

Specification For Approval

Date: 2013 / 08 / 13

File No.: 1308130010

Version: 1.0

Customer : 盛達電業股份有限公司

Customer P/N : /

INVAX P/N : IVX0053-B35BX

Description : Antenna

Cortec Checked By:

R@D Dept
2013.08.13
Jack

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
<http://www.invaxsystem.com>



Cortec Technology Inc.
Xian-Xi Industrial, Sha-Tou Administration Zone,
Chang-An Town, Dong-Guan City, Guangdong
Province, China

TEL:86-769-85388261 FAX:86-769-85317869
<http://www.cortec.com.cn>

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Product Number: IVX0053-B35BX

Product Name: Antenna



1. Revision History

Revision	Date	Change Notification	Description
1.0	2013.08.13		

Product Number: IVX0053-B35BX

Product Name: Antenna



2. Specification

Sample Photo	
	
A. Electrical Characteristics	
Frequency	2400 ~ 2500 MHz
S.W.R.	≤ 2.0
Return Loss	$< -10\text{dB}$
Antenna Gain	$2.0 \pm 0.7\text{dBi}$
Efficiency	50%
Polarization	Linear
Impedance	50 Ohm
B. Material & Mechanical Characteristics	
Material of Radiator	PCB
Cable Type	O.D. 1.13 mm
Connector Type	Mini Connector
Connector Pull Test	$\geq 1\text{ Kg}$
C. Environmental	
Operation Temperature	$-40\text{ }^{\circ}\text{C} \sim +65\text{ }^{\circ}\text{C}$
Storage Temperature	$-40\text{ }^{\circ}\text{C} \sim +80\text{ }^{\circ}\text{C}$

Product Number: IVX0053-B35BX

Product Name: Antenna



3. Characteristics and Reliability Test

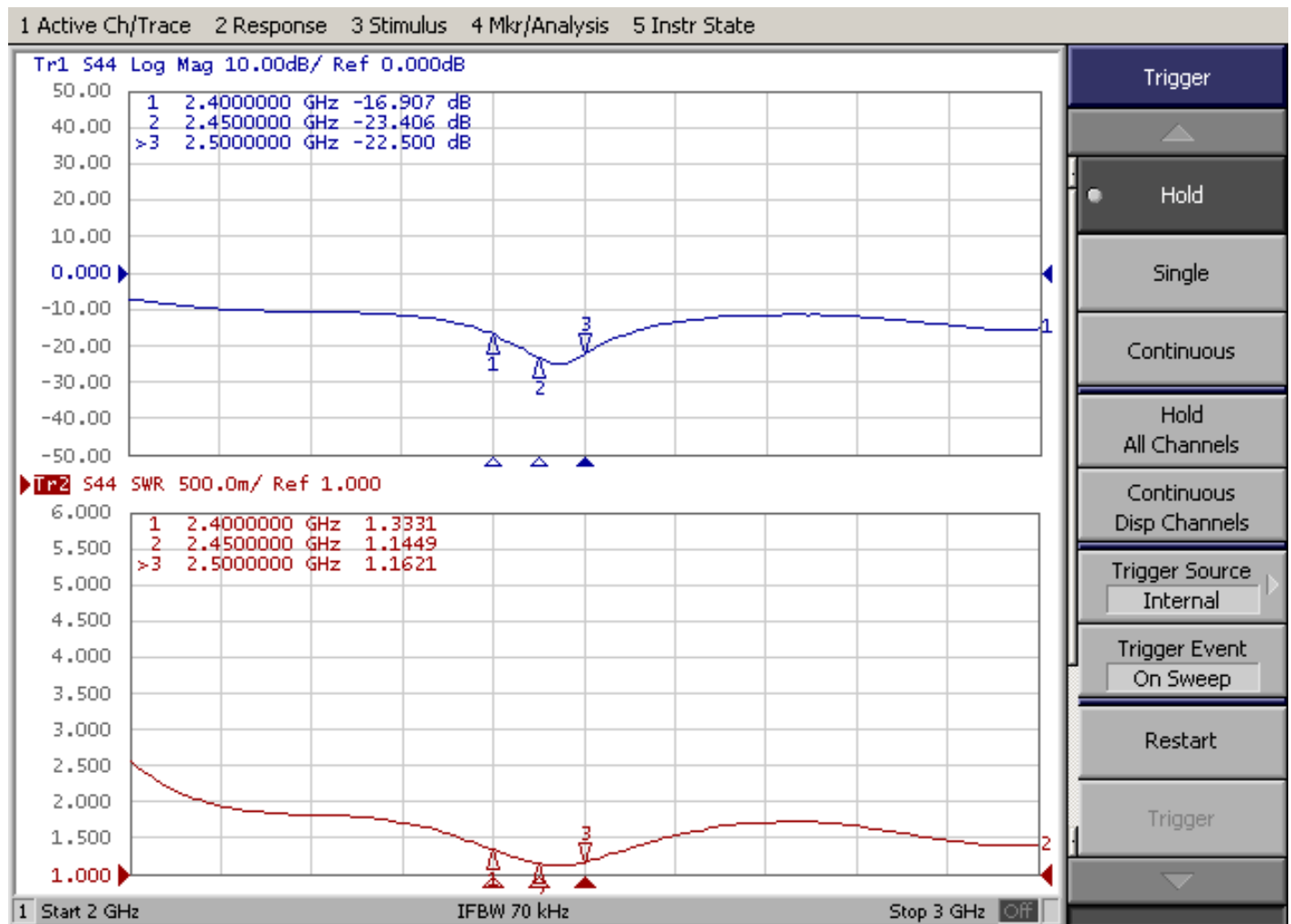
Test Items		Test Condition and Procedure	Requirements
C1	S.W.R.	Set DUT on Network Analyzer; make individual calibration to test	Directive DUT specification
C2	Antenna Gain	Set DUT on Antenna Chamber; make individual calibration to test	Directive DUT specification
M1	Vibration	GB / T2423 . 48-1997 Amplitude: 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: IVX0053-B35BX

Product Name: Antenna



4. Antenna - S Parameter Test Data

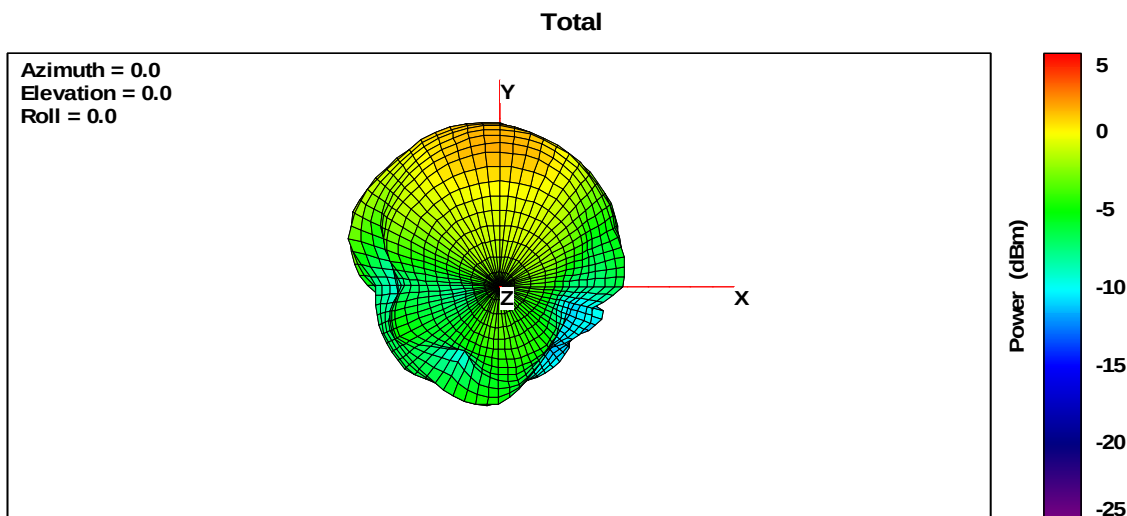


Product Number: IVX0053-B35BX

Product Name: Antenna



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	-4.27246	1.74643	6.01889	-3.27246	48.3899	1.74643
	2420	0	-3.9997	1.96812	5.96782	-2.9997	51.8135	1.96812
	2440	0	-4.25046	1.5296	5.78006	-3.15046	48.5797	2.1296
	2460	0	-4.34411	1.32026	5.66437	-2.84411	52.778	2.02026
	2480	0	-4.74339	0.945859	5.68925	-2.74339	53.5476	1.945859
	2500	0	-5.20315	0.763499	5.96665	-3.20315	48.4776	2.363499

6. Mechanical Drawing

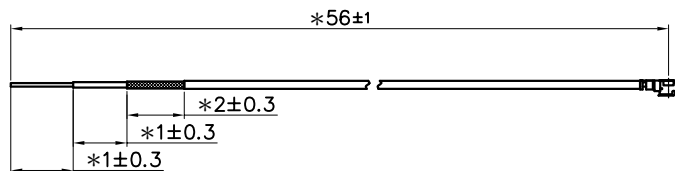
See attached files

7. Material Description and RoHS Test Report

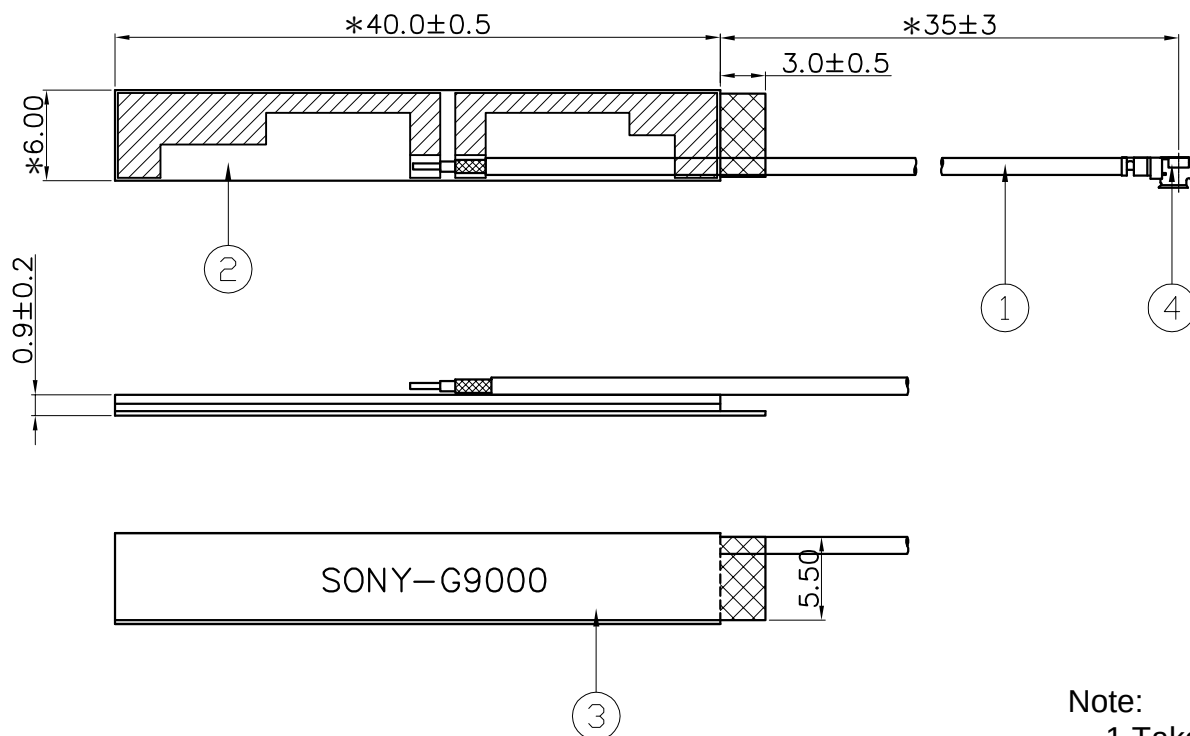
See attached files

RoHS

Compatible



SIGN	DATE	DESCRIPTION	APPROVER
△			
△			
△			



Note:

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

4	CI-113	Connector	Cu	I-pex connector	1
3	HF-GS-IVX0053-A	Adhesive	SONY-G9000	40*5.5mm	1
2	IVX0053-B01	PCB	FR4	Green T=0.6mm	1
1	R-CB-113B	Coaxial Cable	OD1.13	Black	1
No.	Part Number	Name	Material	Finish	Q'ty

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: Embedded Antenna

PART NO.: IVX0053-B35BX

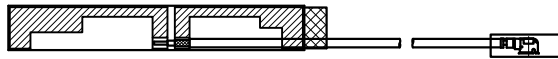
CUSTOMER P/N: /

APP BY	CHK BY	RF BY	DES BY		Tolerance
Grant	Jack	SiFei	Seagold	UNITS: mm	X.X ±0.3
2013/04/18	2013/04/18	2013/04/18	2013/04/18	SCALE: 2/1	X.XX ±0.2
				REVISION: A	X° ±1

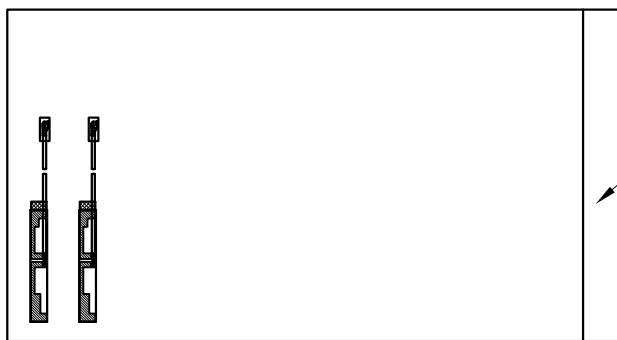
Date: 2013/08/13

Part Number : IVX0053-B35BX	Revision : A
Name: Embedded Antenna	Customer :

1. The Product

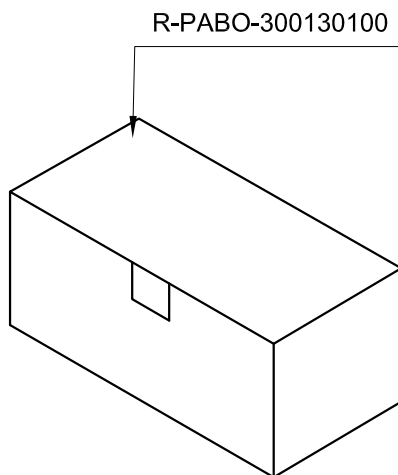


2. 50 PCS/per Bag



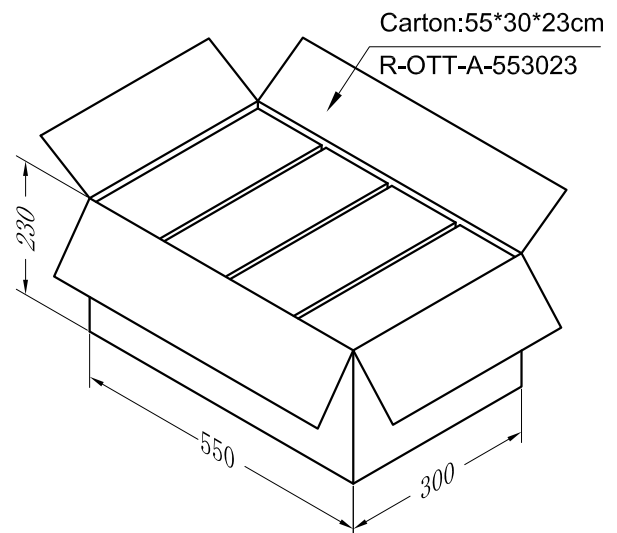
Bag:130*170*0.04mm

3. 1000 PCS/per Box



R-PABO-300130100

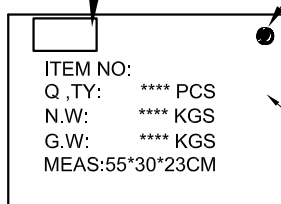
4. 8000 PCS/per Carton



Carton:55*30*23cm

R-OTT-A-553023

Carton Label



Green Label

Side Mark

ITEM NO:
Q, TY: **** PCS
N.W: **** KGS
G.W: **** KGS
MEAS:55*30*23CM



Case Mark

APPROVED BY : GrantCHECKED BY : JackDESIGNED BY : Seagold

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

COR/F-G-47a

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：IVX0053-B35BX

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	IVX0053-B01	PCB	FR4	N.D.	7	N.D.	N.D.	N.D.	N.D.	CANEC1210051902	2012.08.03	KB-6160	SGS
2	HF-GS-IVX0053-A	Adhesive	G9000	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	CE/2013/16248	2013.02.05	ADHESIVE	SGS
3	R-CB-113B	Cable	黑色色母	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	HKGEC1201335502	2012.11.16	FCM H-1372 BLACK	SGS
4			FEP	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	RLSHE001125120002C	2012.08.21	电线电缆料	CTI
5			鍍錫銅	N.D.	N.D.	N.D.	Negative	N.D.	N.D.	RLSHE001125120004C	2012.08.21	电线电缆料	CTI
6			鍍銀銅	N.D.	N.D.	N.D.	Negative	N.D.	N.D.	RLSHE001125120003C	2012.08.21	电线电缆料	CTI
7	CI-113	Mini Connector	PBT黑色	N.D	N.D	N.D	N.D	N.D	N.D	CE/2012/91068A	2012.09.17	MHFPLUGHOUSING	SGS
8			銅鍍金	N.D	17	N.D	Negative			CE/2013/10248	2013.01.10	MHFIIIRECE.GROUND	SGS
9			銅鍍金	N.D	21	N.D	Negative			CE/2013/13104	2013.01.18	MHFIIIRECE.GROUND	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%

测试报告

No. CANEC1210051902

日期: 2012年08月03日

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建滔积层板控股有限公司

香港新界沙田香港科学园第二期科技大道东十二号海滨大楼一座二楼

以下测试之样品是由申请者所提供及确认: KB-6160

SGS工作编号: CP12-036076 - GZ

测试样品信息: KB-6160

客户参考信息: KB-6060, KB-6160A/6060A, KB-6160C/6060C, KB-6150/6050, KB-6150C/6050C

样品接收日期: 2012年07月26日

测试周期: 2012年07月26日 - 2012年08月01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

授权签名



Almay Gao高志梅

批准签署人

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测试报告

No. CANEC1210051902

日期: 2012年08月03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
1	CAN12-100519.001	黄色片1#

备注:

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

元素分析和阻燃剂

测试方法: 参考IEC 62321:2008:

- (1) 用ICP-OES测定镉的含量
- (2) 用ICP-OES测定铅的含量
- (3) 用ICP-OES测定汞的含量
- (4) 用紫外-可见分光光度计比色法测定六价铬的含量
- (5) 用GC-MS测定PBBs(多溴联苯)和PBDEs(多溴二苯醚)的含量

测试项目	单位	MDL	001
镉 (Cd)	mg/kg	2	ND
铅 (Pb)	mg/kg	2	7
汞 (Hg)	mg/kg	2	ND
六价铬(Cr(VI))	mg/kg	2	ND
多溴联苯之和(PBBs)	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)	mg/kg	-	ND
一溴二苯醚	mg/kg	5	ND

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测试报告

No. CANEC1210051902

日期: 2012年08月03日

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测试项目	单位	MDL	001
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

有机锡

测试方法: 参照ISO 17353: 2004方法测定, 采用GC-MS进行分析.

测试项目	单位	MDL	001
二丁基锡(DBT)	mg/kg	0.02	ND
三丁基锡(TBT)	mg/kg	0.02	ND
二辛基锡(DOT)	mg/kg	0.02	ND
三苯基锡(TPhT)	mg/kg	0.02	ND

多环芳香烃(PAHs)

测试方法: 参照ZEK 01.4-08及其后续指令, 采用 GC-MS进行分析.

测试项目	单位	MDL	001
萘 (NAP)	mg/kg	0.2	ND
苊烯(ANY)	mg/kg	0.2	ND
苊(萘嵌戊烷) (ANA)	mg/kg	0.2	ND
芴 (FLU)	mg/kg	0.2	ND
菲 (PHE)	mg/kg	0.2	ND
蒽 (ANT)	mg/kg	0.2	ND

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日期: 2012年08月03日

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测试项目	单位	MDL	001
荧蒽 (FLT)	mg/kg	0.2	ND
芘 (PYR)	mg/kg	0.2	ND
苯并(a)蒽 (BaA)	mg/kg	0.2	ND
屈 (CHR)	mg/kg	0.2	ND
苯并(b)荧蒽 (BbF)和苯并(j)荧蒽 (BjF)	mg/kg	0.4	ND
苯并(k)荧蒽 (BkF)	mg/kg	0.2	ND
苯并(e)芘 (BeP)	mg/kg	0.2	ND
苯并(a)芘 (BaP)	mg/kg	0.2	ND
茚并(1,2,3-c,d)芘 (IPY)	mg/kg	0.2	ND
二苯并(a,h)蒽(DBA)	mg/kg	0.2	ND
苯并(g,h,i)芘(二苯并(a,h)芘) (BPE)	mg/kg	0.2	ND
18项多环芳香烃总和	mg/kg	-	ND

ZEK 01.4-08:产品最大控制值

参数	1 类	2 类	3 类
	设计意图为放入口中的材料,以及 36 个月以下幼儿的玩具上与皮肤接触的材料	未在 1 类规定中涵盖的材料,且可能与皮肤长期接触的材料(接触时间大于 30 秒)	未在 1 和 2 类规定中涵盖的材料,且可能与皮肤短期接触的材料(接触时间小于等于 30 秒)
BaP 含量 (mg/kg)	< 0.2**	1	20
18 种 PAH 总量 (mg/kg)*	< 0.2**	10	200

备注:

* =仅物质浓度大于 0.2ppm 时才用于计算 18 项 PAHs 总量

**=若设计意图为放入口中的材料的测试结果大于 1 类限值但不超过 2 类限值,需再依据 DIN EN 1186ff 及 §64 LFGB 80.30-1 进行 PAH 的迁移性测试并根据相关食品法规进行判定。

甲醛

测试方法: SGS内部方法 (GZTC CHEM-TOP-059-03), 用紫外-可见分光光度计分析。

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测试报告

No. CANEC1210051902

日期: 2012年08月03日

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测试项目

甲醛

单位

g/kg

MDL

0.02

001

ND

六溴环十二烷(HBCDD)

测试方法: 参考IEC 62321:2008, 用GC-MS分析。

测试项目

六溴环十二烷(HBCDD)

单位

mg/kg

MDL

10

001

ND

备注:

(1) 参考信息: RoHS指令2002/95/EC的重订指令2011/65/EU:

六溴环十二烷(HBCDD) 被列为需优先进行风险评估和考虑进行限制的物质。

四溴双酚-A

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

四溴双酚-A

单位

mg/kg

MDL

10

001

ND

邻苯二甲酸盐(或酯)

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

测试项目

邻苯二甲酸二丁酯 (DBP)

单位

%(w/w)

MDL

0.003

001

ND

邻苯二甲酸丁酯苄酯 (BBP)

%(w/w)

0.003

ND

邻苯二甲酸二(2-乙基己基) (DEHP)

%(w/w)

0.003

ND

邻苯二甲酸二异壬酯 (DINP)

%(w/w)

0.010

ND

邻苯二甲酸二正辛酯 (DNOP)

%(w/w)

0.003

ND

邻苯二甲酸二异癸酯 (DIDP)

%(w/w)

0.010

ND

邻苯二甲酸二甲酯 (DMP)

%(w/w)

0.003

ND

邻苯二甲酸二乙酯 (DEP)

%(w/w)

0.003

ND

邻苯二甲酸二异丁酯 (DIBP)

%(w/w)

0.003

ND

邻苯二甲酸二壬酯 (DNP)

%(w/w)

0.003

ND

邻苯二甲酸二异辛酯 (DiOP)

%(w/w)

0.010

ND

邻苯二甲酸二丙酯 (DPrP)

%(w/w)

0.003

ND

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测试报告

No. CANEC1210051902

日期: 2012年08月03日

第6页,共13页

测试项目	单位	MDL	001
邻苯二甲酸二环己酯(DCHP)	%(w/w)	0.003	ND
邻苯二甲酸二戊酯 (DPP)	%(w/w)	0.003	ND
邻苯二甲酸二苄酯 (DBzP)	%(w/w)	0.003	ND
邻苯二甲酸二苯酯 (DPhP)	%(w/w)	0.003	ND
邻苯二甲酸二正己酯(DnHP)	%(w/w)	0.003	ND

备注:

(1) 参考信息: RoHS指令2002/95/EC的重订指令2011/65/EU:

邻苯二甲酸二(2-乙基己基)酯(DEHP), 邻苯二甲酸丁酯苄酯(BBP)和邻苯二甲酸二丁酯(DBP) 被列为需优先进行风险评估和考虑进行限制的物质。

全氟辛烷磺酰基化合物(PFOS)和全氟辛酸(PFOA)

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

测试项目	单位	MDL	001
全氟辛烷磺酰基化合物 (PFOS)- 酸,金属盐和酰胺	mg/kg	10	ND
全氟辛酸 (PFOA)	mg/kg	10	ND

备注:

参考: (EC) No 850/2004 补充指令 (EU) No 757/2010的要求:

(1) 第4章 (1) (b) 款适用于PFOS浓度等于或低于10mg/kg (0.001%重量比) 的物质或配制品。

(2) 第4章 (1) (b) 款适用于PFOS浓度低于0.1% (重量比) 的半成品, 成品或者它们的部件, 以含有PFOS的结构或特殊部件的局部结构计算, 对于纺织品和其它涂层材料, PFOS的量低于1µg/m²。

苯并三唑类紫外吸收剂

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

测试项目	单位	MDL	001
2-(2'-羟基-3',5'-二叔丁基苯基)-苯并三唑(CAS No: 3846-71-7)	mg/kg	5	ND
2-(2'-羟基-3',5'-二叔丁基苯基)-5-氯代苯并三唑(CAS No: 3864-99-1)	mg/kg	5	ND
2-(2'-羟基-3',5'-二叔戊基苯基)苯并三唑(CAS No: 25973-55-1)	mg/kg	5	ND
2-(2'-羟基-3'-异丁基-5'-叔丁基苯基)苯并三唑(CAS No: 36437-37-3)	mg/kg	5	ND

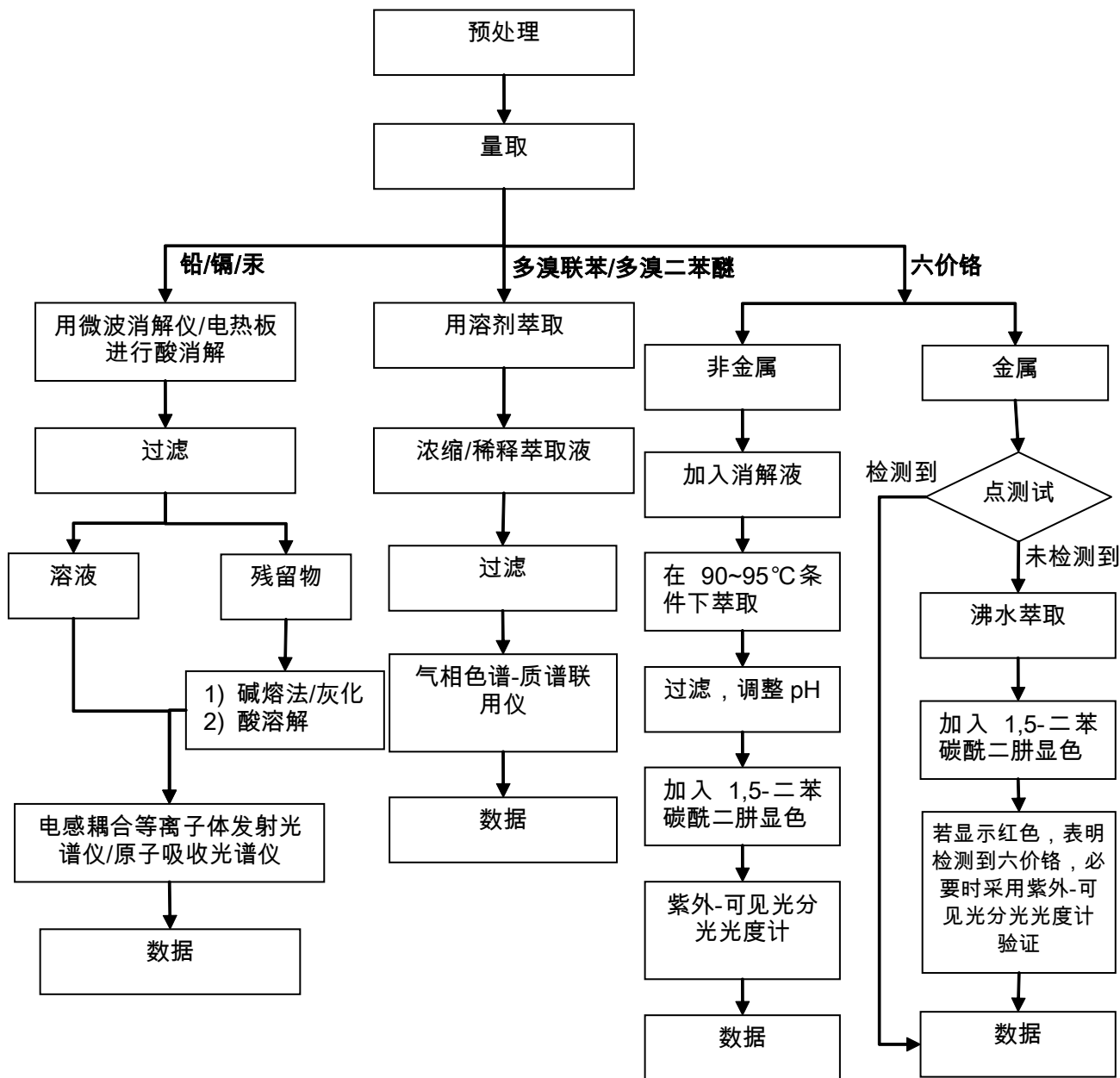
备注: 本测试报告内容是参照报告编号为CANEC1210051901的中文译本, 中英文版本如有歧异, 概以英文版为准。

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附件

RoHS 测试流程图

- 1) 分析人员: 汪丹 / 余晓璐
- 2) 项目负责人: 余奕东 / 杨伟兴
- 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)。

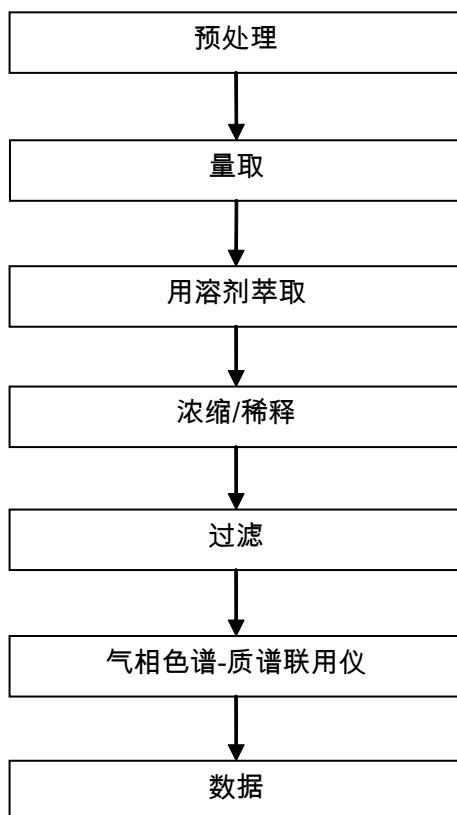


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附件

HBCDD 测试流程图

- 1) 分析人员：余晓璐
- 2) 项目负责人：杨伟兴

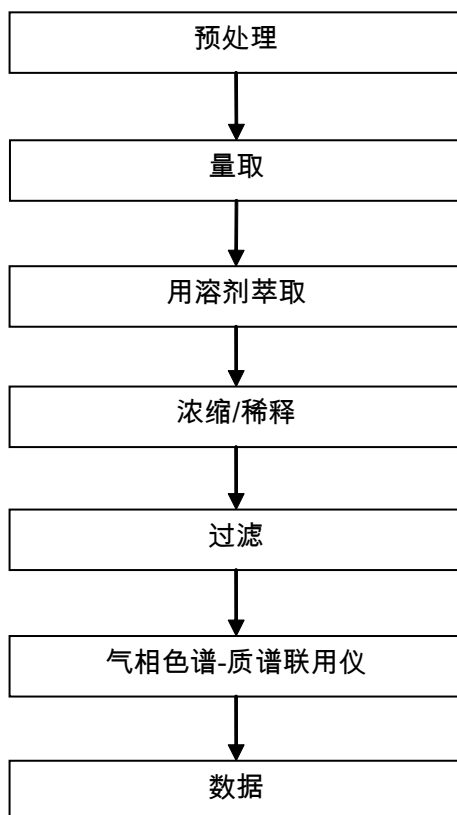


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附件

Phthalates 测试流程图

- 1) 分析人员：赵瑞娜
- 2) 项目负责人：杨伟兴

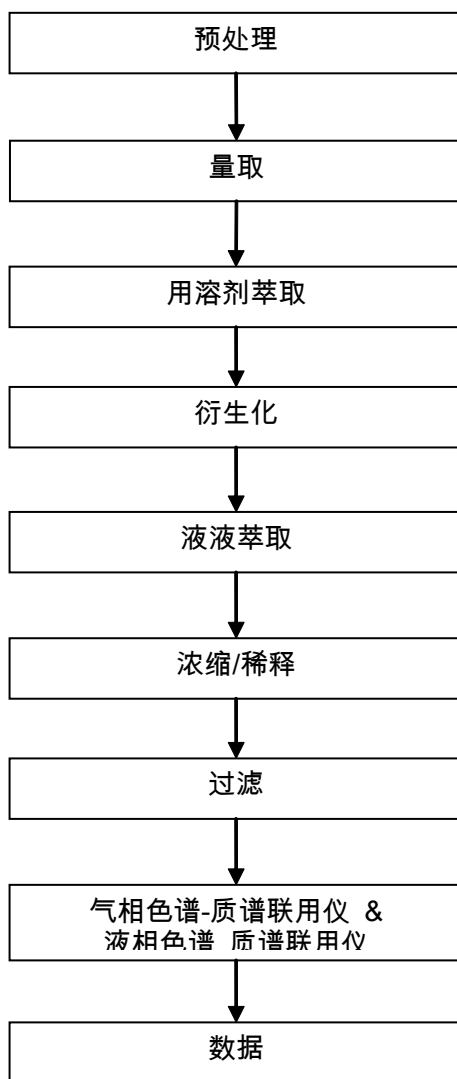


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附件

TBBP-A 测试流程图

- 1) 分析人员: 余晓璐
- 2) 项目负责人: 杨伟兴

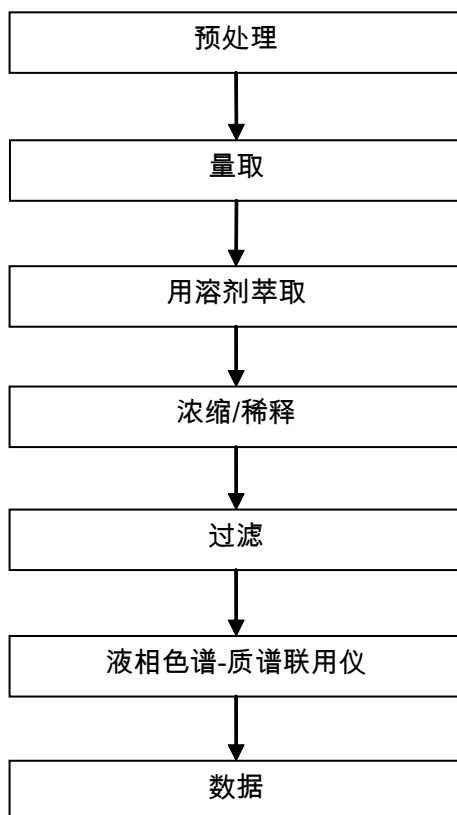


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附件

PFOA / PFOS 测试流程图

- 1) 分析人员: 黄少婵
- 2) 项目负责人: 杨伟兴

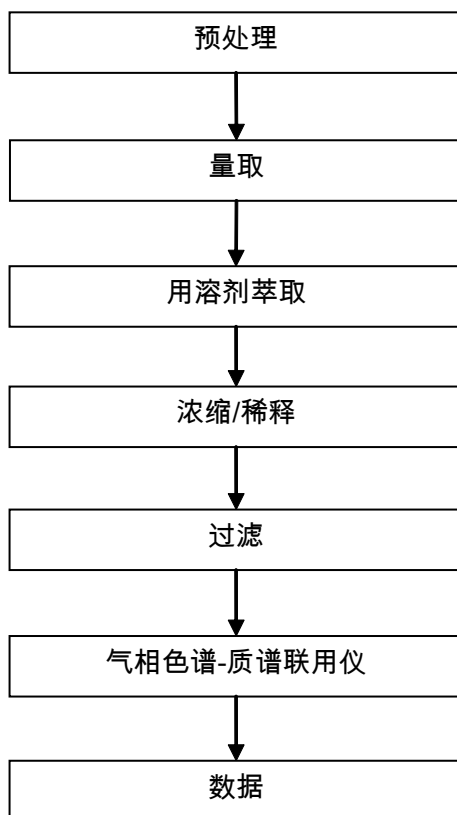


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附件

PAHs 测试流程图

- 1) 分析人员：余晓璐
- 2) 项目负责人：杨伟兴



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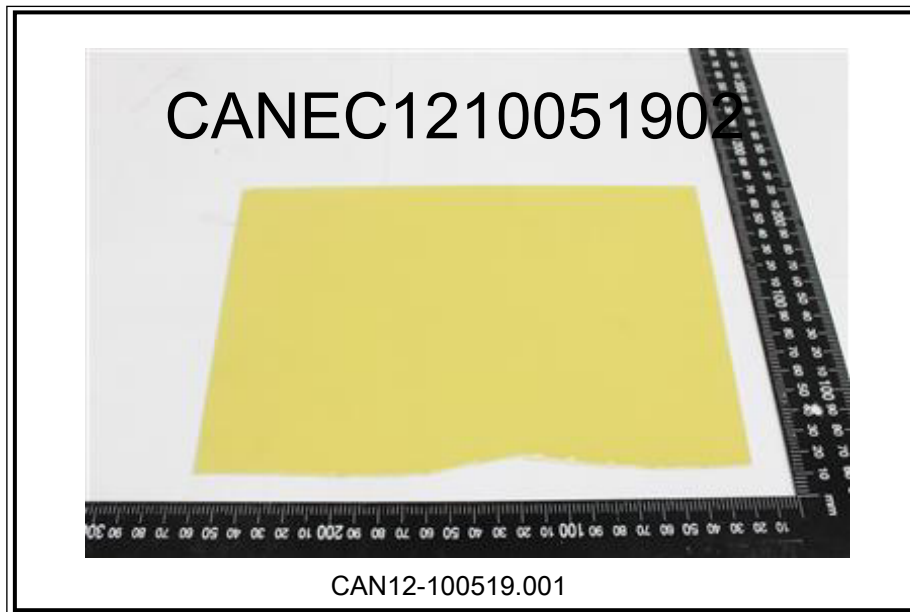
测试报告

No. CANEC1210051902

日期: 2012年08月03日

第13页,共13页

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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Test Report

No. : CE/2013/16248

Date : 2013/02/05

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DEXERIALS CORPORATION
8F, 1-11-2, OSAKI, SHINAGAWA-KU, TOKYO, 141-0032 JAPAN



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

Sample Description : ADHESIVE
Style/Item No. : G9000 SERIES(G9000, G9000 C, G9000-SY, G9000W, G9010, G9011, G9012)
The Testing Sample : G9000
Lot No : 2H10
Sample Receiving Date : 2013/01/29
Testing Period : 2013/01/29 TO 2013/02/05

Test Requested : (1) As specified by client, with reference to RoHS Directive 2011/65/EU Annex II to determine Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs contents in the submitted sample.
(2) As specified by client, to test Halogen-Fluorine, Chlorine, Bromine, Iodine contents in the submitted sample.

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

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


Chenyu Kung / Operation Manager
Signed for and on behalf of
SGS TAIWAN LTD.
Chemical Laboratory – Taipei

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DEXERIALS CORPORATION
8F, 1-11-2, OSAKI, SHINAGAWA-KU, TOKYO, 141-0032 JAPAN



Test Result(s)

PART NAME No.1 : SEMI-TRANSPARENT DOUBLE SIDED ADHESIVE (EXCLUDING THE RELEASE LINER)

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	n.d.
Mercury (Hg)	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.
Hexavalent Chromium Cr(VI)	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			-	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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DEXERIALS CORPORATION
8F, 1-11-2, OSAKI, SHINAGAWA-KU, TOKYO, 141-0032 JAPAN



Test Item(s)	Unit	Method	MDL	Result
				No.1
Halogen				
Halogen-Fluorine (F) (CAS No.: 14762-94-8)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC.	50	n.d.
Halogen-Chlorine (Cl) (CAS No.: 22537-15-1)			50	n.d.
Halogen-Bromine (Br) (CAS No.: 10097-32-2)			50	n.d.
Halogen-Iodine (I) (CAS No.: 14362-44-8)			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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Test Report

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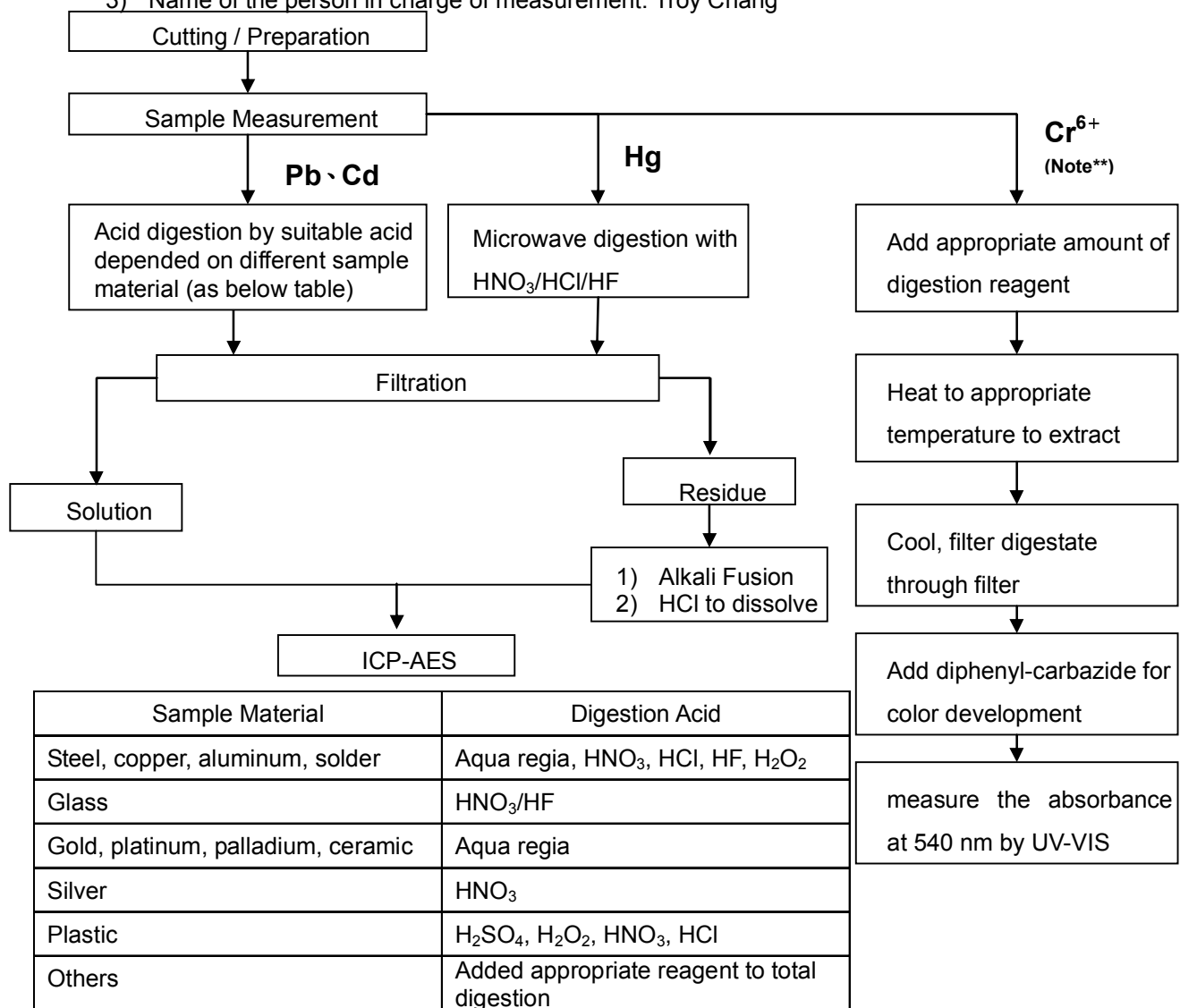
Page: 4 of 7

DEXERIALS CORPORATION

8F, 1-11-2, OSAKI, SHINAGAWA-KU, TOKYO, 141-0032 JAPAN



- 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: Climbgreat Yang
- 3) Name of the person in charge of measurement: Troy 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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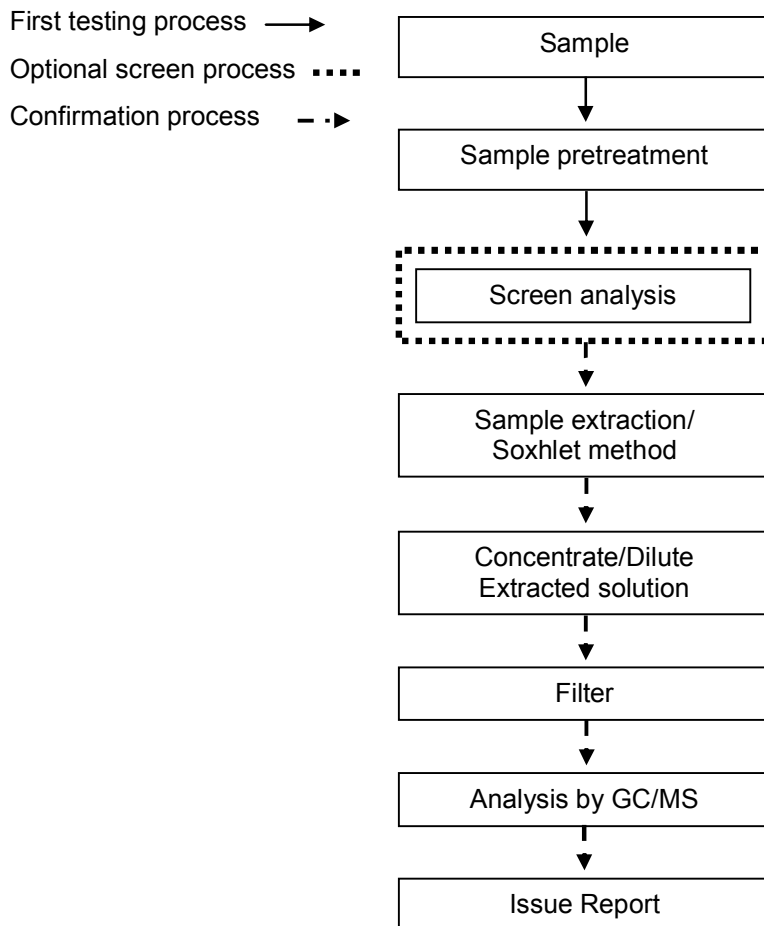
DEXERIALS CORPORATION

8F, 1-11-2, OSAKI, SHINAGAWA-KU, TOKYO, 141-0032 JAPAN



PBB/PBDE analytical FLOW CHART

- Name of the person who made measurement: Roman Wong
- Name of the person in charge of measurement: Troy Chang



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Date : 2013/02/05

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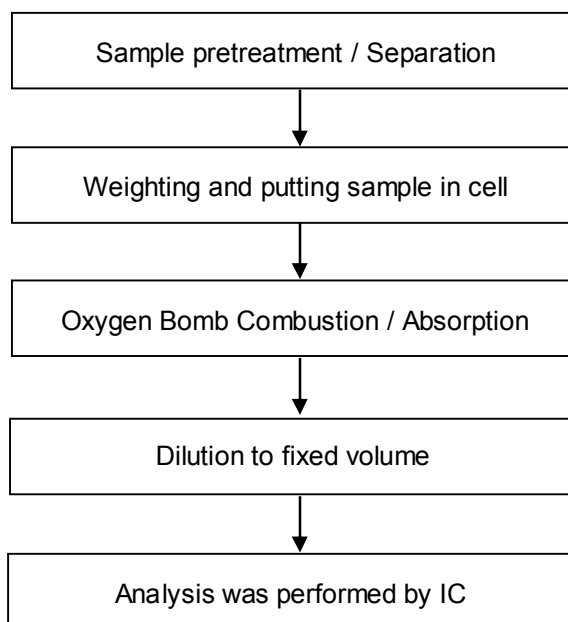
DEXERIALS CORPORATION

8F, 1-11-2, OSAKI, SHINAGAWA-KU, TOKYO, 141-0032 JAPAN



Analytical flow chart of halogen content

- 1) Name of the person who made measurement: Rita Chen
- 2) Name of the person in charge of measurement: Troy Chang



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Test Report

No. : CE/2013/16248

Date : 2013/02/05

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DEXERIALS CORPORATION

8F, 1-11-2, OSAKI, SHINAGAWA-KU, TOKYO, 141-0032 JAPAN



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

CE/2013/16248



** End of Report **

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Test Report

No. HKGEC1201335502

Date: 16 Nov 2012

Page 1 of 6

DAINICHISEIKA COLOR & CHEMICALS MFG. CO., LTD.

7-6, BAKUROCHO 1-CHOME, NIHONBASHI

CHUO-KU

TOKYO 103-8383

JAPAN

The following sample(s) was/were submitted and identified on behalf of the clients as : FCM H-1372 BLACK (LOT: 80H1450)

SGS Job No. : 1986372 - HK

Supplier : DAINICHISEIKA COLOR & CHEMICAL MFG.CO., LTD.

Manufacturer : DAINICHISEIKA COLOR & CHEMICAL MFG.CO., LTD.

Country of Origin : 日本, 上海

Date of Sample Received : 13 Nov 2012

Testing Period : 13 Nov 2012 - 16 Nov 2012

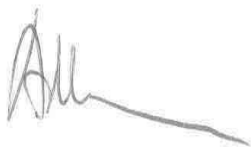
Test Requested : Selected test(s) as requested by client.

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 Hong Kong Limited.



Lam Ka Yung, Allen
Chemist

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Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Test Report

No. HKGEC1201335502

Date: 16 Nov 2012

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Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
1	HKG12-013355.002	Black Plastic 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/AAS.
- (2) Determination of Lead by ICP-OES/AAS.
- (3) Determination of Mercury by Hg Analyzer.
- (5) Determination of PBB / PBDE content by GC-MS.
- (4) Determination of Hexavalent Chromium by Colorimetric Method using UV-vis Spectrophotometer.

Test Item(s)	Limit	Unit	MDL	002
Cadmium (Cd)	100	mg/kg	5	ND
Lead (Pb)	1,000	mg/kg	5	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
Dibromodiphenyl ether	-	mg/kg	5	ND

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Test Report

No. HKGEC1201335502

Date: 16 Nov 2012

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<u>Test Item(s)</u>	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>002</u>
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 IC.

<u>Test Item(s)</u>	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>002</u>
Fluorine (F)	-	mg/kg	50	130000
Chlorine (Cl)	-	mg/kg	50	ND
Bromine (Br)	-	mg/kg	50	ND
Iodine (I)	-	mg/kg	50	ND

Phthalates

Test Method : In house method based on EN 14372: 2004, analysis was performed by GC-MS after solvent extraction

<u>Test Item(s)</u>	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>002</u>
Dibutyl Phthalate (DBP)	-	%	0.003	ND
Benzylbutyl Phthalate (BBP)	-	%	0.003	ND
Bis-(2-ethylhexyl) Phthalate (DEHP)	-	%	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.

Hexabromocyclododecane (HBCDD)

Test Method : With reference to IEC 62321:2008, analysis was performed by GC-MS.

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Test Report

No. HKGEC1201335502

Date: 16 Nov 2012

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<u>Test Item(s)</u>	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>002</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.

PFOS (Perfluorooctane Sulfonates) and PFOA (Perfluorooctanoic Acid)

Test Method : With reference to In-house method (CTS-SL-219-3). Analysis was performed by HPLC-MS.

<u>Test Item(s)</u>	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>002</u>
Perfluorooctane Sulfonates (PFOS) and related Acid, Metal Salt and Amide	-	mg/kg	10	ND
Perfluorooctyl Acid (PFOA)	-	mg/kg	10	ND

Notes :

PFOS Reference information: Commission Regulation (EU) No. 757/2010 amending Annexes I and III of Regulation (EC) No. 850/2004 (previously restricted under Annex XVII to REACH Regulation (EC) No. 1907/2006).

(i) For the purposes of this entry, Article 4(1)(b) shall apply to concentrations of PFOS equal to or below 10 mg/kg (0,001 % by weight) when it occurs in substances or in preparations.

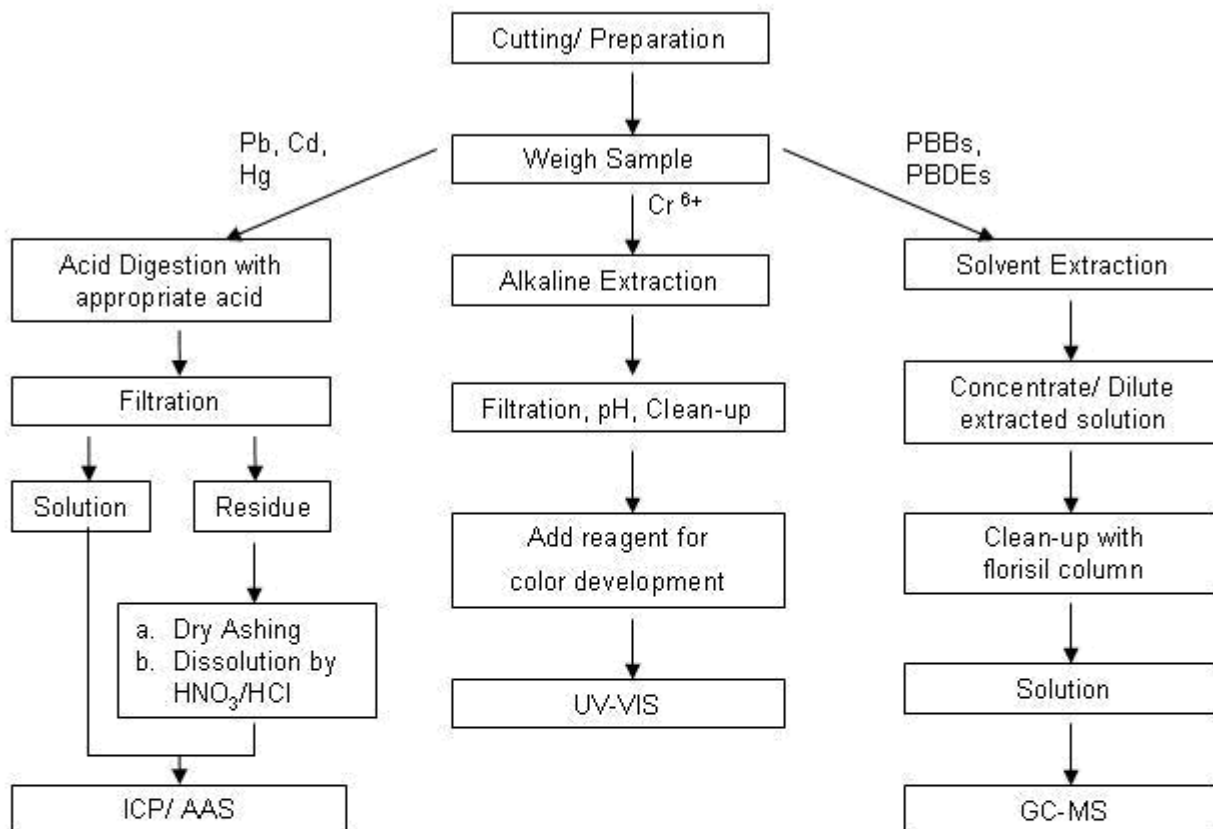
(ii) For the purposes of this entry, Article 4(1)(b) shall apply to concentrations of PFOS in semi-finished products or articles, or parts thereof, if the concentration of PFOS is lower than 0,1 % by weight calculated with reference to the mass of structurally or micro-structurally distinct parts that contain PFOS or, for textiles or other coated materials, if the amount of PFOS is lower than 1 µg/m² of the coated material.

Please refer to Commission Regulation (EU) 757/2010 and Regulation (EC) No. 850/2004 to get more detailed information

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Flowchart:



- Note : 1) Boiling water test method was also performed for the analysis of Cr (VI) in metal sample.
 2) The polymeric samples were dissolved totally by pre-conditioning method according to above flow chart for Cd, Pb and Hg contents analysis.

Operator : Chiu Kan Yuen/ Tang Koon Pang (Acid digestion)
Chiu Kan Yuen (Dry Ashing)
Ho Pui Yu, Ivy (Hexavalent Chromium)
Lau Chung Yin, Eric (PBBs and PBDEs)

Section Chief : Chan Chun Kit, Dickson

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Test Report

No. HKGEC1201335502

Date: 16 Nov 2012

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Sample photo:



SGS authenticate the photo on original report only

*** End of Report ***

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检测报告

报告编号 RLSHE001125120002C

第 1 页 共 4 页

申请单位 苏州市华诺线缆科技有限公司

地 址 苏州市相城区太平镇太平大街

以下测试之样品及样品信息由申请者提供并确认

样品名称 电线电缆料

样品型号 FEP

样品接收日期 2012.08.17

样品检测日期 2012.08.17—2012.08.21

检测要求 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)),多溴联苯(PBBs),多溴二苯醚(PBDEs)进行测试。

检测依据

测试项目	测试方法	测试仪器	方法检测限
铅(Pb)	IEC 62321:2008 Ed.1 Sec.8	ICP-OES	2mg/kg
镉(Cd)	IEC 62321:2008 Ed.1 Sec.8	ICP-OES	2mg/kg
汞(Hg)	IEC 62321:2008 Ed.1 Sec.7	ICP-OES	2mg/kg
六价铬(Cr(VI))	IEC 62321:2008 Ed.1 Annex C	UV-Vis	2mg/kg
多溴联苯(PBBs)	IEC 62321:2008 Ed.1 Annex A	GC-MS	5mg/kg
多溴二苯醚(PBDEs)	IEC 62321:2008 Ed.1 Annex A	GC-MS	5mg/kg

检测结果 请参见下页。

主 检

陈利娟

批 准

苏红伟

苏红伟

实验室高级经理

审 核

钟伟

日 期

2012.08.21

No.83402154

深圳市华测检测技术股份有限公司上海分公司

上海市浦东新区新金桥路 1996 号

检测报告

报告编号 RLSHE001125120002C

第 2 页 共 4 页

检测结果

测试项目	含量
铅 (Pb)	N. D.
镉 (Cd)	N. D.
汞 (Hg)	N. D.
六价铬 (Cr (VI))	N. D.

测试项目	含量
多溴联苯 (PBBs)	
一溴联苯	N. D.
二溴联苯	N. D.
三溴联苯	N. D.
四溴联苯	N. D.
五溴联苯	N. D.
六溴联苯	N. D.
七溴联苯	N. D.
八溴联苯	N. D.
九溴联苯	N. D.
十溴联苯	N. D.

测试项目	含量
多溴二苯醚 (PBDEs)	
一溴二苯醚	N. D.
二溴二苯醚	N. D.
三溴二苯醚	N. D.
四溴二苯醚	N. D.
五溴二苯醚	N. D.
六溴二苯醚	N. D.
七溴二苯醚	N. D.
八溴二苯醚	N. D.
九溴二苯醚	N. D.
十溴二苯醚	N. D.

测试样品/部位描述 白色半透明塑料粒子

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

备注: 报告编号中“C”表示此报告为中文版本。

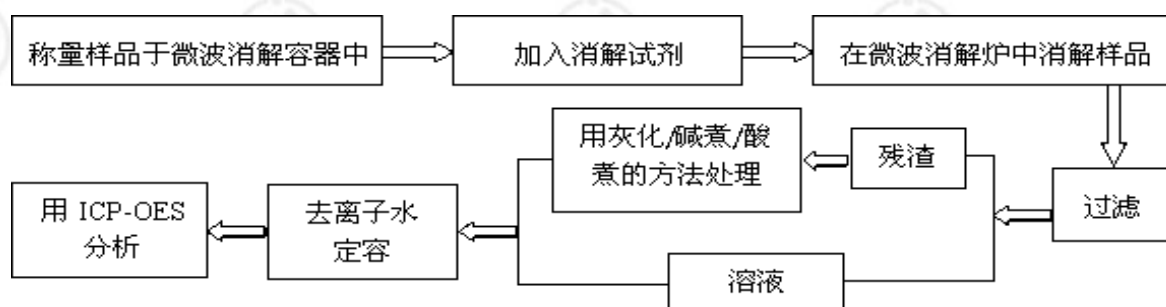
检测报告

报告编号 RLSHE001125120002C

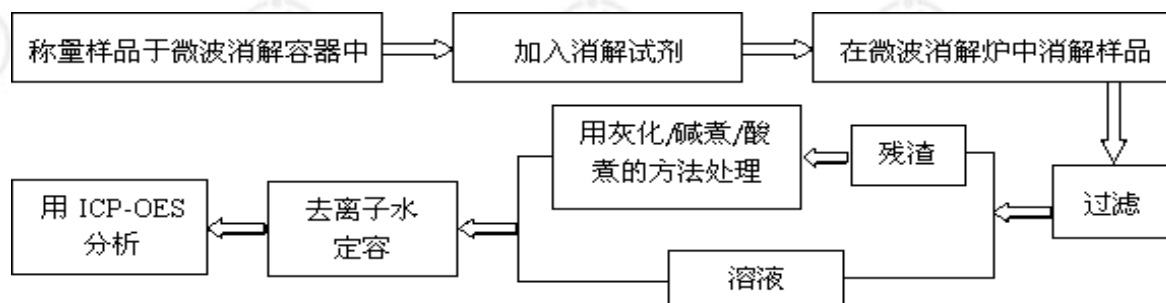
第 3 页 共 4 页

检测流程

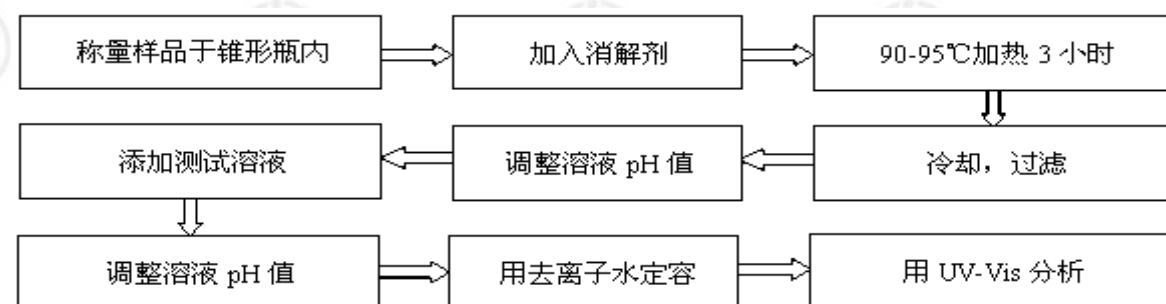
1. 铅(Pb), 镉(Cd)



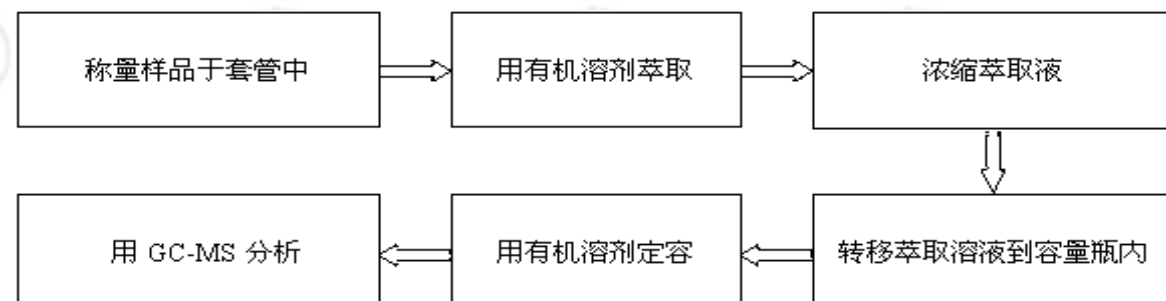
2. 汞(Hg)



3. 六价铬(Cr(VI))



4. 多溴联苯(PBBs), 多溴二苯醚(PBDEs)



检测报告

报告编号 RLSHE001125120002C

第 4 页 共 4 页

样品图片



报告结束

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检测报告

报告编号 RLSHE001125120004C

第 1 页 共 4 页

申请单位 苏州市华诺线缆科技有限公司

地 址 苏州市相城区太平镇太平大街

以下测试之样品及样品信息由申请者提供并确认

样品名称 电线电缆料

样品型号 镀锡铜丝

样品接收日期 2012.08.17

样品检测日期 2012.08.17—2012.08.21

检测要求 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)),多溴联苯(PBBs),多溴二苯醚(PBDEs)进行测试。

检测依据

测试项目	测试方法	测试仪器	方法检测限
铅(Pb)	IEC 62321:2008 Ed.1 Sec.9	ICP-OES	2mg/kg
镉(Cd)	IEC 62321:2008 Ed.1 Sec.9	ICP-OES	2mg/kg
汞(Hg)	IEC 62321:2008 Ed.1 Sec.7	ICP-OES	2mg/kg
六价铬(Cr(VI))	IEC 62321:2008 Ed.1 Annex B	UV-Vis	/
多溴联苯(PBBs)	IEC 62321:2008 Ed.1 Annex A	GC-MS	5mg/kg
多溴二苯醚(PBDEs)	IEC 62321:2008 Ed.1 Annex A	GC-MS	5mg/kg

检测结果 请参见下页。

主 检

陈利娟

批 准

苏红伟

苏红伟

实验室高级经理

深圳市华测检测技术股份有限公司上海分公司

审 核

钟伟

日 期

2012.08.21

No.83402154

上海市浦东新区新金桥路 1996 号

检测报告

报告编号 RLSHE001125120004C

第 2 页 共 4 页

检测结果

测试项目	含量
铅 (Pb)	N. D.
镉 (Cd)	N. D.
汞 (Hg)	N. D.
六价铬 (Cr (VI))	Negative

测试项目	含量
多溴联苯 (PBBs)	
一溴联苯	N. D.
二溴联苯	N. D.
三溴联苯	N. D.
四溴联苯	N. D.
五溴联苯	N. D.
六溴联苯	N. D.
七溴联苯	N. D.
八溴联苯	N. D.
九溴联苯	N. D.
十溴联苯	N. D.

测试项目	含量
多溴二苯醚 (PBDEs)	
一溴二苯醚	N. D.
二溴二苯醚	N. D.
三溴二苯醚	N. D.
四溴二苯醚	N. D.
五溴二苯醚	N. D.
六溴二苯醚	N. D.
七溴二苯醚	N. D.
八溴二苯醚	N. D.
九溴二苯醚	N. D.
十溴二苯醚	N. D.

测试样品/部位描述 有银色镀层的金属丝

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

-Negative表示阴性

 阴性=不含有六价铬, 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

备注: 报告编号中“C”表示此报告为中文版本。

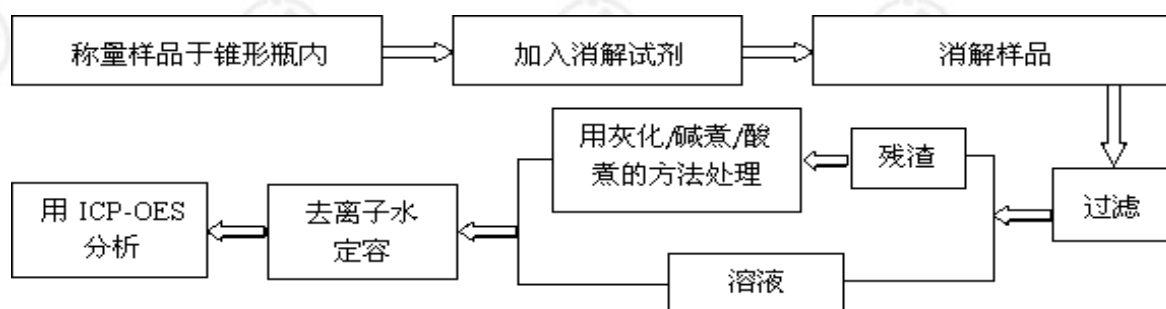
检测报告

报告编号 RLSHE001125120004C

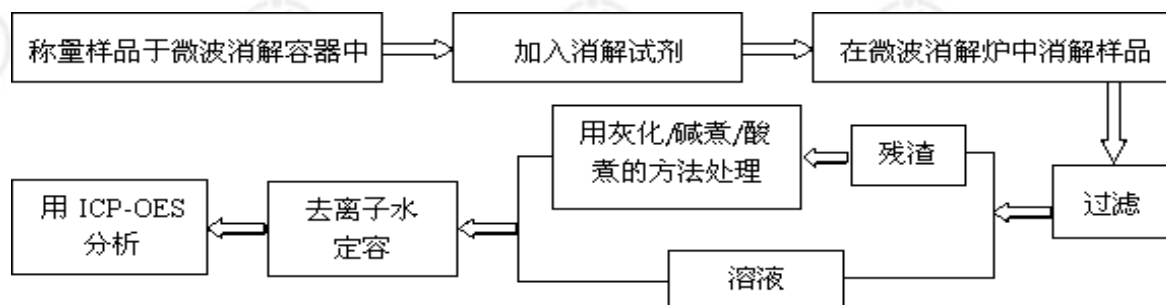
第 3 页 共 4 页

检测流程

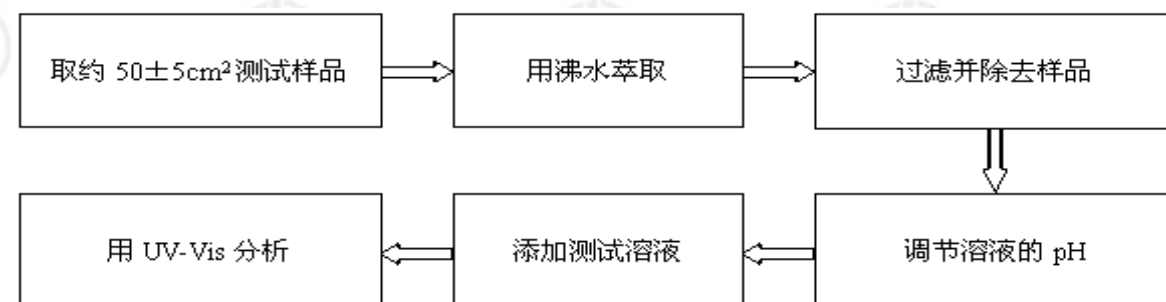
1. 铅(Pb), 镉(Cd)



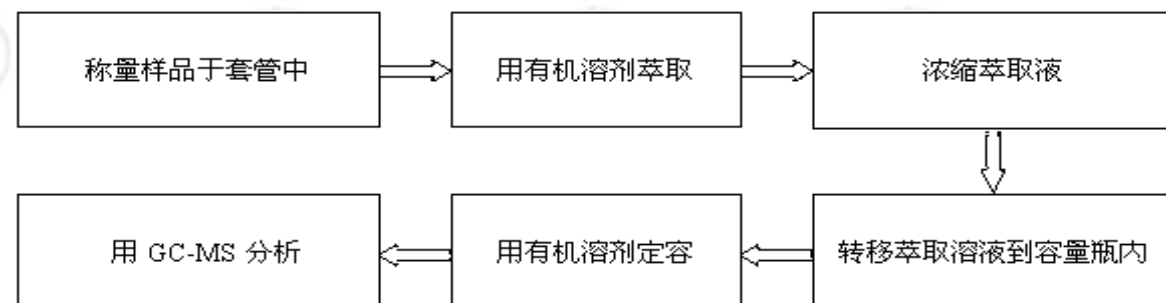
2. 汞(Hg)



3. 六价铬(Cr(VI))



4. 多溴联苯(PBBs), 多溴二苯醚(PBDEs)



检测报告

报告编号 RLSHE001125120004C

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样品图片



报告结束

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。

检测报告

报告编号 RLSHE001125120003C

第 1 页 共 4 页

申请单位 苏州市华诺线缆科技有限公司

地 址 苏州市相城区太平镇太平大街

以下测试之样品及样品信息由申请者提供并确认

样品名称 电线电缆料

样品型号 镀银铜丝

样品接收日期 2012.08.17

样品检测日期 2012.08.17—2012.08.21

检测要求 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)),多溴联苯(PBBs),多溴二苯醚(PBDEs)进行测试。

检测依据

测试项目	测试方法	测试仪器	方法检测限
铅(Pb)	IEC 62321:2008 Ed.1 Sec.9	ICP-OES	2mg/kg
镉(Cd)	IEC 62321:2008 Ed.1 Sec.9	ICP-OES	2mg/kg
汞(Hg)	IEC 62321:2008 Ed.1 Sec.7	ICP-OES	2mg/kg
六价铬(Cr(VI))	IEC 62321:2008 Ed.1 Annex B	UV-Vis	/
多溴联苯(PBBs)	IEC 62321:2008 Ed.1 Annex A	GC-MS	5mg/kg
多溴二苯醚(PBDEs)	IEC 62321:2008 Ed.1 Annex A	GC-MS	5mg/kg

检测结果 请参见下页。

主 检

陈利娟

批 准

苏红伟

苏红伟

实验室高级经理

深圳市华测检测技术股份有限公司上海分公司

审 核

钟伟

日 期

2012.08.21

No.83402154

上海市浦东新区新金桥路 1996 号

检测报告

报告编号 RLSHE001125120003C

第 2 页 共 4 页

检测结果

测试项目	含量
铅 (Pb)	N. D.
镉 (Cd)	N. D.
汞 (Hg)	N. D.
六价铬 (Cr (VI))	Negative

测试项目	含量
多溴联苯 (PBBs)	
一溴联苯	N. D.
二溴联苯	N. D.
三溴联苯	N. D.
四溴联苯	N. D.
五溴联苯	N. D.
六溴联苯	N. D.
七溴联苯	N. D.
八溴联苯	N. D.
九溴联苯	N. D.
十溴联苯	N. D.

测试项目	含量
多溴二苯醚 (PBDEs)	
一溴二苯醚	N. D.
二溴二苯醚	N. D.
三溴二苯醚	N. D.
四溴二苯醚	N. D.
五溴二苯醚	N. D.
六溴二苯醚	N. D.
七溴二苯醚	N. D.
八溴二苯醚	N. D.
九溴二苯醚	N. D.
十溴二苯醚	N. D.

测试样品/部位描述 有银白色镀层的金属丝

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

-Negative表示阴性

 阴性=不含有六价铬, 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

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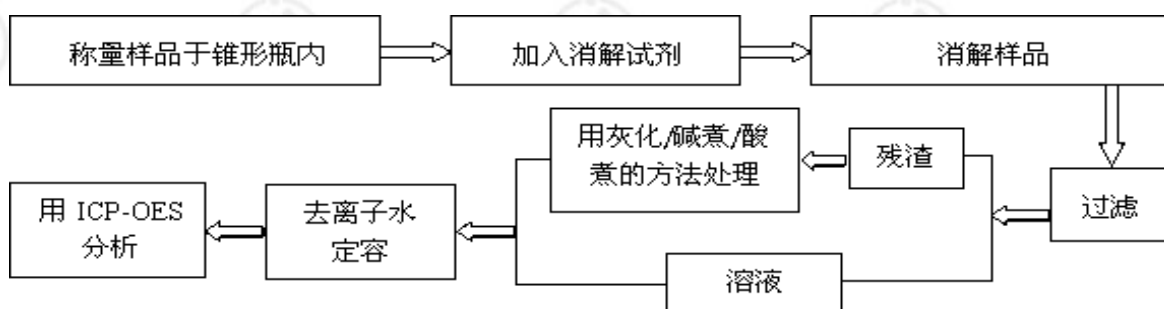
检测报告

报告编号 RLSHE001125120003C

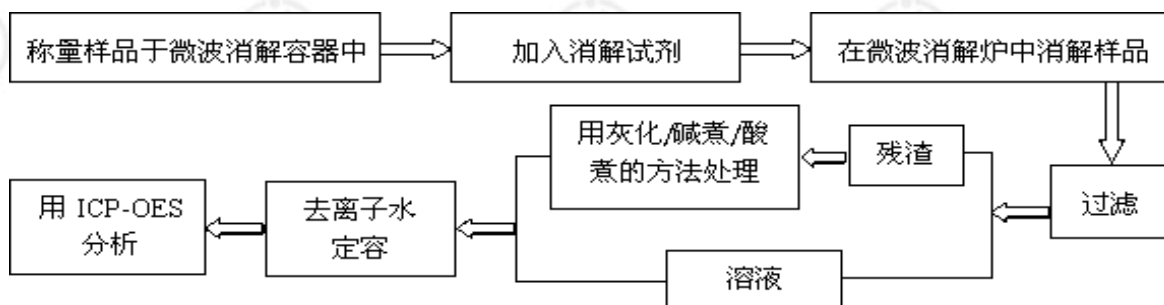
第 3 页 共 4 页

检测流程

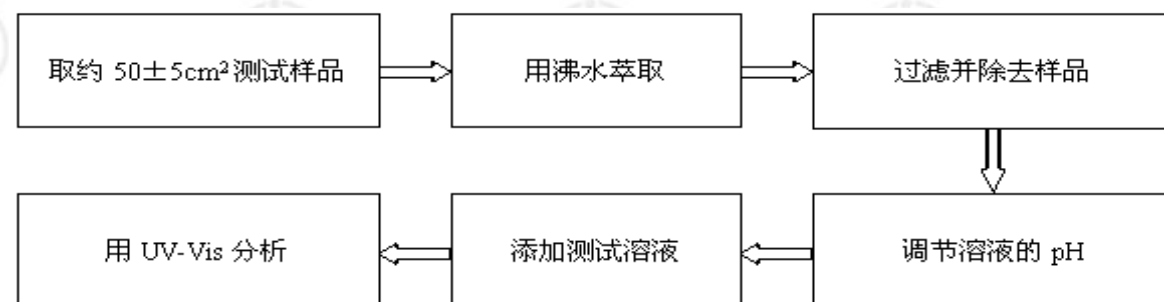
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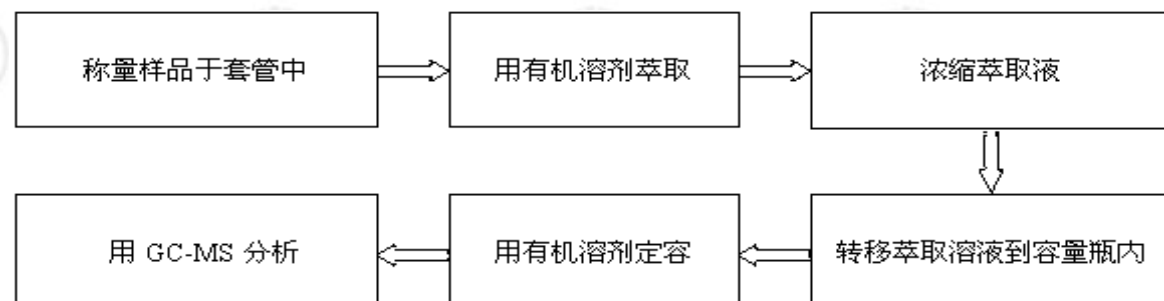
2. 汞(Hg)



3. 六价铬(Cr(VI))



4. 多溴联苯(PBBs), 多溴二苯醚(PBDEs)



检测报告

报告编号 RLSHE001125120003C

第 4 页 共 4 页

样品图片



报告结束

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Test Report

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DAI-ICHI SEIKO CO., LTD.

6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN



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

Sample Description : MHF PLUG HOUSING
 Style/Item No. : 1844-011-01
 Sample Receiving Date : 2012/09/06
 Testing Period : 2012/09/06 TO 2012/09/12 AND 2012/09/13 TO 2012/09/17

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

* This report is added testing and combined with CE/2012/91068 *


 Chenyu Kung / Operation Manager
 Signed for and on behalf of
 SGS TAIWAN LTD.
 Chemical Laboratory – Taipei

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DAI-ICHI SEIKO CO., LTD.

6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN



Test Result(s)

PART NAME No.1 : BLACK PLASTIC

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	n.d.
Mercury (Hg)	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.
Hexavalent Chromium Cr(VI)	mg/kg	With reference to IEC 62321: 2008 and performed by UV-VIS.	2	n.d.
Antimony (Sb)	mg/kg	With reference to US EPA Method 3050B for Antimony Content. Analysis was performed by ICP-AES.	2	n.d.
Antimony trioxide (Sb ₂ O ₃) (#) (CAS No.: 1309-64-4)	mg/kg	With reference to US EPA Method 3050B. Analysis was performed by ICP-AES.	-	n.d.
Phosphorus (P)	mg/kg	With reference to US EPA Method 3052 for Phosphorus Content. Analysis was performed by ICP-AES.	2	27400
Perfluorooctane sulfonates (PFOS-Acid, Metal Salt, Amide)	mg/kg	With reference to US EPA 3550C: 2007. Analysis was performed by LC/MS.	10	n.d.
PFOA (CAS No.: 335-67-1)	mg/kg	With reference to US EPA 3550C: 2007. Analysis was performed by LC/MS.	10	n.d.
Tetrabromobisphenol A (TBBP-A) (CAS No.: 79-94-7)	mg/kg	With reference to DIN 53313. Analysis was performed by GC/MS.	10	n.d.
Hexabromocyclododecane (HBCDD) (CAS No.: 25637-99-4)	mg/kg	With reference to US EPA 3540C method. Analysis was performed by GC/MS.	5	n.d.

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DAI-ICHI SEIKO CO., LTD.

6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN



Test Item(s)	Unit	Method	MDL	Result
				No.1
Sum of PBBs	mg/kg	With reference to IEC 62321: 2008 and performed by GC/MS.	-	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 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.
Halogen				
Halogen-Fluorine (F) (CAS No.: 14762-94-8)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC.	50	798
Halogen-Chlorine (Cl) (CAS No.: 22537-15-1)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC.	50	n.d.
Halogen-Bromine (Br) (CAS No.: 10097-32-2)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC.	50	n.d.
Halogen-Iodine (I) (CAS No.: 14362-44-8)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC.	50	n.d.

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DAI-ICHI SEIKO CO., LTD.

6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN



Test Item(s)	Unit	Method	MDL	Result
				No.1
BBP (Benzyl butyl phthalate) (CAS No.: 85-68-7)	%	With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.
DEHP (Di- (2-ethylhexyl) phthalate) (CAS No.: 117-81-7)	%		0.003	n.d.
DIDP (Di-isodecyl phthalate) (CAS No.: 26761-40-0)	%		0.01	n.d.
DINP (Di-isononyl phthalate) (CAS No.: 28553-12-0)	%		0.01	n.d.
DNOP (Di-n-octyl phthalate) (CAS No.: 117-84-0)	%		0.003	n.d.
DBP (Dibutyl phthalate) (CAS No.: 84-74-2)	%		0.003	n.d.

Note :

1. mg/kg = ppm ; 0.1wt% = 1000ppm
2. n.d. = Not Detected
3. MDL = Method Detection Limit
4. " - " = Not Regulated
5. (#): The substance was calculated by the test result of Antimony. The MDL was evaluated for Antimony.

$$AX = A \times F$$

AX	A	F
Antimony trioxide (Sb ₂ O ₃)	Antimony	1.1971

PFOS Reference Information : POPs - (EU) 757/2010

Outlawing PFOS as substances or preparations in concentrations above 0.001% (10ppm), in semi-finished products or articles or parts at a level above 0.1%(1000ppm), in textiles or other coated materials above 1µg/m².

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Test Report

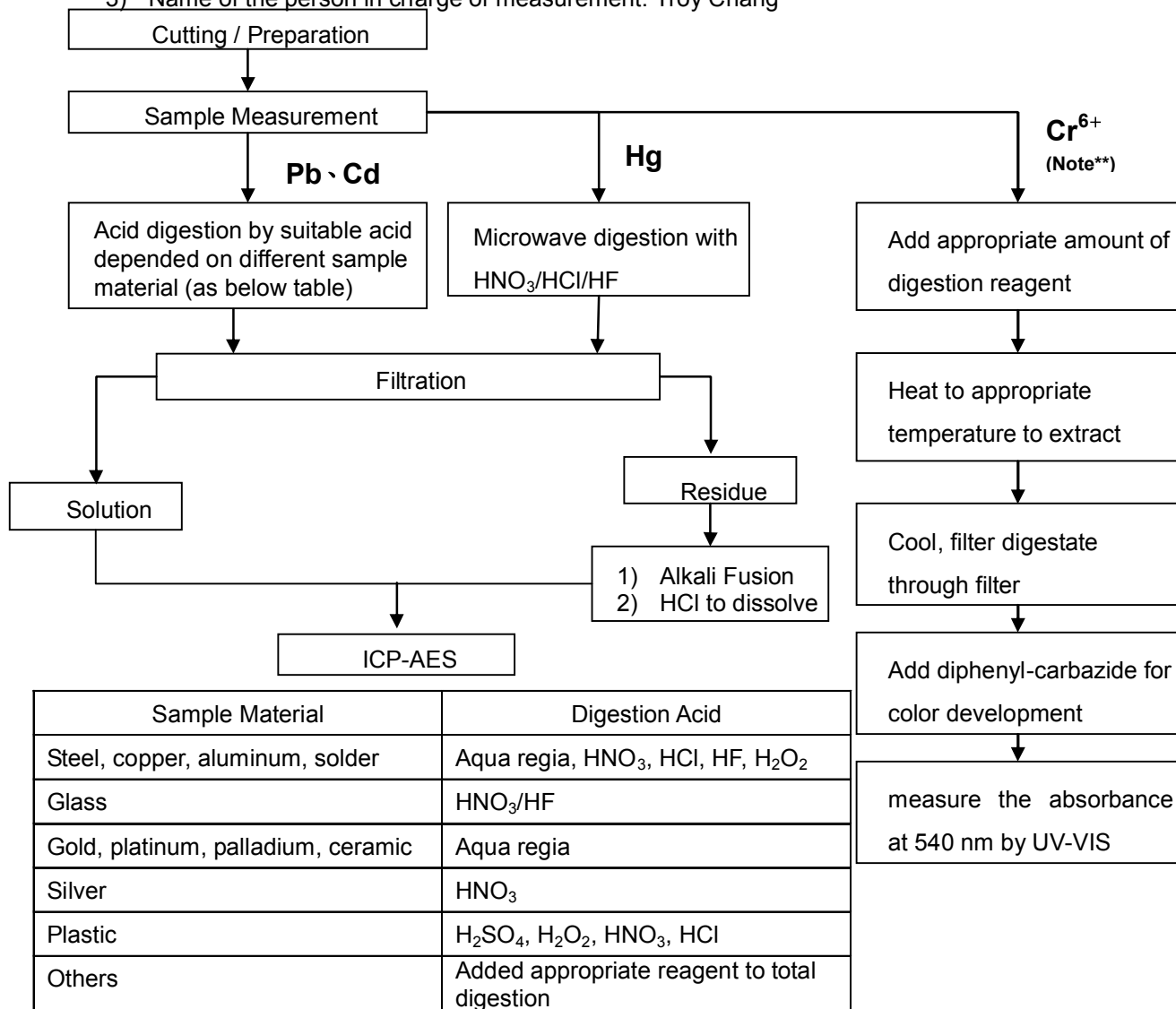
No. : CE/2012/91068A Date : 2012/09/17 Page : 5 of 13

DAI-ICHI SEIKO CO., LTD.

6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN



- 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: Climbgreat Yang
- 3) Name of the person in charge of measurement: Troy 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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Test Report

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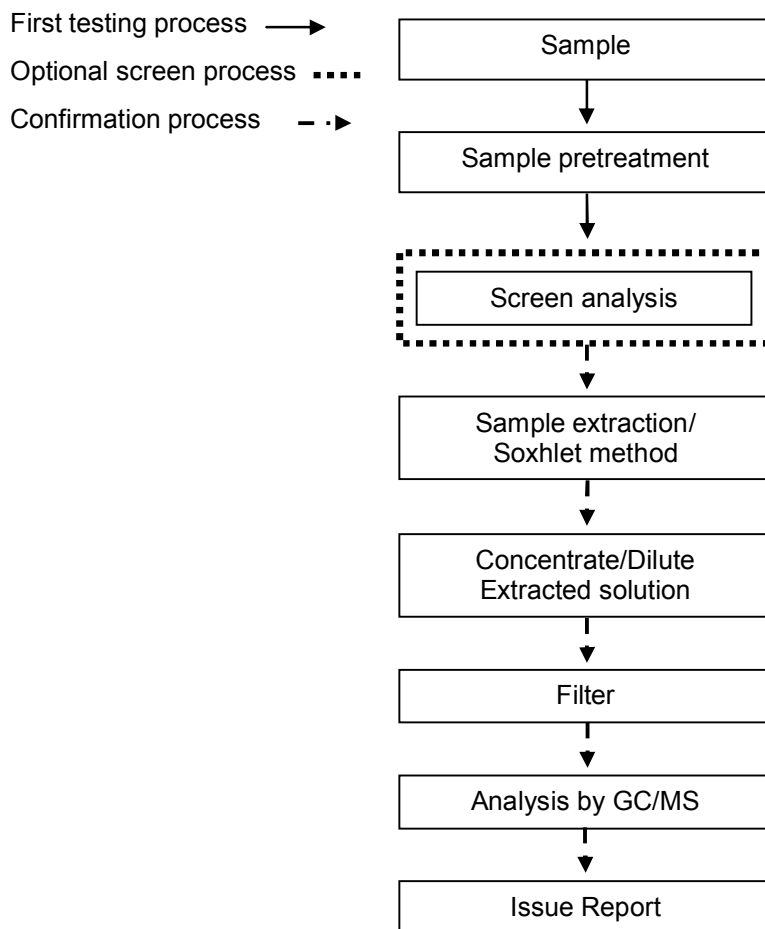
DAI-ICHI SEIKO CO., LTD.

6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN



PBB/PBDE analytical FLOW CHART

- Name of the person who made measurement: Roman Wong
- Name of the person in charge of measurement: Troy Chang



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Test Report

No. : CE/2012/91068A Date : 2012/09/17 Page : 7 of 13

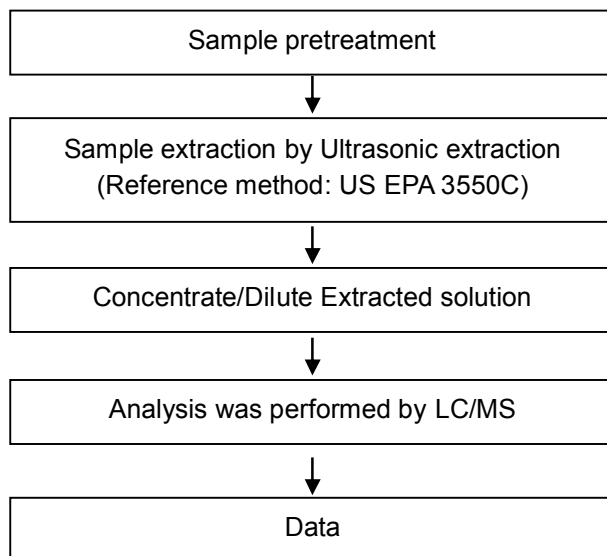
DAI-ICHI SEIKO CO., LTD.

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PFOA/PFOS analytical flow chart of Ultrasonic extraction (LC/MS) procedure

- Name of the person who made measurement: Roman Wong
- Name of the person in charge of measurement: Troy Chang



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Test Report

No. : CE/2012/91068A Date : 2012/09/17 Page : 8 of 13

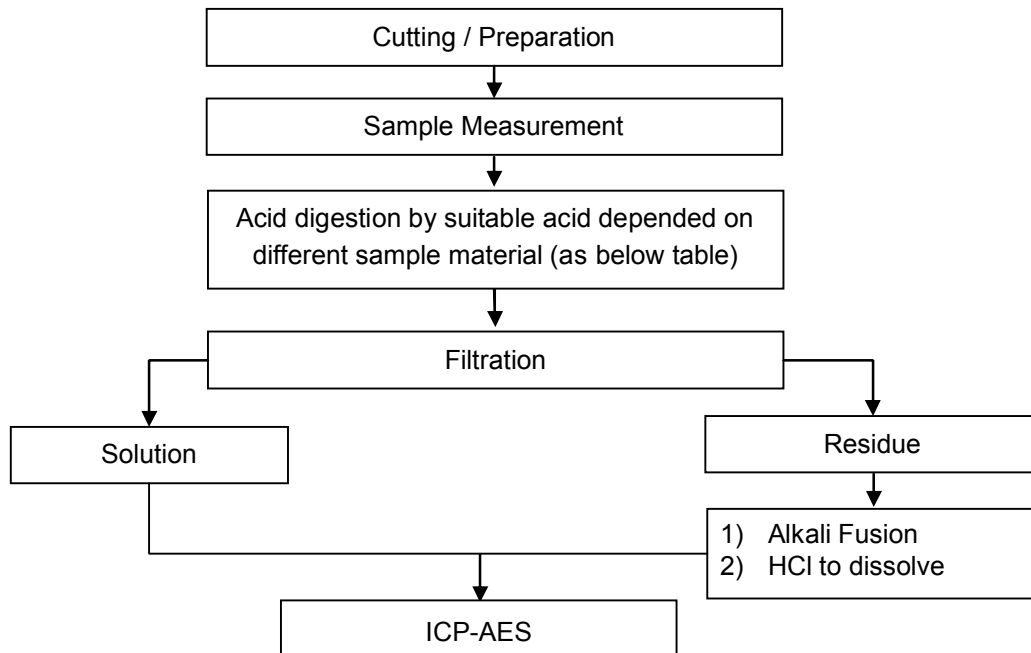
DAI-ICHI SEIKO CO., LTD.

6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN



- 1) These samples were dissolved totally by pre-conditioning method according to below flow chart.
- 2) Name of the person who made measurement: Climbgreat Yang
- 3) Name of the person in charge of measurement: Troy Chang

Flow Chart of digestion for the elements analysis performed by ICP-AES



Steel, copper, aluminum, solder	Aqua regia, HNO ₃ , HCl, HF, H ₂ O ₂
Glass	HNO ₃ /HF
Gold, platinum, palladium, ceramic	Aqua regia
Silver	HNO ₃
Plastic	H ₂ SO ₄ , H ₂ O ₂ , HNO ₃ , HCl
Others	Added appropriate reagent to total digestion

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Test Report

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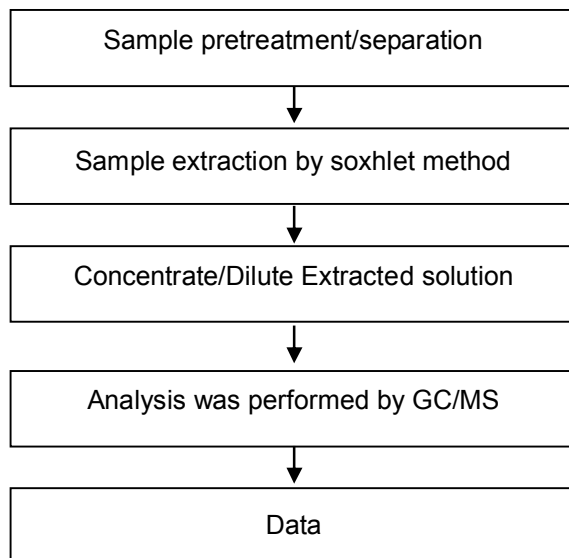
DAI-ICHI SEIKO CO., LTD.

6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN



HBCDD analytical flow chart

- Name of the person who made measurement: Roman Wong
- Name of the person in charge of measurement: Troy Chang



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Test Report

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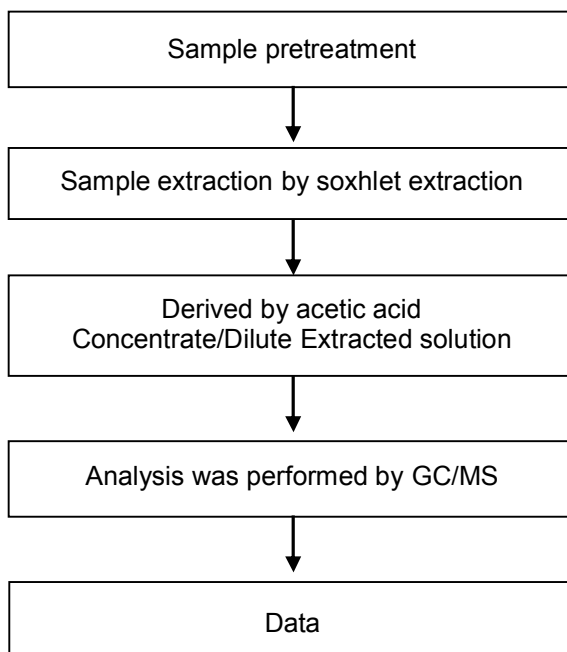
DAI-ICHI SEIKO CO., LTD.

6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN



TBBP-A analytical flow chart

- Name of the person who made measurement: Roman Wong
- Name of the person in charge of measurement: Troy Chang



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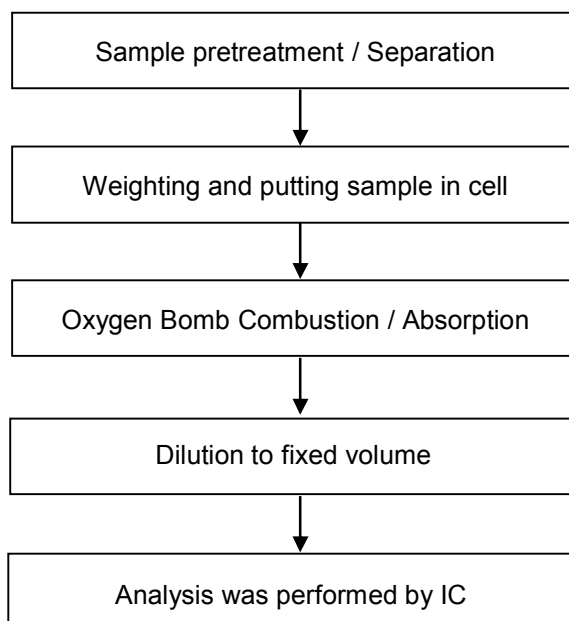
DAI-ICHI SEIKO CO., LTD.

6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN



Analytical flow chart of halogen content

- 1) Name of the person who made measurement: Rita Chen
- 2) Name of the person in charge of measurement: Troy Chang



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DAI-ICHI SEIKO CO., LTD.

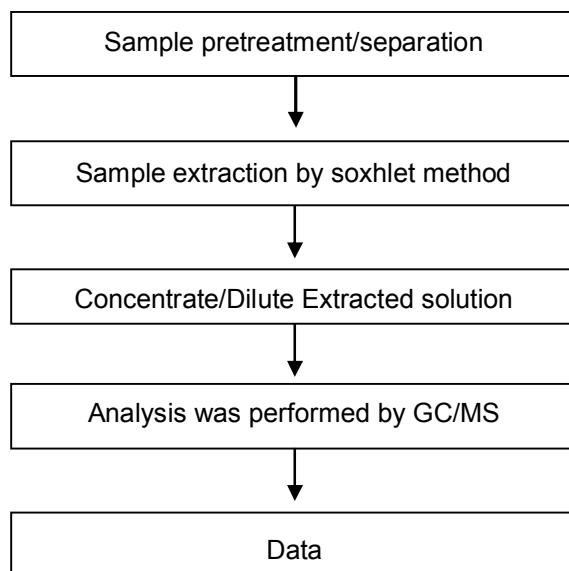
6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN



Analytical flow chart of Soxhlet extraction (GC/MS) procedure

- 1) Name of the person who made measurement: Roman Wong
- 2) Name of the person in charge of measurement: Troy Chang

■ Test Items: Phthalate



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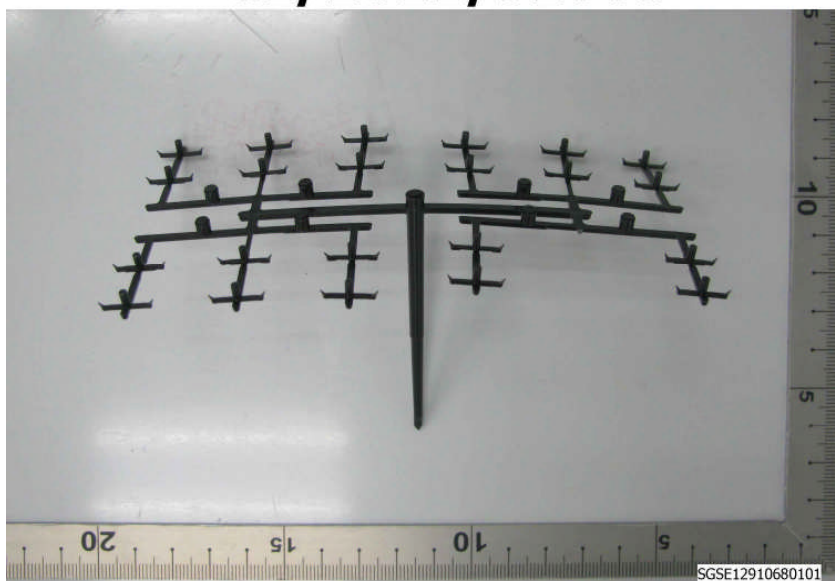
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* The tested sample / part is marked by an arrow if it's shown on the photo. *

CE/2012/91068



** End of Report **

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Test Report

No. : CE/2013/13104 Date : 2013/01/18 Page : 1 of 7

DAI-ICHI SEIKO CO., LTD.

6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN



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

Sample Description : MHF RECE. GROUND CONTACT
Style/Item No. : 1848-001
Sample Receiving Date : 2013/1/14
Testing Period : 2013/1/14 TO 2013/01/18

Test Requested : (1) As specified by client, with reference to RoHS Directive 2011/65/EU Annex II to determine Cadmium, Lead, Mercury, Cr(VI) contents in the submitted sample.
(2) As specified by client, to test PFOS contents in the submitted sample.

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


Chenyu Kung / Operation Manager
Signed for and on behalf of
SGS TAIWAN LTD.
Chemical Laboratory – Taipei

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DAI-ICHI SEIKO CO., LTD.

6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN



Test Result(s)

PART NAME No.1 : PLATING LAYER OF GOLDEN/SILVER COLORED METAL
PART NAME No.2 : BASE MATERIAL OF GOLDEN/SILVER COLORED METAL

Test Item(s)	Unit	Method	MDL	Result	
				No.1	No.2
Cadmium (Cd)	mg/kg	IEC 62321: 2008 application of modified digestion by surface etching and performed by ICP-AES.	2	n.d.	---
	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	---	n.d.
Lead (Pb)	mg/kg	IEC 62321: 2008 application of modified digestion by surface etching and performed by ICP-AES.	2	n.d.	---
	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	---	21
Mercury (Hg)	mg/kg	IEC 62321: 2008 application of modified digestion by surface etching and performed by ICP-AES.	2	n.d.	---
	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	---	n.d.
Hexavalent Chromium Cr(VI)	**	With reference to IEC 62321: 2008 and performed by Boiling water extraction Method.#	#	Negative	Negative
Perfluorooctane sulfonates (PFOS-Acid, Metal Salt, Amide)	µg/m ²	With reference to US EPA 3550C: 2007. Analysis was performed by LC/MS.	1	n.d.	---

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DAI-ICHI SEIKO CO., LTD.

6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN



Note :

1. mg/kg = ppm ; 0.1wt% = 1000ppm
2. n.d. = Not Detected
3. MDL = Method Detection Limit
4. "---" = Not Conducted
5. ** = Qualitative analysis (No Unit)
6. # = a. Positive means the presence of CrVI on the tested areas

b. Negative means the absence of CrVI on the tested areas

The detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm² tested areas.

PFOS Reference Information : POPs - (EU) 757/2010

Outlawing PFOS as substances or preparations in concentrations above 0.001% (10ppm), in semi-finished products or articles or parts at a level above 0.1%(1000ppm), in textiles or other coated materials above 1µg/m².

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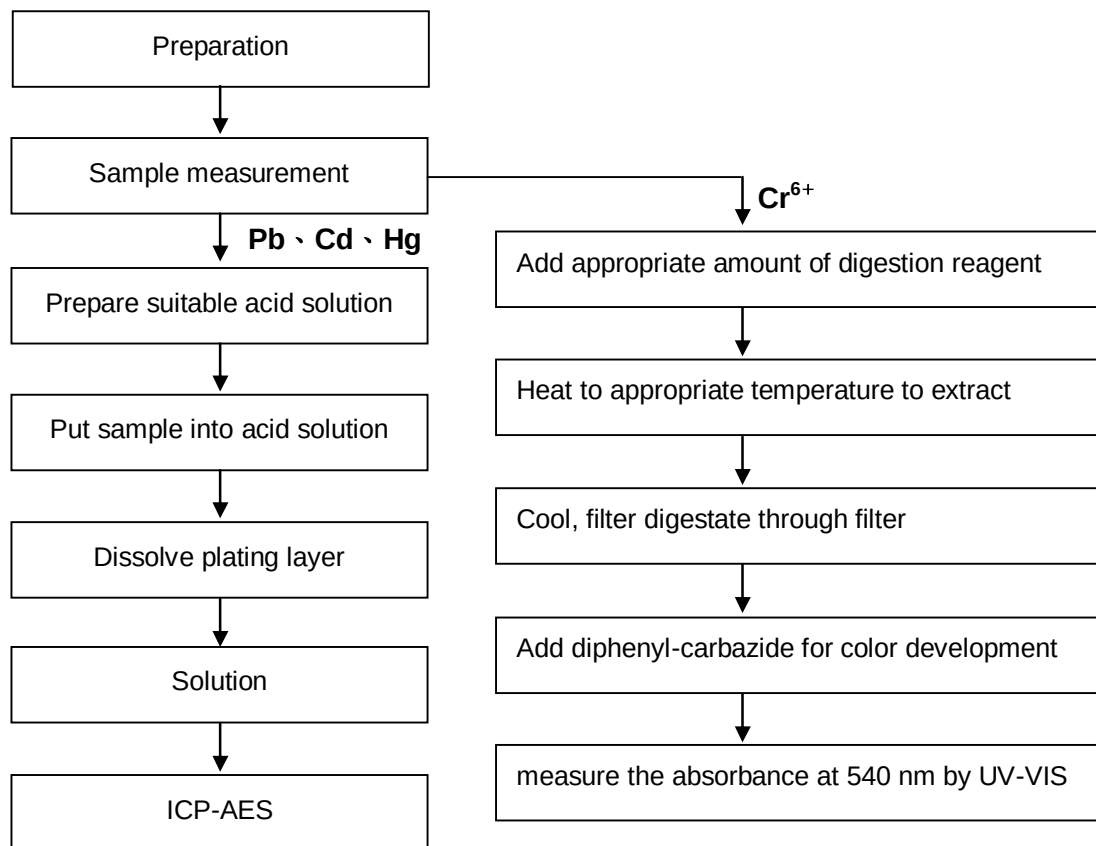
6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN



No.1

- 1) The plating layer of 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: Climbgreat Yang
- 3) Name of the person in charge of measurement: Troy Chang

Flow Chart of Stripping method for metal analysis



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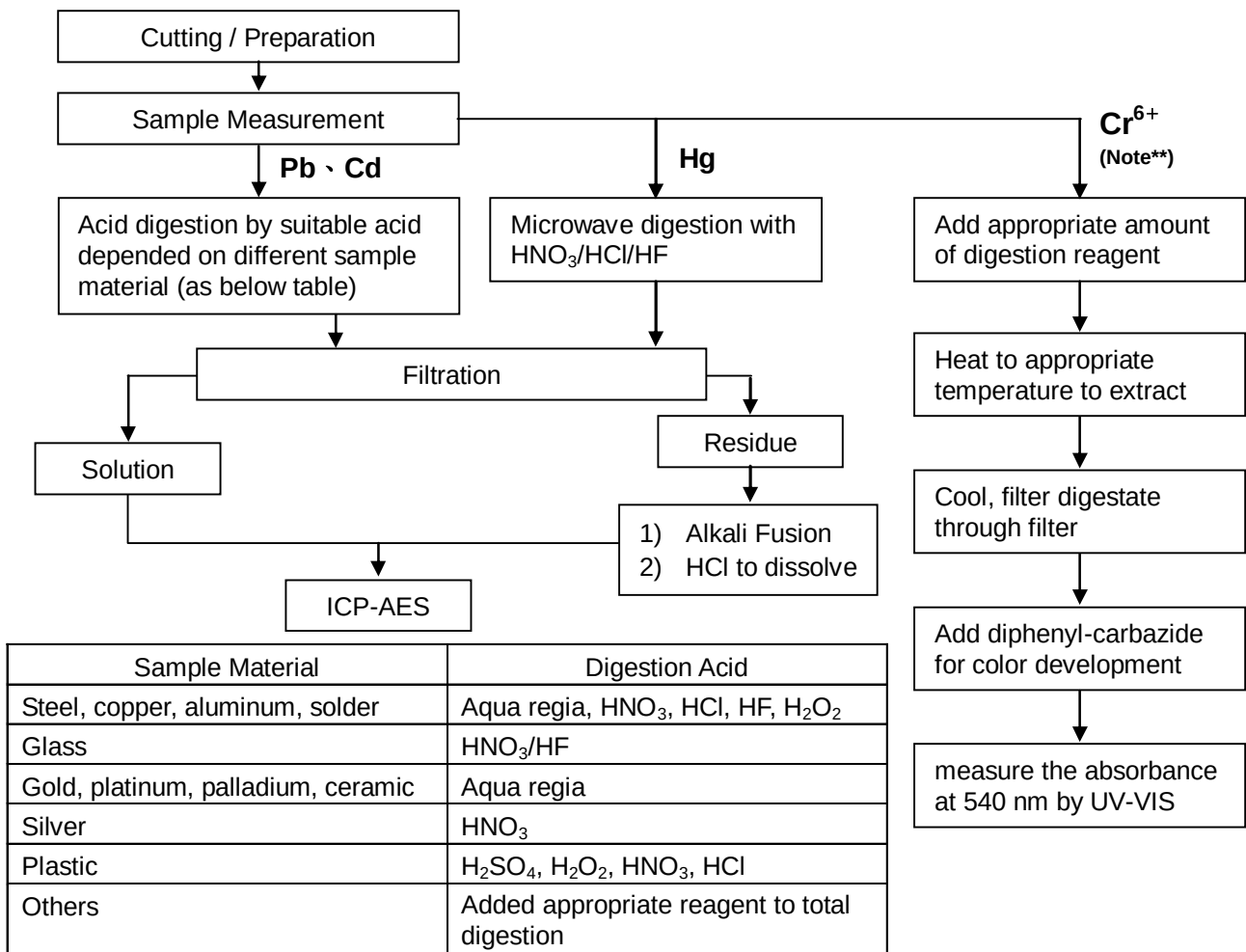
DAI-ICHI SEIKO CO., LTD.

6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN



No.2

- 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: Climbgreat Yang
- 3) Name of the person in charge of measurement: Troy 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.

Test Report

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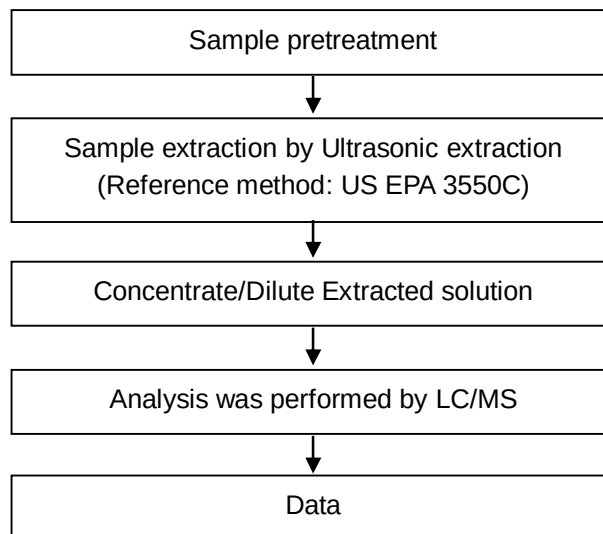
DAI-ICHI SEIKO CO., LTD.

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PFOS analytical flow chart of Ultrasonic extraction (LC/MS) procedure

- Name of the person who made measurement: Roman Wong
- Name of the person in charge of measurement: Troy Chang



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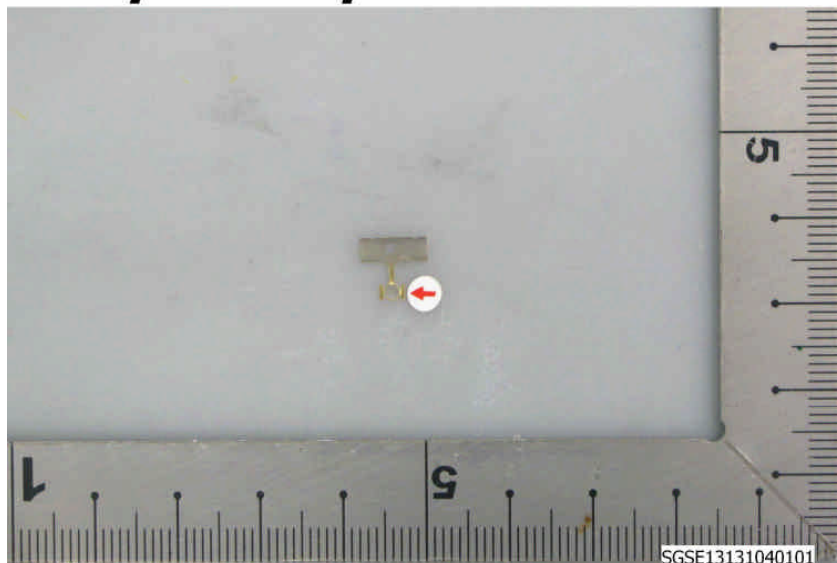
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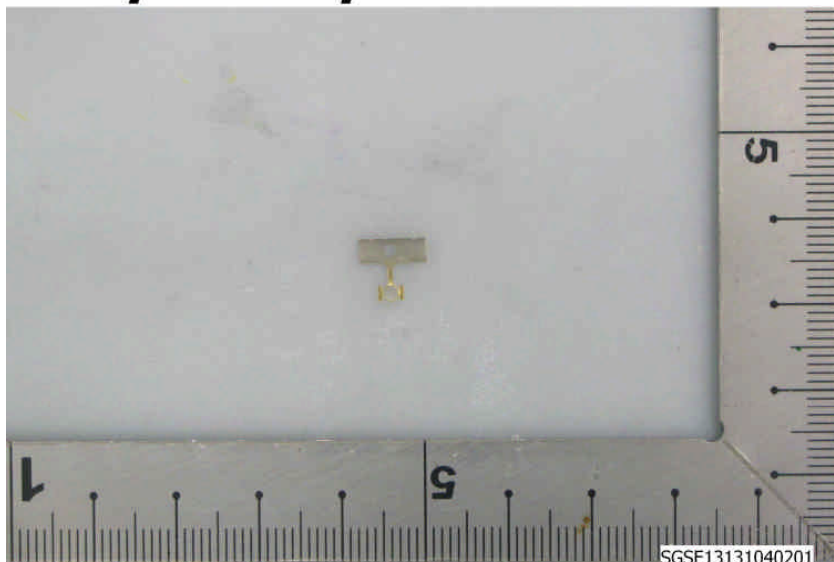


* The tested sample / part is marked by an arrow if it's shown on the photo. *

CE/2013/13104 NO.1



CE/2013/13104 NO.2



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Test Report

No. : CE/2013/10248 Date : 2013/01/10 Page : 1 of 7

DAI-ICHI SEIKO CO., LTD.
6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN



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

Sample Description : MHF III RECE. GROUND CONTACT
Style/Item No. : 2173-001
Sample Receiving Date : 2013/01/02
Testing Period : 2013/01/02 TO 2013/01/10

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

Test Requested : (1) As specified by client, with reference to RoHS Directive 2011/65/EU Annex II to determine Cadmium, Lead, Mercury, Cr(VI) contents in the submitted sample.
(2) As specified by client, to test contents in the submitted sample.

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

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


Chenyu Kung / Operation Manager
Signed for and on behalf of
SGS TAIWAN LTD.
Chemical Laboratory – Taipei

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No. : CE/2013/10248 Date : 2013/01/10 Page : 2 of 7

DAI-ICHI SEIKO CO., LTD.

6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN



Test Result(s)

PART NAME No.1 : PLATING LAYER OF GOLDEN COLORED METAL
PART NAME No.2 : BASE MATERIAL OF GOLDEN COLORED METAL

Test Item(s)	Unit	Method	MDL	Result	
				No.1	No.2
Cadmium (Cd)	mg/kg	IEC 62321: 2008 application of modified digestion by surface etching and performed by ICP-AES.	2	n.d.	---
	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	---	n.d.
Lead (Pb)	mg/kg	IEC 62321: 2008 application of modified digestion by surface etching and performed by ICP-AES.	2	n.d.	---
	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	---	17
Mercury (Hg)	mg/kg	IEC 62321: 2008 application of modified digestion by surface etching and performed by ICP-AES.	2	n.d.	---
	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	---	n.d.
Hexavalent Chromium Cr(VI)	**	With reference to IEC 62321: 2008 and performed by Boiling water extraction Method.#	#	Negative	Negative
Perfluorooctane sulfonates (PFOS-Acid, Metal Salt, Amide)	µg/m ²	With reference to US EPA 3550C: 2007. Analysis was performed by LC/MS.	1	n.d.	---

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Test Report

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DAI-ICHI SEIKO CO., LTD.

6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN



Note :

1. mg/kg = ppm ; 0.1wt% = 1000ppm
2. n.d. = Not Detected
3. MDL = Method Detection Limit
4. "---" = Not Conducted
5. ** = Qualitative analysis (No Unit)
6. # = a. Positive means the presence of CrVI on the tested areas

b. Negative means the absence of CrVI on the tested areas

The detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm² tested areas.

PFOS Reference Information : POPs - (EU) 757/2010

Outlawing PFOS as substances or preparations in concentrations above 0.001% (10ppm), in semi-finished products or articles or parts at a level above 0.1%(1000ppm), in textiles or other coated materials above 1µg/m².

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DAI-ICHI SEIKO CO., LTD.

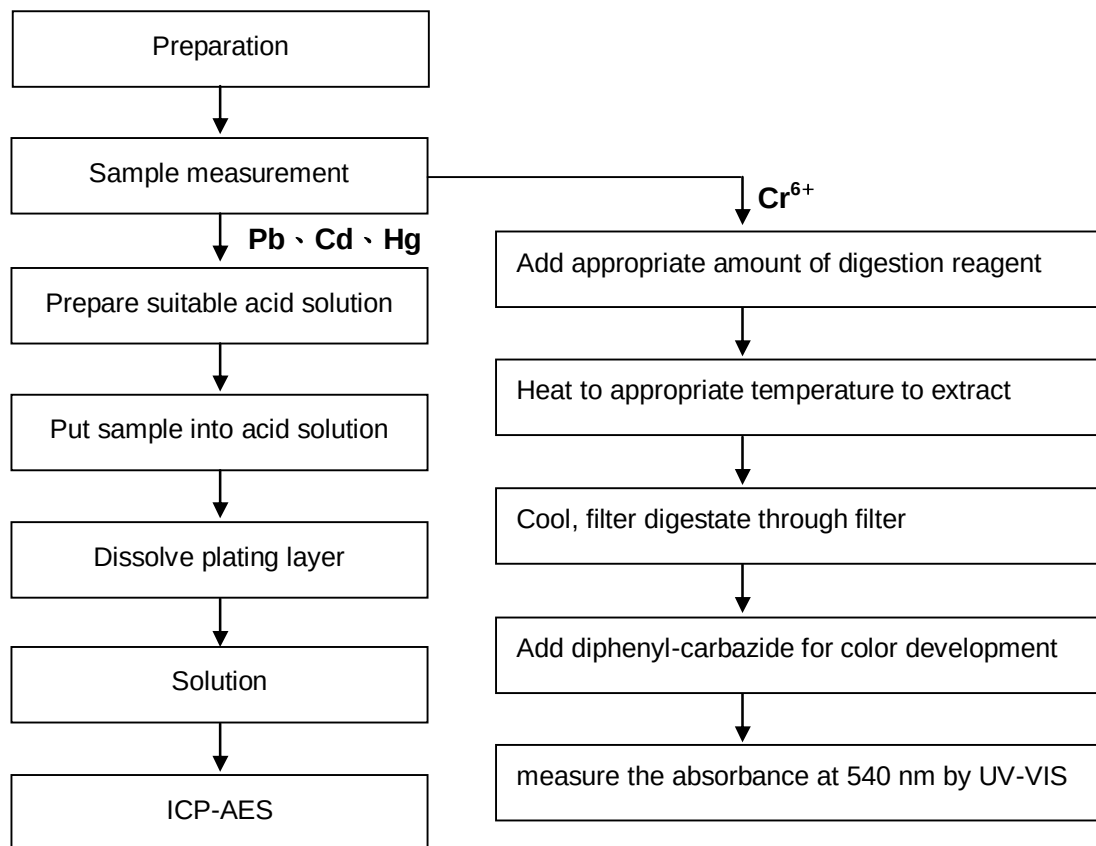
6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN



No.1

- 1) The plating layer of 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: Climbgreat Yang
- 3) Name of the person in charge of measurement: Troy Chang

Flow Chart of Stripping method for metal analysis



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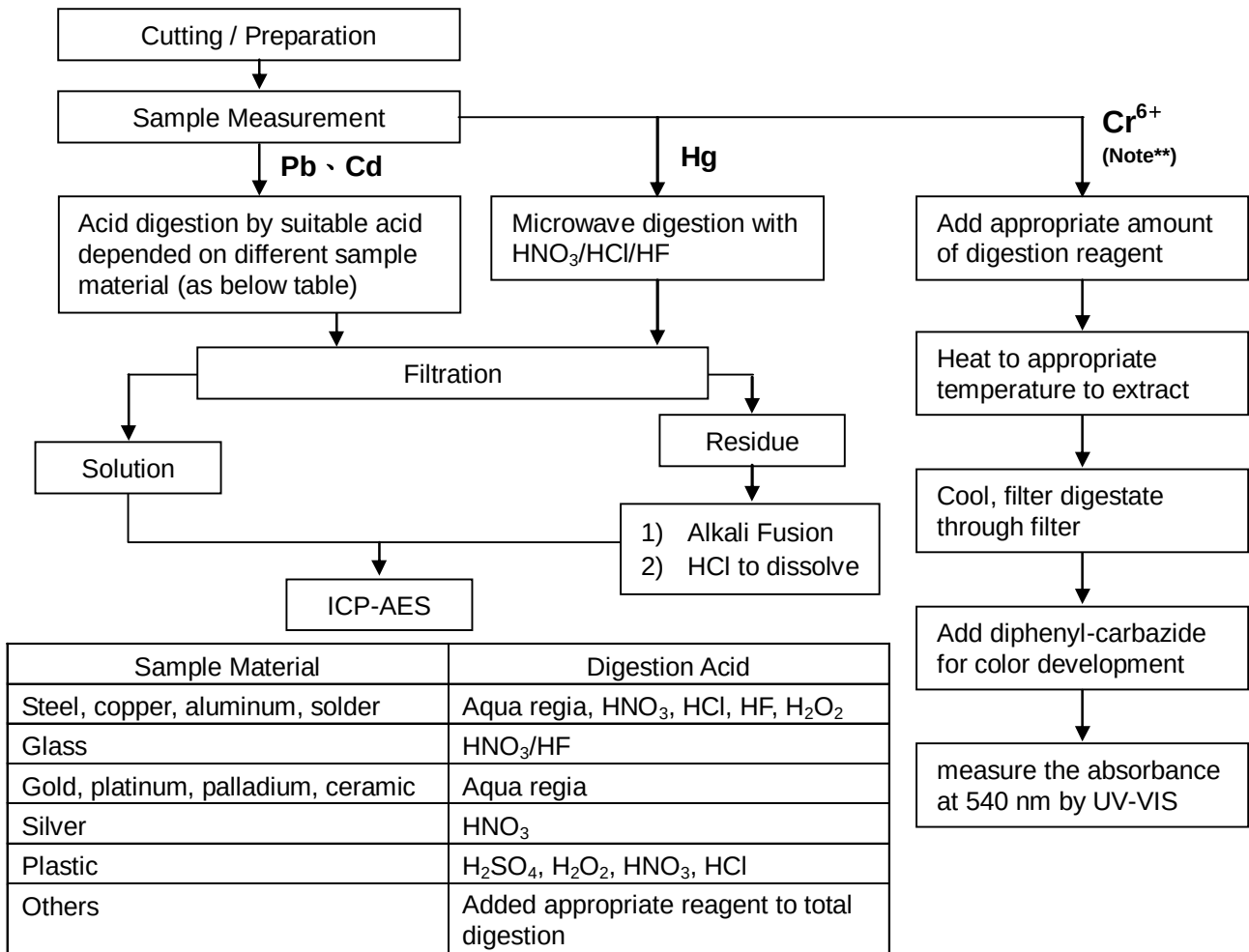
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No.2

- 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: Climbgreat Yang
- 3) Name of the person in charge of measurement: Troy 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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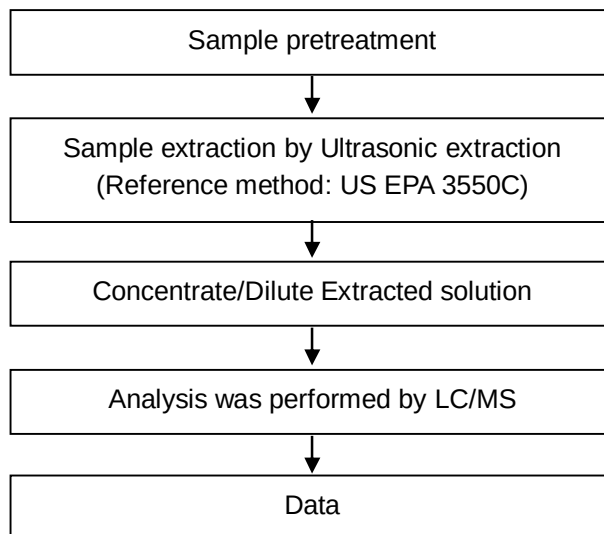
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PFOS analytical flow chart of Ultrasonic extraction (LC/MS) procedure

- Name of the person who made measurement: Roman Wong
- Name of the person in charge of measurement: Troy Chang



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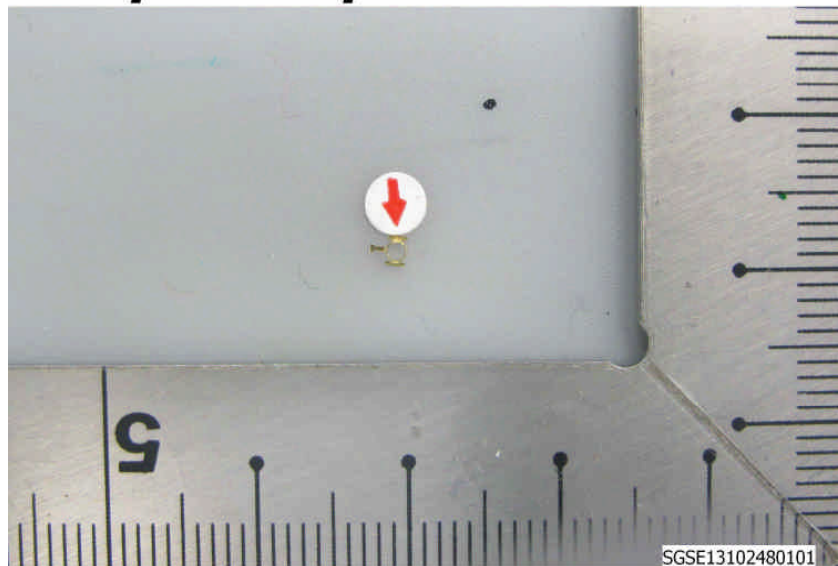
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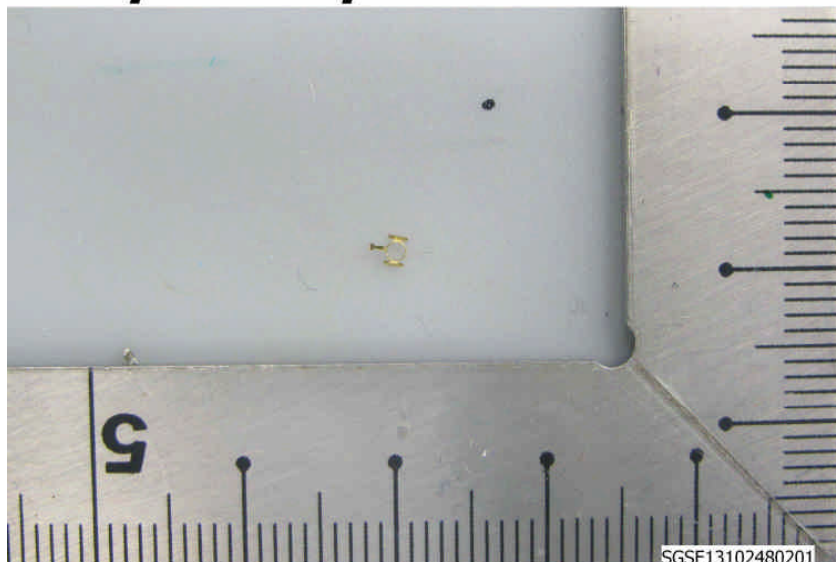


* The tested sample / part is marked by an arrow if it's shown on the photo. *

CE/2013/10248 NO.1



CE/2013/10248 NO.2



** End of Report **

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