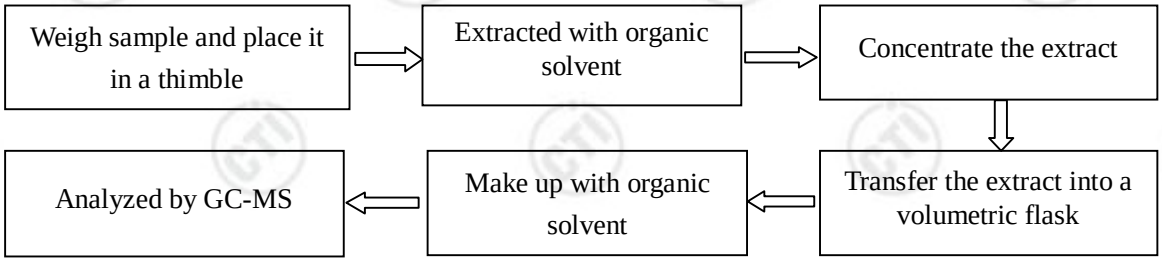
5. Phthalates



6. Fluorine(F), Chlorine(Cl), Bromine(Br), Iodine(I)

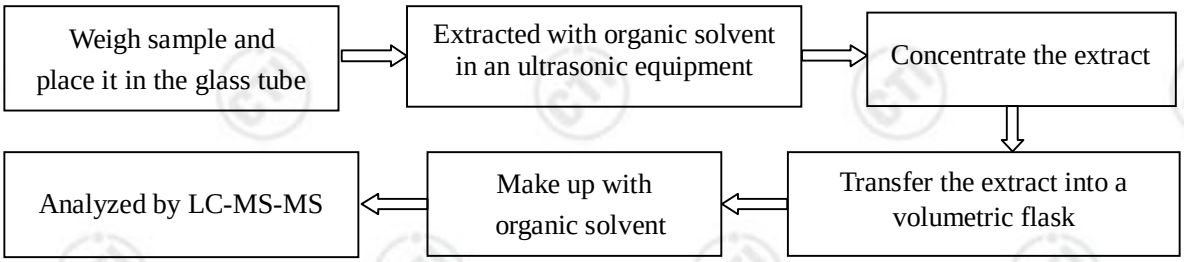


7. Hexabromocyclododecane (HBCDD)

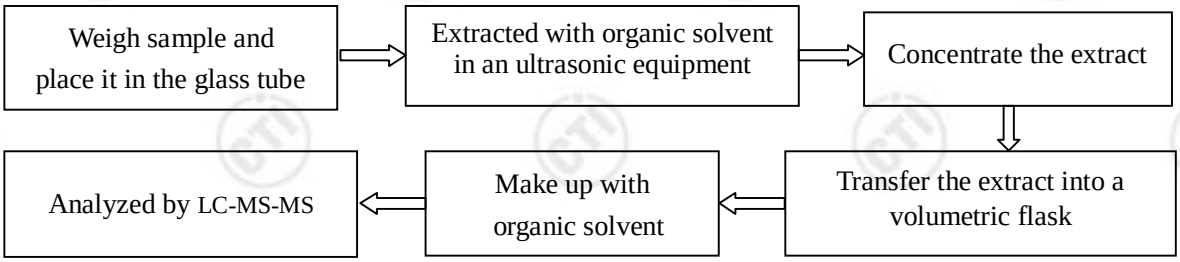


Test Report

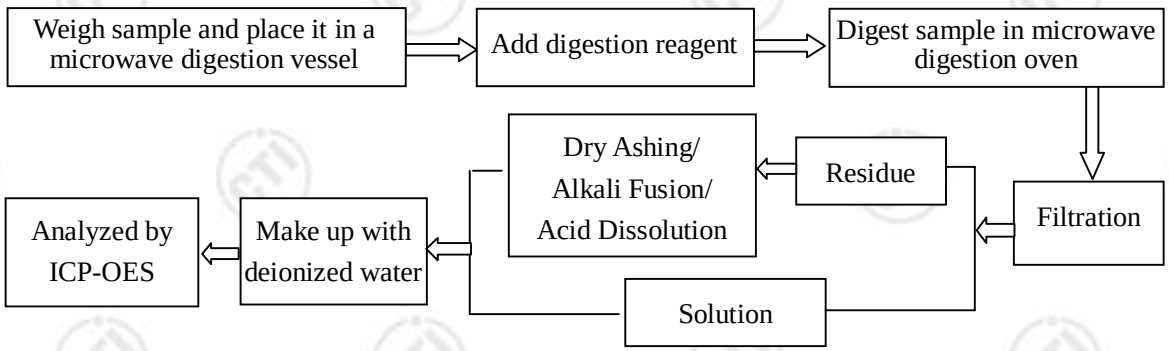
8. Tetrabromobisphenol-A (TBBP-A)



9. Perfluorooctanoic Acid (PFOA), Perfluorooctane Sulfonates(PFOS)

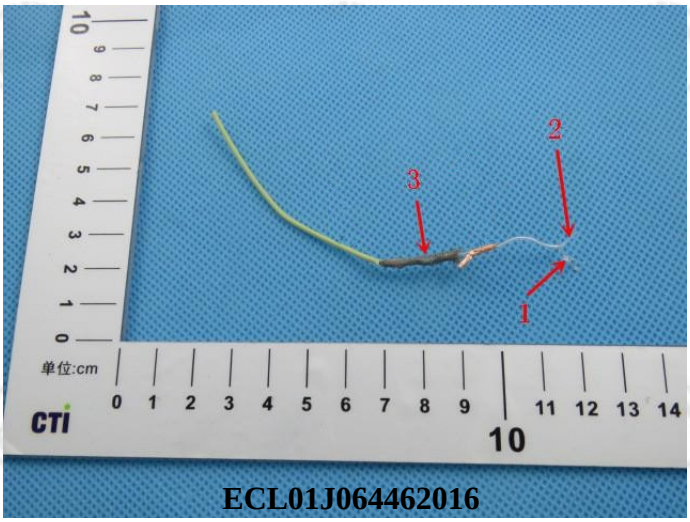


10. Antimony (Sb)

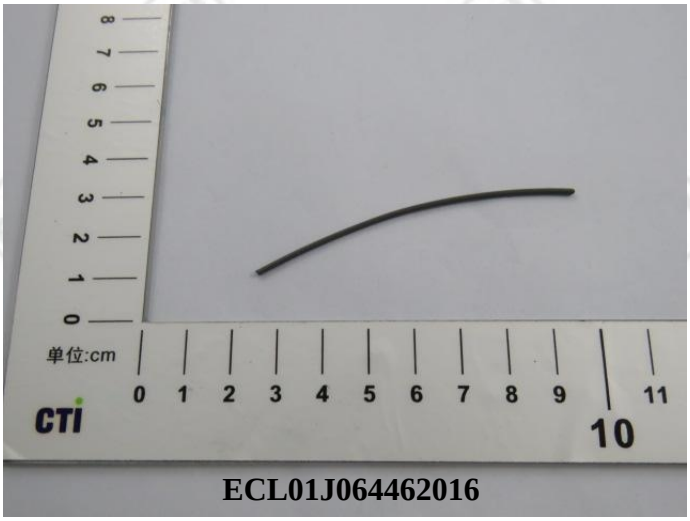


Test Report

Photo(s) of the sample(s)



1-3



4

*** End of Report ***

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佛山市南海区狮山镇松岗山南开发区中区二路

以下测试之样品是由申请者所提供及确认：无铅锡条

SGS工作编号：	CP17-063327 - GZ
样品接收日期：	2017年11月22日
测试周期：	2017年11月22日 - 2017年11月27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-乙基已基)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。

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授权签名

史丽兰

Violet,Shi史丽兰
批准签署人

备注:本报告是编号为CANEC1723467203报告的中文版本。

通标标准技术服务有限公司广州分公司 检验检测专用章 Inspection & Testing Services SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch Testing Center Chemical Laboratory

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测试结果 :

测试样品描述 :

SN1 CAN17-234672.002 银灰色金属条

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

测试方法 : 参考IEC 62321-4:2013+A1:2017, IEC62321-5:2013, IEC62321-7-1:2015 , IEC 62321-6:2015 和 IEC62321-8:2017, 采用 ICP-OES , UV-Vis 和 GC-MS 进行分析.

测试项目	限值	单位	MDL	002
镉 (Cd)	100	mg/kg	2	ND
铅 (Pb)	1,000	mg/kg	2	66
汞 (Hg)	1,000	mg/kg	2	ND
六价铬(Cr(VI))▾	-	μg/cm²	0.10	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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测试项目	限值	单位	MDL	002
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-乙基已基)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

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

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

c. 当六价铬的浓度介于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铬，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，样品的六价铬测试结果仅能代表测试时样品含六价铬的状态。

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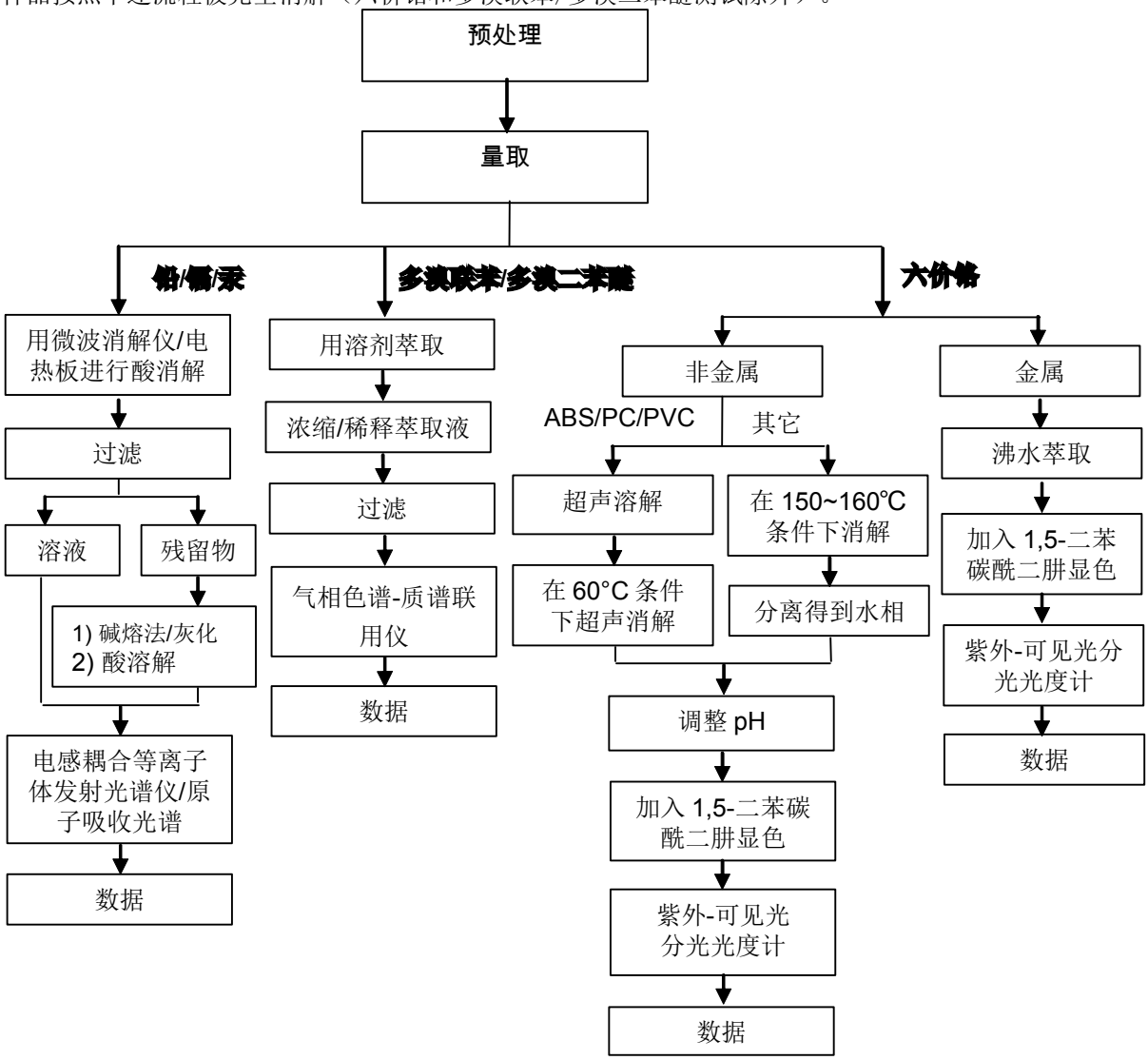
附件

Pb/Cd/Hg/Cr^{6+}/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）。



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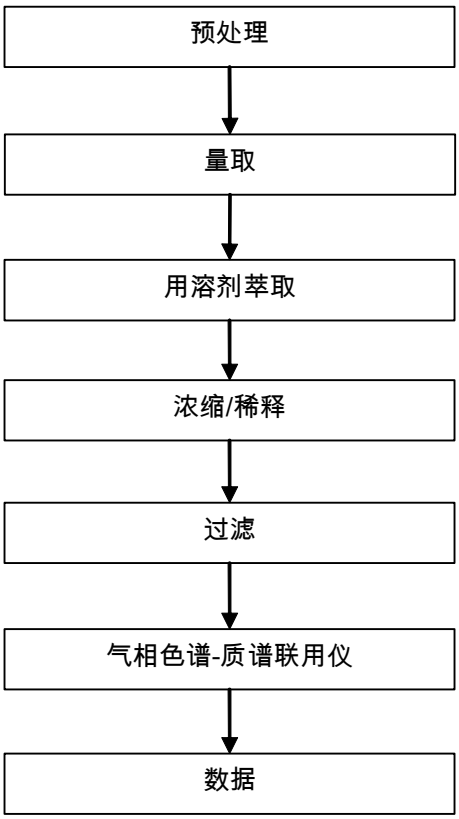
附件

Phthalates 测试流程图

1) 分析人员：胡香云
2) 项目负责人：刘琼



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江阴市青阳镇工业集中区华澄路18号

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SGS工作编号：	SP17-023882 - SUZ
型号：	KSM-388BK/KSM-28=23:2
样品接收日期：	2017年07月06日
测试周期：	2017年07月06日 - 2017年07月11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)的测试结果不超过欧盟RoHS指令2011/65/EU附录II的修正指令(EU) 2015/863的限值要求。

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测试结果：

测试样品描述：

SN1 SHA17-143396.002 黑色液体

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

测试方法： (1) 参考IEC 62321-5:2013，用ICP-OES测定镉的含量
(2) 参考IEC 62321-5:2013，用ICP-OES测定铅的含量
(3) 参考IEC 62321-4:2013，用ICP-OES测定汞的含量
(4) 参考IEC 62321-7-2:2017，用UV-Vis分析六价铬含量和/或者参考IEC 62321-5:2013，用ICP-OES测试总铬含量
(5) 参考IEC 62321-6:2015，用GC-MS测定PBBs(多溴联苯)和PBDEs(多溴二苯醚) 的含量

测试项目	限值	单位	MDL	*002*
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

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测试项目	限值	单位	MDL	002
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
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) 检测的铬(Cr)含量是“ND”，则六价铬(Cr(VI))含量也是“ND”，不需要进行六价铬(Cr(VI))的确认性测试。

(3) 若铬(Cr)含量超过六价铬(Cr(VI))方法检出限，需要进行六价铬(Cr(VI))的确认性测试。

(4) 2015年6月4号发表在欧盟官方杂志（官方公报）上的RoHS指令(EU) 2015/863附录II限值中还包括邻苯二甲酸酯BBP，DBP，DEHP和DIBP。新的指令限制了电子电器产品的每一个均一材质中邻苯二甲酸酯含量不得超过0.1%。

(5) 2021年7月22号开始，DEHP, BBP, DBP 和 DIBP的限制适用于医疗器械，包括体外医疗器械，监控仪表，包括工业监测和控制仪器。

(6) DEHP, BBP, DBP 和 DIBP的限制不适用于2019年7月22日前投放市场的电缆及电子电气产品中用于维修、重复利用、功能更新及容量提升的备用配件以及2021年7月22日前投放市场的医疗器械，包括体外医疗器械，监控仪表，包括工业监测和控制仪器。

(7) DEHP、BBP 和 DBP的限制不适用于玩具产品，因为No.1907/2006附录XVII第51条已对玩具产品中的DEHP、BBP 和 DBP含量进行了限制。

测试方法： 参照EN 14582:2007方法测定, 采用IC进行分析.

测试项目	单位	MDL	002
氟(F)	mg/kg	50	ND
氯(Cl)	mg/kg	50	369
溴(Br)	mg/kg	50	ND
碘(I)	mg/kg	50	ND

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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	*002*
六溴环十二烷 (HBCDD)	25637-99-4, 3194- 55-6	mg/kg	10	ND

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

测试项目	限值	单位	MDL	002
全氟辛烷磺酸(PFOS)及衍生物^	10	mg/kg	10	ND
全氟辛酸 (PFOA)	-	mg/kg	10	ND

备注：

(1) 最大允许限制引用自(EC) No. 850/2004 的修订指令欧盟决议(EU) No. 757/2010.
(2) ^= 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)。

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

测试项目	CAS NO.	单位	MDL	002
邻苯二甲酸二丁酯(DBP)	84-74-2	%	0.003	ND
邻苯二甲酸丁苄酯 (BBP)	85-68-7	%	0.003	ND
邻苯二甲酸二(2-乙基己基)酯 (DEHP)	117-81-7	%	0.003	ND
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
邻苯二甲酸二甲酯 (DMP)	131-11-3	%	0.003	ND
邻苯二甲酸二乙酯 (DEP)	84-66-2	%	0.003	ND
邻苯二甲酸二异丁酯(DIBP)	84-69-5	%	0.003	ND
邻苯二甲酸二戊酯(DnPP)	131-18-0	%	0.003	ND
邻苯二甲酸二环已酯 (DCHP)	84-61-7	%	0.003	ND

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测试项目	CAS NO.	单位	MDL	002
邻苯二甲酸二苯酯 (DPhP)	84-62-8	%	0.003	ND
邻苯二甲酸二苄酯(DBzP)	523-31-9	%	0.003	ND
邻苯二甲酸二异辛酯 (DiOP)	27554-26-3	%	0.01	ND
邻苯二甲酸二丙酯 (DPrP)	131-16-8	%	0.003	ND
邻苯二甲酸二壬酯 (DNP)	84-76-4	%	0.003	ND
邻苯二甲酸二正己酯(DnHP)	84-75-3	%	0.003	ND

备注：

(1) DBP, BBP, DEHP 参考信息: 1907/2006/EC Reach 附录XVII的修正指令——552/2009/EC 第51条 (前身为2005/84/EC) 的要求:

i) 不允许DBP，BBP, DEHP质量浓度高于0.1%的可塑性物料用于玩具和儿童护理品

ii) 当玩具和儿童护理品中的可塑性物料含DBP, BBP, DEHP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

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

备注：所示结果为湿样品总重量中的含量。

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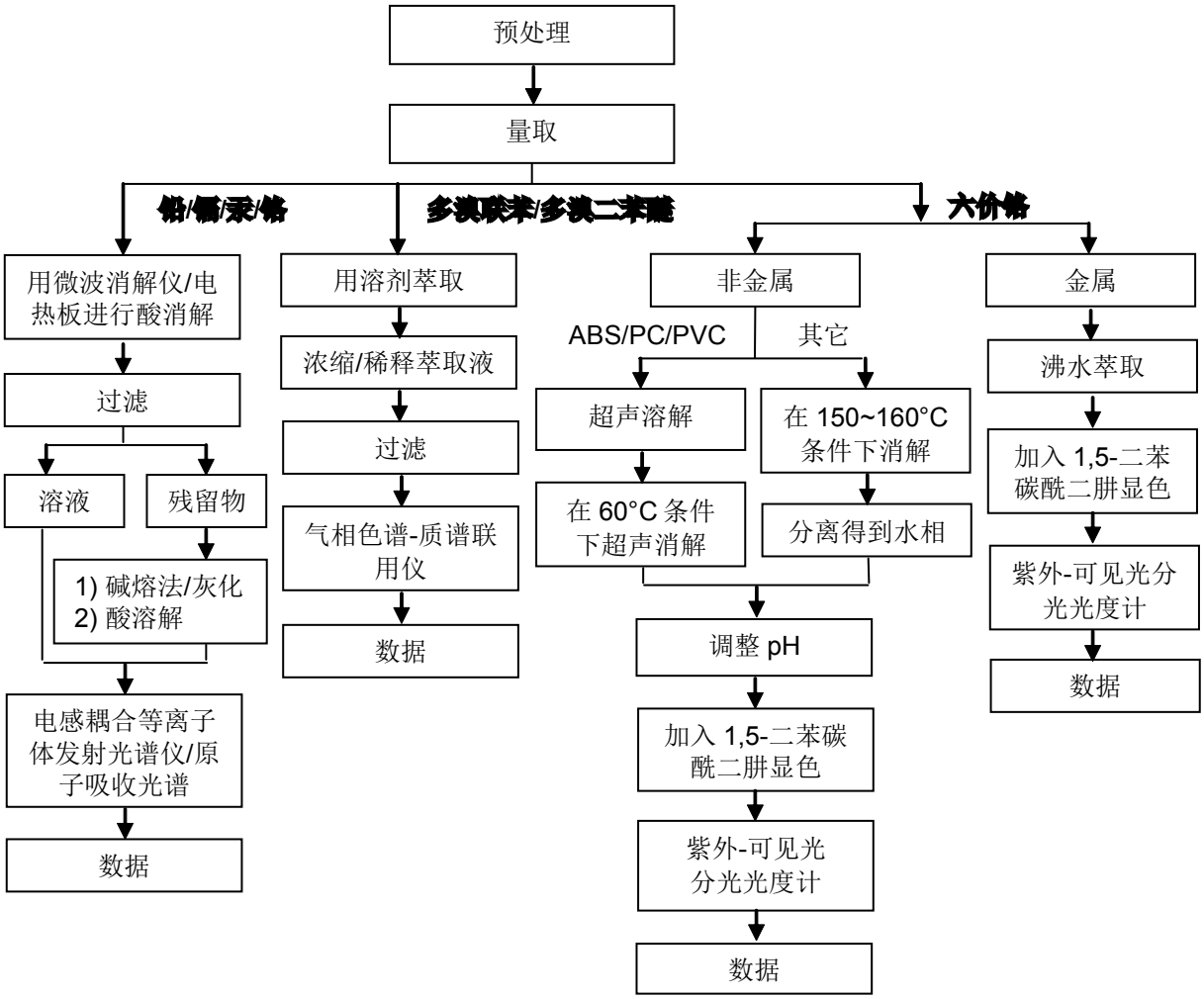
Pb/Cd/Hg/Cr^{6+}/PBBs/PBDEs 测试流程图

1) 分析人员：金叶/徐刚/李振 /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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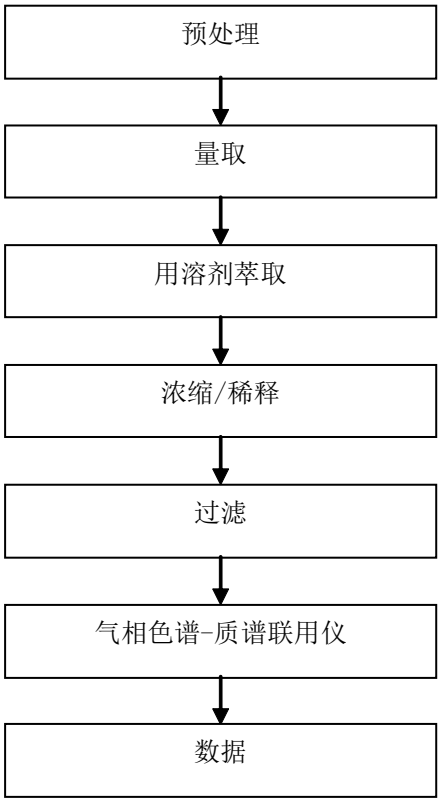
Phthalates 测试流程图

1) 分析人员: 高仰景
2) 项目负责人: 黄婷



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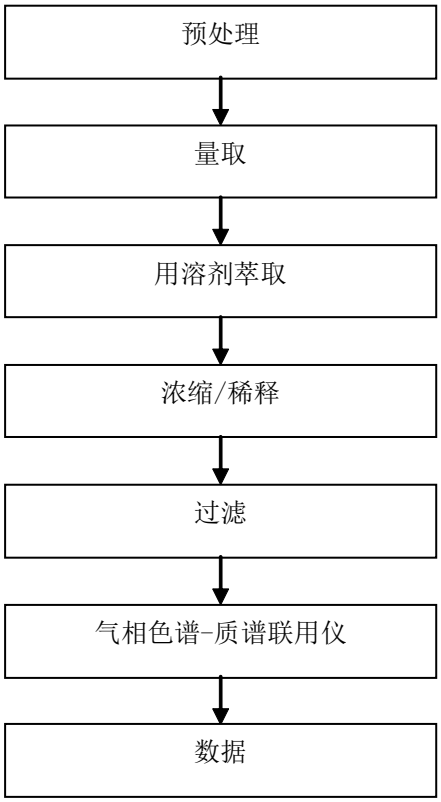
HBCDD 测试流程图

1) 分析人员: 徐刚
2) 项目负责人: 黄婷



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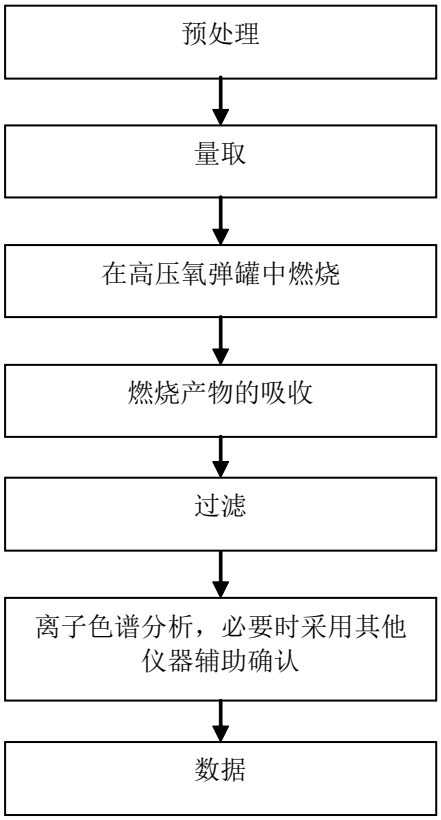
Halogen(氧弹法)测试流程图

1) 分析人员: 徐诚
2) 项目负责人: 印宇



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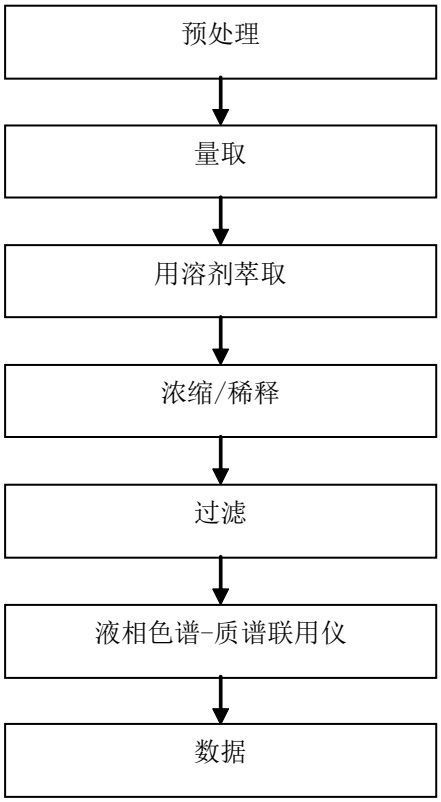
PFOS/PFOA 测试流程图

1) 分析人员: 杨占君
2) 项目负责人: 马永存



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样品照片:

SHA17-143396.002

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上海市松江区工业园区宝胜路33号

以下测试之样品是由申请者所提供及确认 : FR-4.1无卤素环氧玻纤板

SGS工作编号 :	SP17-043094 - SH
样品接收日期 :	2017年12月21日
测试周期 :	2017年12月21日 - 2017年12月28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-乙基已基)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（上海）有限公司
授权签名

Marry Ma马广媛
批准签署人

本报告是编号为SHAEC1728092103报告的中文版本.

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测试结果：

测试样品描述：

SN1 SHA17-280921.002 黄色固体

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

测试方法： 参考IEC 62321-4:2013+AMD1:2017， 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	*002*
铅(Pb)	1000	mg/kg	2	8
镉(Cd)	100	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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测试项目	限值	单位	MDL	002
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
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

(2) 2015年6月4号发表在欧盟官方杂志（官方公报）上的RoHS指令(EU) 2015/863附录II限值中还包括邻苯二甲酸酯BBP，DBP，DEHP和DIBP。新的指令限制了电子电器产品的每一个均一材质中邻苯二甲酸酯含量不得超过0.1%。

(3) 2021年7月22号开始，DEHP, BBP, DBP 和 DIBP的限制适用于医疗器械，包括体外医疗器械，监控仪表，包括工业监测和控制仪器。

(4) DEHP, BBP, DBP 和 DIBP的限制不适用于2019年7月22日前投放市场的电缆及电子电气产品中用于维修、重复利用、功能更新及容量提升的备用配件以及2021年7月22日前投放市场的医疗器械，包括体外医疗器械，监控仪表，包括工业监测和控制仪器。

(5) DEHP、BBP 和 DBP的限制不适用于玩具产品，因为No.1907/2006附录XVII第51条已对玩具产品中的DEHP、BBP 和 DBP含量进行了限制。

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	002
氯 (Cl)	mg/kg	50	261
溴 (Br)	mg/kg	50	ND

测试方法： 参照US EPA 3550C: 2007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	002
六溴环十二烷 (HBCDD)	25637-99-4, 3194- 55-6	mg/kg	10	ND

测试方法： 参照NIOSH 9002:1994, 用偏光显微镜定性测定石棉.

测试项目	CAS NO.	单位	MDL	002
阳起石	77536-66-4	%	0.1	阴性
铁石棉	12172-73-5	%	0.1	阴性
直闪石	77536-67-5	%	0.1	阴性
温石棉	12001-29-5 132207-32-0	%	0.1	阴性
青石棉	12001-28-4	%	0.1	阴性
透闪石	77536-68-6	%	0.1	阴性

备注：

(1) 阴性=未检出石棉，阳性=检出石棉

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

测试项目	限值	单位	MDL	002
全氟辛烷磺酸(PFOS)及衍生物^	1000	mg/kg	10	ND
全氟辛酸 (PFOA)	-	mg/kg	10	ND

备注：

(1) 最大允许限制引用自(EC) No. 850/2004的修订指令欧盟决议(EU) No. 757/2010.
(2) ^= 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)。

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

测试项目	CAS NO.	单位	MDL	002
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
邻苯二甲酸二正己酯(DnHP)	84-75-3	%	0.003	ND
邻苯二甲酸二异丁酯(DIBP)	84-69-5	%	0.003	ND
邻苯二甲酸二丁酯(DBP)	84-74-2	%	0.003	ND
邻苯二甲酸丁苄酯 (BBP)	85-68-7	%	0.003	ND
邻苯二甲酸二(2-乙基己基)酯 (DEHP)	117-81-7	%	0.003	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

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Pb/Cd/Hg/Cr^{6+}/PBBs/PBDEs 测试流程图

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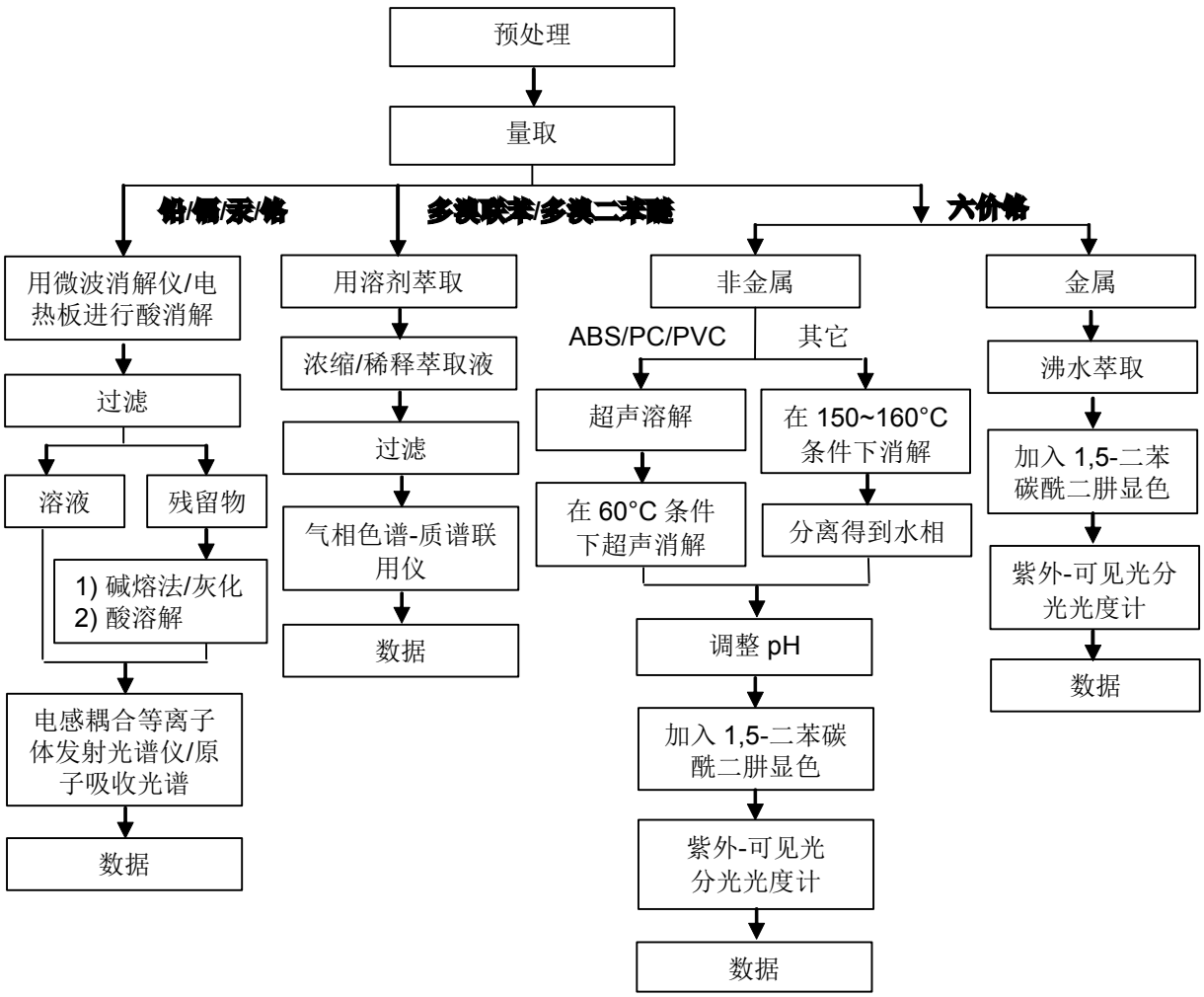

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Phthalates 测试流程图

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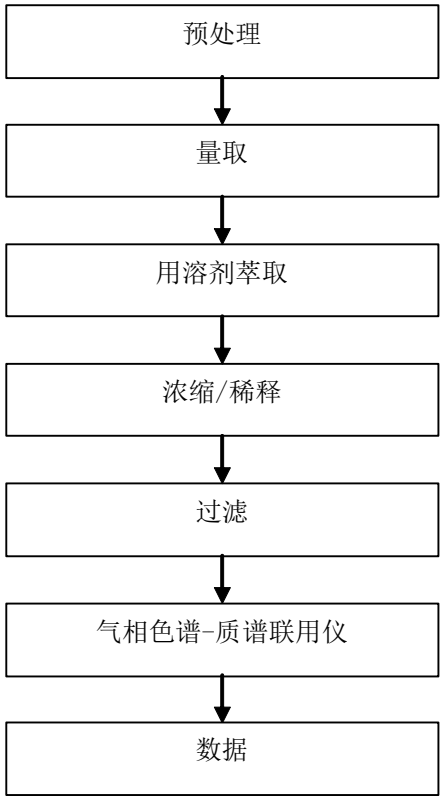

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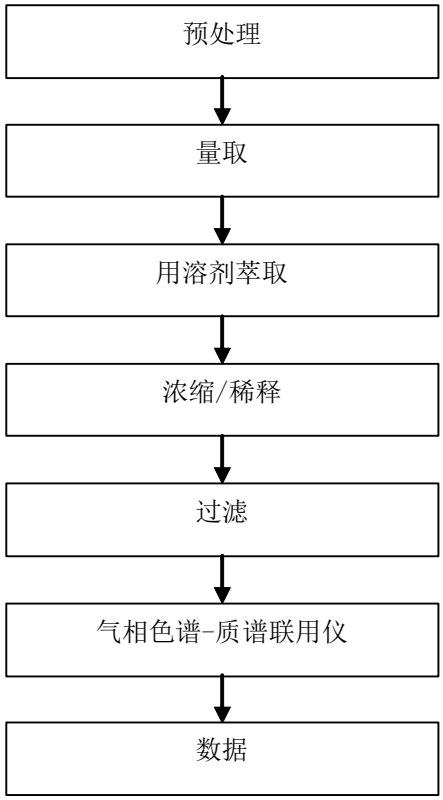
HBCDD 测试流程图

1) 分析人员: 徐刚
2) 项目负责人: 黄婷



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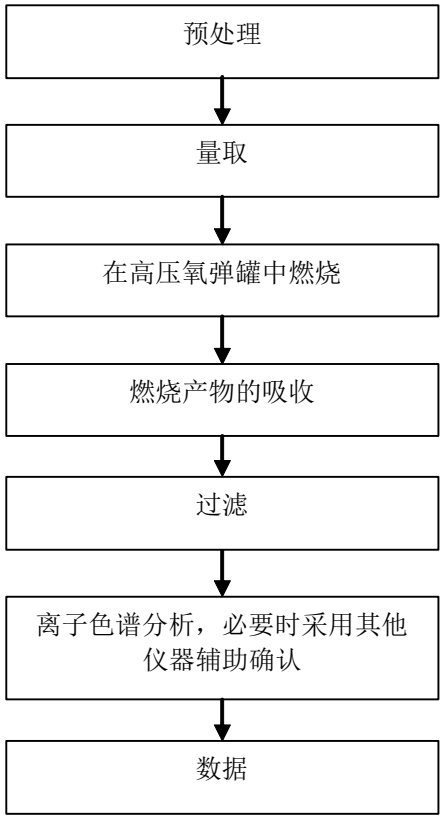
附件

Halogen(氧弹法)测试流程图

1) 分析人员: 徐诚
2) 项目负责人: 印宇



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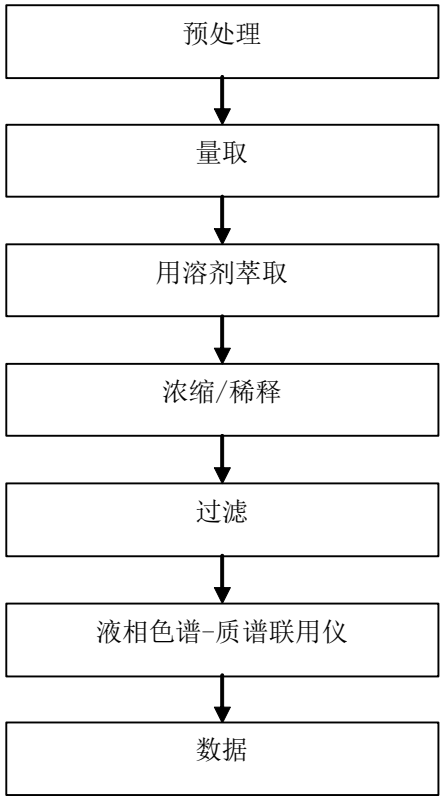
附件

PFOS/PFOA 测试流程图

1) 分析人员: 杨占君
2) 项目负责人: 马永存



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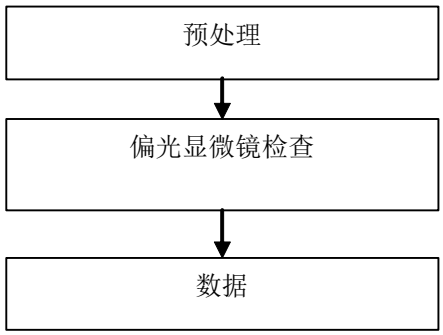
附件

Asbestos 测试流程图

1) 分析人员: 黄慧丽
2) 项目负责人: 余锦晖



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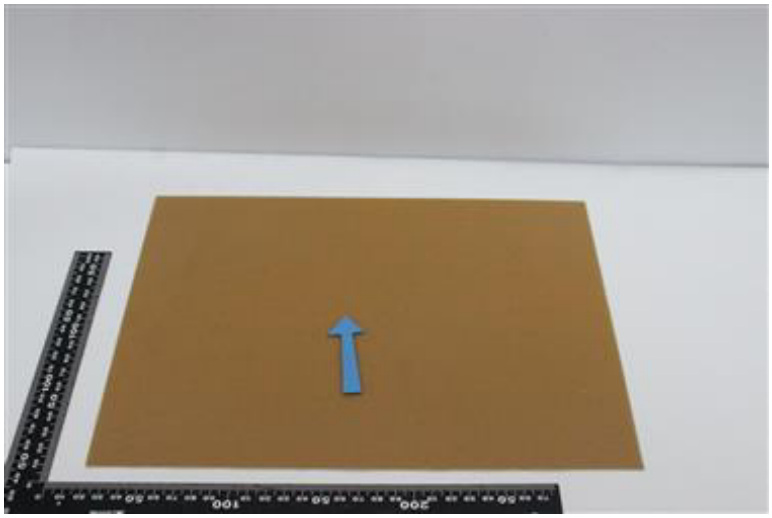
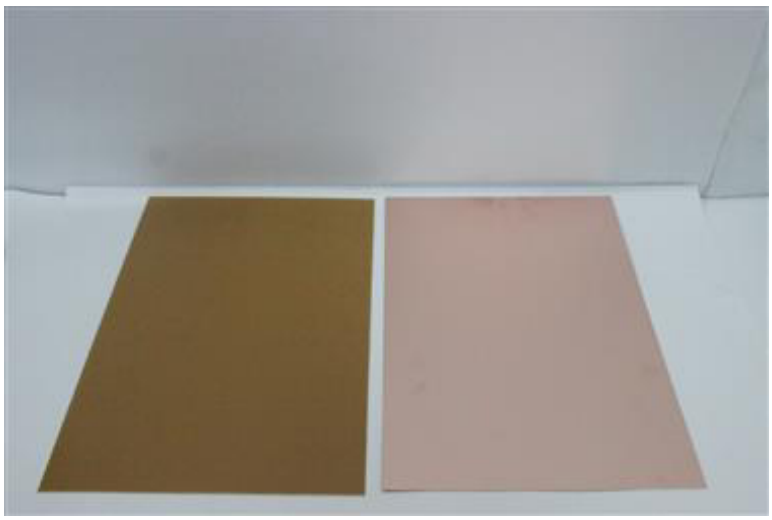
样品照片:



SHA17-280921.002



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太仓市科翔电子有限公司
江苏省苏州市太仓浮桥工业区

以下测试之样品是由申请者所提供及确认：抗干扰磁芯

SGS工作编号：	SP18-021634 - SH
样品接收日期：	2018年06月28日
测试周期：	2018年06月28日 - 2018年07月02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

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Helen Liu 刘海鹏
批准签署人

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测试结果 :

测试样品描述 :

SN1 SHA18-141643.001 黑色固体

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

测试方法 : 参考IEC 62321-4:2013+AMD1:2017，IEC 62321-5:2013和IEC 62321-7-2:2017，采用ICP-OES，AAS和UV-Vis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

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
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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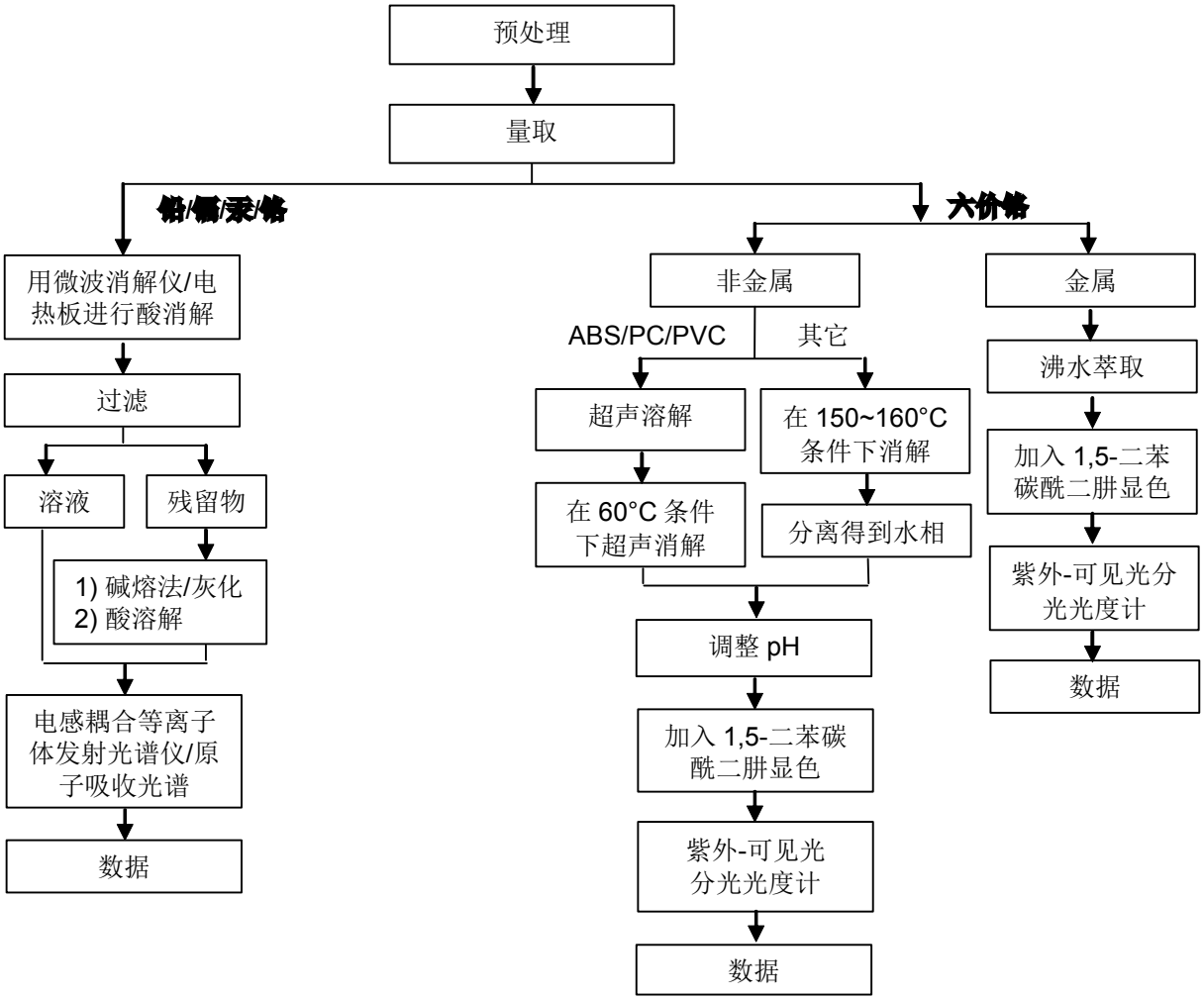
附件

Pb/Cd/Hg/Cr^{6+} 测试流程图

1) 分析人员：金叶/杨小龙 /宋珂静
2) 项目负责人：施青/徐亮/王晓艳
3) 样品按照下述流程被完全消解（六价铬测试除外）。



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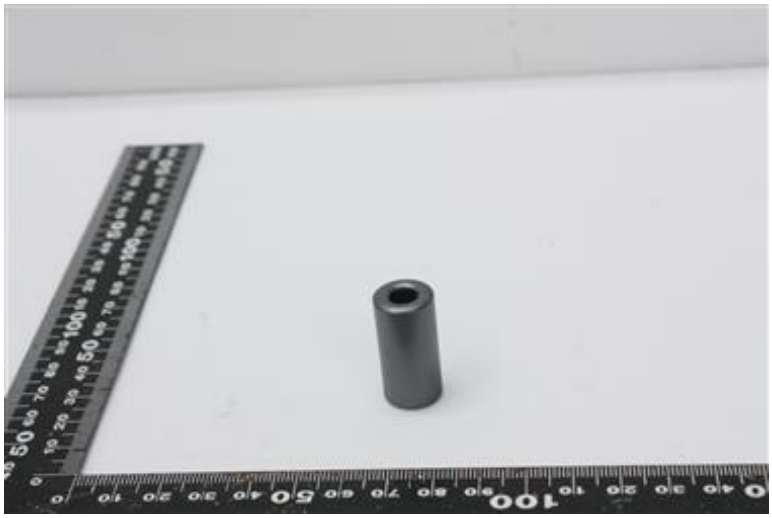

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江苏省太仓市浮桥镇浏家港三里村

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SGS工作编号：	SP18-005207 - SH
样品接收日期：	2018年02月27日
测试周期：	2018年02月27日 - 2018年03月02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。

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Helen Liu 刘海鹏
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测试结果：

测试样品描述：

SN1 SHA18-035482.002 金色金属

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

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，UV-Vis和GC-MS进行分析。

测试项目	限值	单位	MDL	002
镉 (Cd)	100	mg/kg	2	ND
铅(Pb)	1000	mg/kg	2	13
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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测试项目	限值	单位	MDL	002
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. 当六价铬的浓度高于0.13 μg/cm²时，样品为阳性，即含有六价铬；
b. 当六价铬的浓度为ND(低于0.10 μg/cm²)时，样品为阴性，即未检测到六价铬；
c. 当六价铬的浓度介于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铬，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，样品的六价铬测试结果仅能代表测试时样品含六价铬的状态。

测试方法： 参照US EPA 方法3050B:1996测定, 采用ICP-OES进行分析

测试项目	单位	MDL	002
铍(Be)	mg/kg	5	ND

测试方法： 参考 CEN/TS 15968：2010方法，采用LC-MS进行分析。

测试项目	限值	单位	MDL	002
全氟辛烷磺酸 (PFOS)^	1000	mg/kg	10	ND
全氟辛酸(PFOA)	-	mg/kg	10	ND

备注：

(1) 最大允许限制引用自(EC) No. 850/2004的修订指令欧盟决议(EU) No. 757/2010.
(2) ^= 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

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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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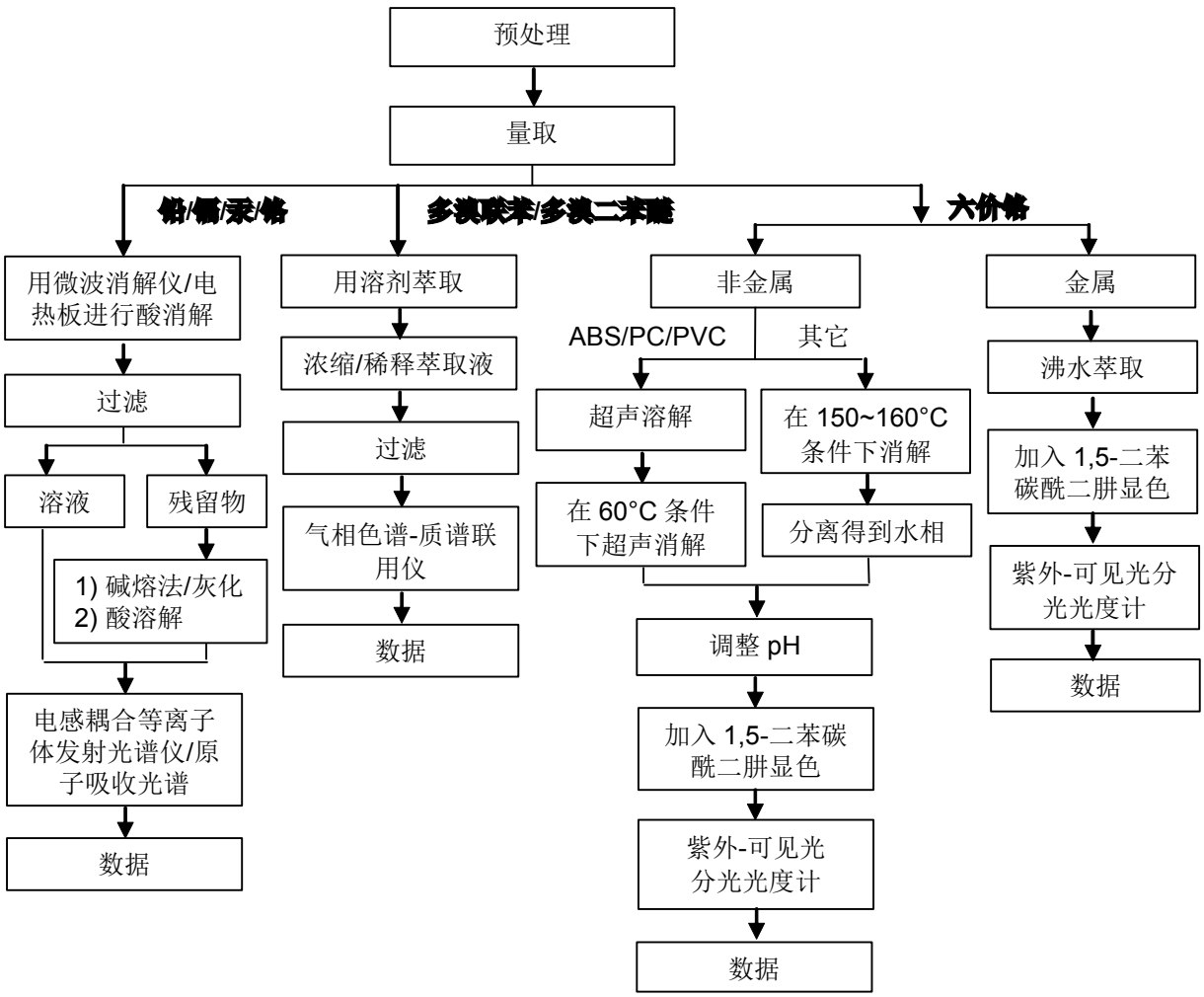
Pb/Cd/Hg/Cr^{6+}/PBBs/PBDEs 测试流程图

1) 分析人员：金叶/徐刚/杨小龙 /宋珂静
2) 项目负责人：施青/马永存/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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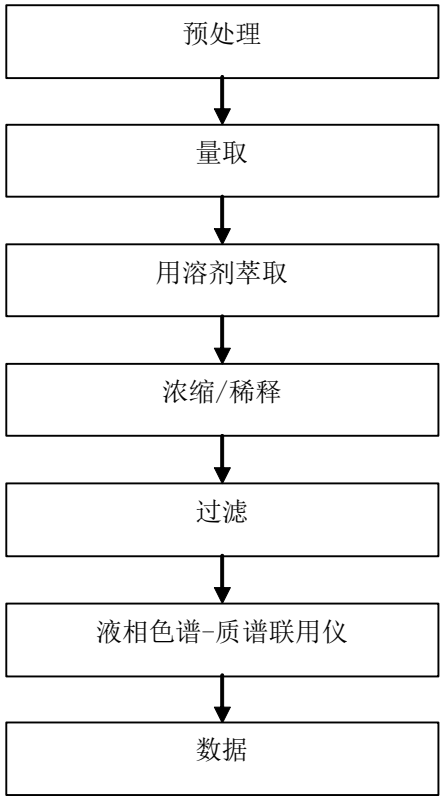
PFOS/PFOA 测试流程图

1) 分析人员: 杨占君
2) 项目负责人: 李晓茹



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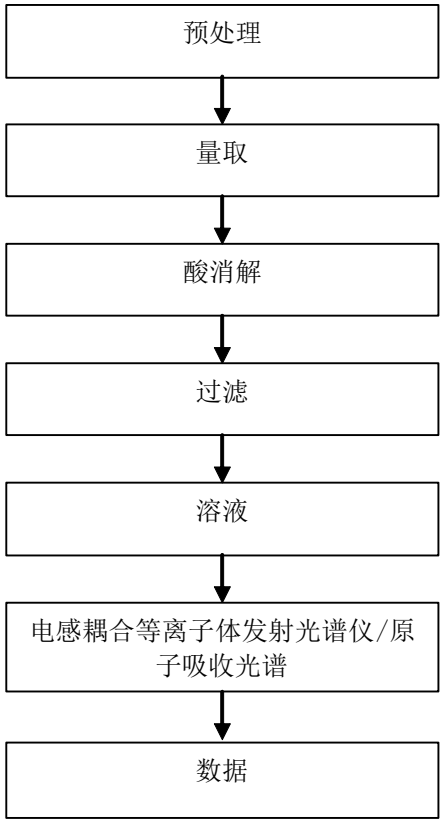
元素测试流程图

1) 分析人员: 金叶/ 宋珂静
2) 项目负责人: 徐亮/施青



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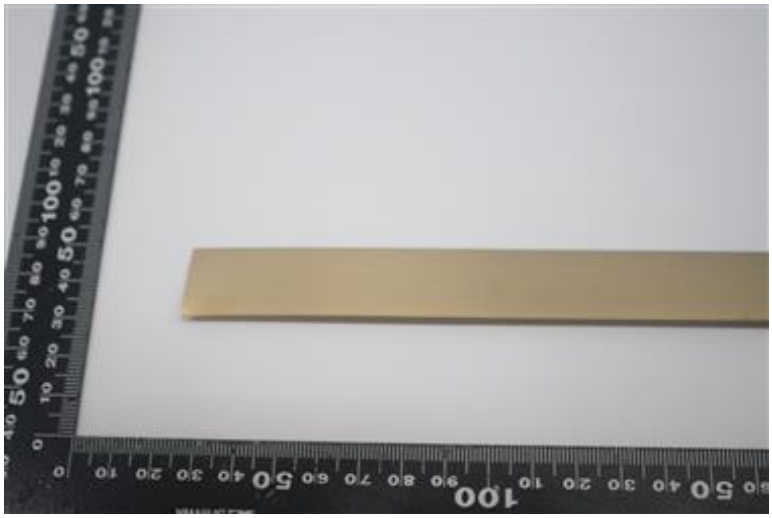

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