

# 承 认 书

Approval Sheet

客户 (Customer):

客户料号 (Cus .P/N):

华联威料号 (HLW P/N):216104-1248-G31018

品名规格 (PronameSpec):排母 2.54间距 1x5P 单排双塑L=11.0

送样日期 (Delivery Date):2023/08/11

承认日期 (Acknowledge Date): 2023/08/11

|                                                                                           |                  |                           |                    |
|-------------------------------------------------------------------------------------------|------------------|---------------------------|--------------------|
| Approved No:                                                                              |                  | 客 户<br>Customer           |                    |
| 采 购 部<br>Purchasing Dept                                                                  | 品 质 部<br>QC Dept | 工 程 部<br>Engineering Dept | 确 认<br>Approved By |
|                                                                                           |                  |                           |                    |
| 深 圳 市 华 联 威 电 子 科 技 有 限 公 司<br>SHEN ZHEN SHI HUA LIAN WEI ELECTRONICS TECHNOLOGY CO; LTD. |                  |                           |                    |
| 业 务 部<br>Sales Dept                                                                       | 品 管 部<br>QC Dept | 工 程 部<br>Engineering Dept | 核 准<br>Checked By  |
| 欧阳小丽                                                                                      | 欠必锋              | 陈依婷                       | 唐竹君                |

地址:深圳市龙华区观澜街道桂香社区观澜桂花路 307 号

TEL: 0755-28888886 28888866

邮箱: hua@hlwconn.com

[Http://www.hlwconn.com](http://www.hlwconn.com)

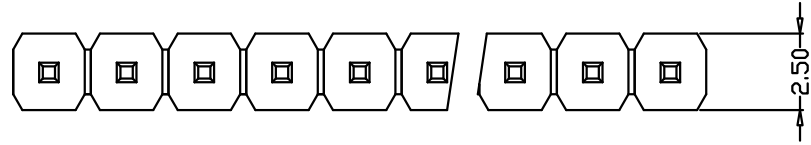


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| REV. | ECN.NO.     | APPD.       |
|------|-------------|-------------|
| A    | EXXXXXXXXXX | chenjianhui |

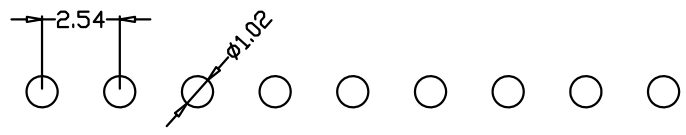
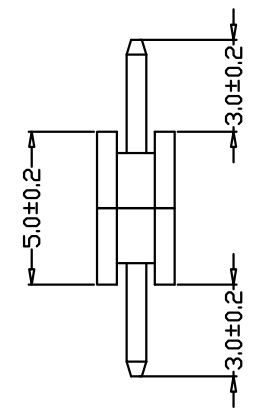
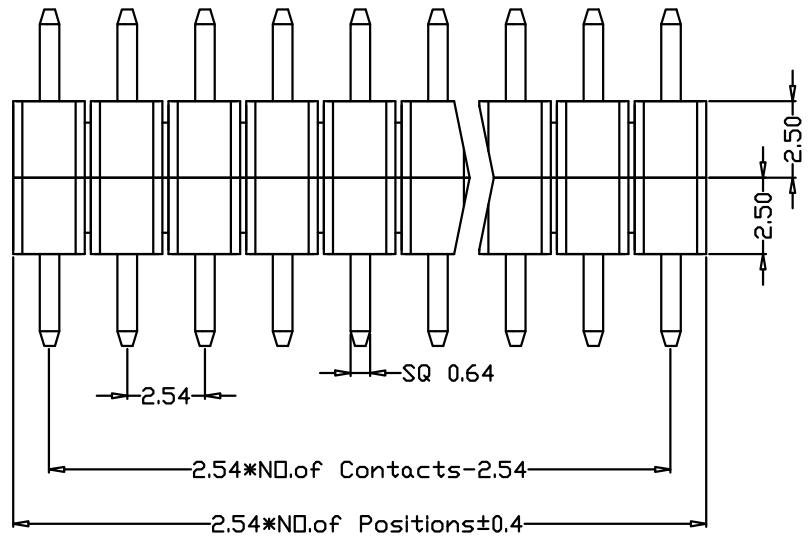


技术指标 (Technical Index) :

1. 工作温度 (Temperature range) : -25° C-85° C.
2. 额定电压 (Rated voltage) : 250V DC/AC (rms)
3. 额定电流 (Rated current) : 5A AC, DC
4. 接触阻抗 (CONTACT Resistance) : ≤25MΩ
5. 耐压值 (Withstanding voltage) : 1500V AC/minute
6. 绝缘阻抗 (Insulation resistance) ≥1000MΩ

216104-1248-G31018

G: 镀金G/Fu  
 3: PA46  
 1: 吸塑盒  
 1: 黑色



PCB LAYOUT

|                                      |             |                           |                            |                                             |        |      |   |
|--------------------------------------|-------------|---------------------------|----------------------------|---------------------------------------------|--------|------|---|
| TOLERANCE UNLESS OTHERWISE SPECIFIED |             | <b>FLW</b> 深圳市华联威电子科技有限公司 |                            |                                             |        |      |   |
| .XXX ±0.10<br>.XX ±0.20<br>.X ±0.30  |             | .X' ±3'<br>.XX' ±2'       |                            | HUA LIAN WEI TECHNOLOGY ELECTRONICS CO;LTD. |        |      |   |
| APPROVED                             |             | PART NAME:                | 排针 2.54间距 1x5P 单排双塑 L=11.0 |                                             |        |      |   |
| CHECKED                              |             | PART No:                  | 216104-1248-G31018         |                                             |        |      | C |
| DRAWN                                | chenjianhui | PROJECTION:               | UNIT:                      | SCALE:                                      | SHEET: | REV. |   |
| DATE                                 | 2022.10.22  |                           | mm                         | 1:1                                         | 10F1   | A    |   |

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## 排针排母系列技术标准

### 1. 范围

1.1 本标准适用于间距为 2.54、2.0、1.27、1.00mm 的排针排母。

### 2. 相关文件

2.1 当此规范与产品图发生冲突时以图面为准；当此规范与其它参考文件发生冲突时，以此规范为准。

### 3. 产品编号

3.1 排针编号按本公司编码原则 (XLC-PH-XX-G(R, SMT)-D(S))

3.2 排母编号按本公司编码原则 (XLC-FH-XX-G(R, SMT)-D(S))

### 4. 材料要求

4.1 排针排母的接触端子用磷铜或青铜。

4.2 排针排母的胶芯用含玻纤 30%耐高温，高绝缘以及其它综合性能优良的 PA9T、PA6T、PBT、LCP 等工程塑料。

### 4.3 镀层要求

依客户要求

### 5. 引脚共面性

5.1 SMT 型排针的引脚共面性： $\leq 0.10\text{mm}$ 。

5.2 SMT 型排母的引脚共面性： $\leq 0.10\text{mm}$ 。

### 6. 温度范围

工作温度为  $-40\sim 105^{\circ}\text{C}$

### 7. 测试程序及要求

表 1

| 外观与尺寸 |       |                                                              |                                                      |    |
|-------|-------|--------------------------------------------------------------|------------------------------------------------------|----|
| 条款    | 测试项目  | 试验方法                                                         | 技术要求                                                 | 备注 |
| 7.1   | 外观检查  | 目视法或放大镜                                                      | 无机械损伤、镀层脱落及变形等                                       |    |
| 7.2   | 外形尺寸  | 用精度为 0.02mm 的卡尺及投影机                                          | 按产品图面要求                                              |    |
| 7.3   | 引脚共面性 | SMT 型产品顺利通过平整度检测治具                                           | 排针： $\leq 0.10\text{mm}$<br>排母： $\leq 0.10\text{mm}$ |    |
| 电气性能  |       |                                                              |                                                      |    |
| 7.4   | 接触电阻  | 施加开路电压 20mV，电流不大于 100mA，或用小电流电阻测试仪（排针排母插合后，测试点：离胶芯基面 2mm 左右） | $\leq 20\text{m}\Omega$                              |    |
| 7.5   | 绝缘电阻  | 施加 DC 500V 1 分钟<br>(测试点：相邻端子之间)                              | $\geq 5000\text{M}\Omega$                            |    |

|              |          |                                                                                 |                                                                                                                                                                                                                                                                                                    |
|--------------|----------|---------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7.6          | 耐电压      | 施加 AC 1000V rms 50 秒（测试点：相邻端子之间）                                                | 无击穿、飞弧现象、漏电流不大于 1mA                                                                                                                                                                                                                                                                                |
| <b>机械性能</b>  |          |                                                                                 |                                                                                                                                                                                                                                                                                                    |
| 7.7          | 烘烤前保持力   | 拉拔力测试机量测                                                                        | 间距：2.54mm $\geq$ 1.0Kgf/PIN<br>2.00mm $\geq$ 0.8Kgf/PIN<br>1.27mm $\geq$ 0.25Kgf/PIN<br>1.00mm $\geq$ 0.08Kgf/PIN                                                                                                                                                                                  |
| 7.8          | 过回流炉后保持力 | 将回流炉升温至 260℃,产品放入回流炉入口经升温区、测试区（10S 以内）、冷却区后有出口取出(产品外观无损伤,变形,翘曲等不良);<br>拉拔力测试机量测 | 间距：2.54mm $\geq$ 0.2Kgf/PIN<br>2.00mm $\geq$ 0.1Kgf/PIN<br>1.27mm $\geq$ 0.03Kgf/PIN<br>1.00mm $\geq$ 0.02Kgf/PIN<br><br><br> |
| 7.9          | 插入力（排母）  | 以不低于 12.7mm/分的速度完成一次插拔之后，测量排针插入排母时的插入力，用拉拔力测试机量测。                               | 间距：2.54mm $\leq$ 0.30Kgf/PIN<br>2.00mm $\leq$ 0.20Kgf/PIN<br>1.27mm $\leq$ 0.15Kgf/PIN<br>1.00mm $\leq$ 0.08Kgf/PIN                                                                                                                                                                                |
| 7.10         | 拔出力（排母）  | 以不低于 12.7mm/分的速度完成一次插拔之后，测量排针拔出排母时的拔出力，用拉拔力测试机量测。                               | 间距：2.54mm $\geq$ 0.06Kgf/PIN<br>2.00mm $\geq$ 0.05Kgf/PIN<br>1.27mm $\geq$ 0.03Kgf/PIN<br>1.00mm $\geq$ 0.015Kgf/PIN                                                                                                                                                                               |
| 7.11         | 机械耐久（寿命） | 以 15 次/分左右的频率插拔插合的排针排母，100 次后进行检测。                                              | 1. 接触电阻符合 7.4 的规定。<br>2. 插入力符合 7.9 条的规定。<br>3. 拔出力符合 7.10 条的规定。<br>4. 外观无机械损伤。                                                                                                                                                                                                                     |
| <b>环境适应性</b> |          |                                                                                 |                                                                                                                                                                                                                                                                                                    |
| 7.12         | 热冲击      | 排针暴露在高低温中交替循环 5 次：<br>低温：-40℃,0.5 小时<br>高温：+105℃,0.5 小时<br>试验后检验性能。             | 1. 外观无机械损伤，裂纹，破碎等现象。<br>2. 接触电阻符合 7.4 的规定。<br>3. 绝缘电阻符合 7.5 的规定。                                                                                                                                                                                                                                   |
| 7.13         | 温度寿命     | 在高温中，在不通电流情况下:85℃ $\pm$ 5℃250 小时                                                | 1. 外观无机械损伤，裂纹，破碎等现象。<br>2. 接触电阻符合 7.4 的规定。                                                                                                                                                                                                                                                         |

|      |      |                                                                             |                                                                                                                                |  |
|------|------|-----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|--|
| 7.14 | 盐雾试验 | 将排针、排母放置于温度为+35℃±2℃,盐水浓度为5±1%的环境中,喷雾12小时后,用自来水清洗干净,在干燥温度35℃±2℃下保持4小时后,检测性能。 | 1. 外观完好,无锈蚀。(折料带折断处不作检查要求)<br>2. 接触电阻符合7.4条的规定。<br>3. 绝缘电阻符合7.5条的规定。<br>4. 耐电压符合7.6的规定。<br>5. 插入力符合7.9条规定。<br>6. 拔出力符合7.10条规定。 |  |
| 7.15 | 可焊性  | 端子锡脚先沾入助焊剂中5~10秒,然后再沾入260±5℃的焊槽内浸渍5+0/-0.5秒                                 | 测试完样品用10倍放大镜检查无损伤(如针孔、表面起泡或粗糙现象),沾锡面积95%以上                                                                                     |  |
| 7.17 | 耐焊锡热 | 引脚在260℃焊料槽中停留时间10秒                                                          | 塑料体无损伤,变形等不良现象。                                                                                                                |  |

## 8. 逐批检查:

8.1 抽样按 GB/T19001:2008 idt ISO9001:2008 要求进行,采用特殊检验水平 S-2,一次抽样方法。

8.2 逐批检查项目及缺陷分类 AQL 值:

表 2

|   | 检查项目  | 条款   | AQL 值 |     | 备注 |
|---|-------|------|-------|-----|----|
|   |       |      | 0.65  | 1.5 |    |
| 1 | 外观    | 7.1  | /     | /   | 全检 |
| 2 | 外形尺寸  | 7.2  | /     | √   |    |
| 3 | 引脚共面性 | 7.3  | /     | /   | 全检 |
| 4 | 接触电阻  | 7.4  | √     | /   |    |
| 5 | 插入力   | 7.9  | √     | /   |    |
| 6 | 拔出力   | 7.10 | √     | /   |    |

8.3 判定:当 NG 数超过规定时,判为不合格,退回重工,再重新按规定提交逐批检查。

## 9. 周期检验

9.1 周期检查按 GB/T19001:2008 idt ISO9001:2008 标准执行,采用判别水平 II,一次抽样方法, RQL=30。

9.2 试验时机:

- A· 批量生产前;
- B· 关键结构,材料更改时;
- C· 生产满 100K 或半年;
- D· 停产三个月以上恢复生产时;
- E· 客户要求时。

9.3 试验样品经逐批检查合格的产品中随机抽取,作为周期检验用样品,样品数总共 25PCS,分成 5 组试验。试验分组及内容如下表:

表 3

| 测试项目 | 测试群  |     |     |     |     |     |
|------|------|-----|-----|-----|-----|-----|
|      | 1    | 2   | 3   | 4   | 5   | 6   |
|      | 测试顺序 |     |     |     |     |     |
| 外观检查 | 1,7  | 1,5 | 1,5 | 1,9 | 1,3 | 1,3 |
| 接触电阻 | 2,5  | 2,4 | 2,4 | 2,6 |     |     |

|          |     |   |   |     |   |   |
|----------|-----|---|---|-----|---|---|
| 绝缘电阻     | 3,6 |   |   |     |   |   |
| 耐电压      |     |   |   |     |   |   |
| 插入力      |     |   |   | 3,7 |   |   |
| 拔出力      |     |   |   | 4,8 |   |   |
| 机械耐久(寿命) |     |   |   | 5   |   |   |
| 热冲击      | 4   |   |   |     |   |   |
| 温度寿命     |     | 3 |   |     |   |   |
| 盐雾试验     |     |   | 3 |     |   |   |
| 可焊性      |     |   |   |     | 2 |   |
| 耐焊锡热     |     |   |   |     |   | 2 |

#### 9.4 判定:

当周期检查试验不合格时,应立即停产,并进行检讨分析,找出原因,经采取改进措施后,经试验合格后方能恢复生产,如为偶然因素,允许重作一次试验,周期试验合格可作为验收和交货依据。

#### 10. 包装:

用相应的管装、卷装、PE袋包装产品,然后装入内箱再装入外箱,每步包装均要求贴标签。包装数量详见包装图。

#### 11. 储存:

包装好的产品,应储存放置于无污染、温度在-15~40℃相对湿度不超过80%的环境仓库中,存放整齐。

#### 12. 运输:

可用任何方式运输,防止重压、严重碰撞、淋雨、雪等。

核准:唐竹君

制作:杨桂峰



# 深圳市华联威电子科技有限公司

SHENZHENHUALIANWEIELECTRONICS CO., LTD.

## 測試報告

TEST REPORT

|                   |                           |                         |                           |                         |                                        |
|-------------------|---------------------------|-------------------------|---------------------------|-------------------------|----------------------------------------|
| 產品名稱<br>Part Name | 排母 2.54间距 1x5P 单排双塑L=11.0 | 測試日期<br>Date of Testing | 2023.08.09-<br>2023.08.11 | 報告編號<br>Report NO.      | MD20230811-01                          |
| 產品型號<br>Part Name | 216104-1248-G31018        | 樣品數量<br>Quantity        | 5PCS                      | 測試環境<br>Date of Testing | 濕度Temp:75~90°C<br>相對濕度<br>R.H.:49%~57% |

### 一. 電性測試 ELECTRICAL TEST

| 序號<br>NO | 測試項目<br>Testing Item | 測試條件<br>Testing Conditions | 測試設備<br>Testing Equipment | 規格<br>SPEC   | 測試記錄Testing Result |      |      |      |      | 判定<br>Judge |    |
|----------|----------------------|----------------------------|---------------------------|--------------|--------------------|------|------|------|------|-------------|----|
|          |                      |                            |                           |              | 1                  | 2    | 3    | 4    | 5    | OK          | NG |
| 1        | 接觸阻抗                 | 20mA                       | 直流低電阻測試儀                  | 20mΩ Max     | Pass               | Pass | Pass | Pass | Pass | V           |    |
| 2        | 絕緣阻抗                 | 500 V DC/1分钟               | 絕緣電阻測試儀                   | 5000 MΩ Min. | Pass               | Pass | Pass | Pass | Pass | V           |    |
| 3        | 耐壓測試                 | 1000V AC /<br>0.5 mA 50秒   | 耐壓測試儀                     | No damaged   | OK                 | OK   | OK   | OK   | OK   | V           |    |

### 二. 机械特性測試 MECHANICAL TEST

| 序號<br>NO | 測試項目<br>Testing Item | 測試條件<br>Testing Conditions | 測試設備<br>Testing Equipment | 規格<br>SPEC | 測試記錄Testing Result |    |    |    |    | 判定<br>Judge |    |  |
|----------|----------------------|----------------------------|---------------------------|------------|--------------------|----|----|----|----|-------------|----|--|
|          |                      |                            |                           |            | 1                  | 2  | 3  | 4  | 5  | OK          | NG |  |
| 4        | 插入力                  | 每分钟12.7±3mm的速度             | 插拔力計                      | 间距         | 插拔                 | OK | OK | OK | OK | OK          | V  |  |
|          |                      |                            |                           | 2.54mm     | 2.94N              |    |    |    |    |             |    |  |
|          |                      |                            |                           | 2.00mm     | 1.96N              |    |    |    |    |             |    |  |
|          |                      |                            |                           | 1.27mm     | 1.47N              |    |    |    |    |             |    |  |
|          |                      |                            |                           | 1.00mm     | 0.784N             |    |    |    |    |             |    |  |
| 5        | 拔出力                  | 每分钟12.7±3mm的速度             | 插拔力計                      | 间距         | 插拔                 | OK | OK | OK | OK | OK          | V  |  |
|          |                      |                            |                           | 2.54mm     | 0.59N              |    |    |    |    |             |    |  |
|          |                      |                            |                           | 2.00mm     | 0.49N              |    |    |    |    |             |    |  |
|          |                      |                            |                           | 1.27mm     | 0.30N              |    |    |    |    |             |    |  |
|          |                      |                            |                           | 1.00mm     | 0.15N              |    |    |    |    |             |    |  |
| 6        | 锁口保持力                | 间距                         | 插拔力                       | 吊重测试机      | 不得发生物理损坏。          | OK | OK | OK | OK | V           |    |  |
|          |                      | 2.54mm                     | 9.8N MIN                  |            |                    |    |    |    |    |             |    |  |
|          |                      | 2.00mm                     | 7.84N MIN                 |            |                    |    |    |    |    |             |    |  |
|          |                      | 1.27mm                     | 2.45N MIN                 |            |                    |    |    |    |    |             |    |  |
|          |                      | 1.00mm                     | 0.08N MIN                 |            |                    |    |    |    |    |             |    |  |



|   |     |                                 |      |           |    |    |    |    |    |   |  |
|---|-----|---------------------------------|------|-----------|----|----|----|----|----|---|--|
| 7 | 耐久性 | 测试速度：每分钟15个循环，<br>测试次数：100次循环最少 | 插拔力計 | 不得发生物理损坏。 | OK | OK | OK | OK | OK | V |  |
|---|-----|---------------------------------|------|-----------|----|----|----|----|----|---|--|

三. 环境特性测试 ENVIRONMENTAL TEST

| 序號<br>NO | 測試項目<br>Testing<br>Item | 測試條件<br>Testing Conditions       | 測試設備<br>Testing<br>Equipment | 規格<br>SPEC     | 測試記錄Testing Result |    |    |    |    | 判定<br>Judge |    |
|----------|-------------------------|----------------------------------|------------------------------|----------------|--------------------|----|----|----|----|-------------|----|
|          |                         |                                  |                              |                | 1                  | 2  | 3  | 4  | 5  | OK          | NG |
| 9        | 冷热冲击                    | 温度-40±3℃<br>温度105±3℃<br>持续时间0.5H | 高低温试验箱                       | 不得发生物理损坏。      | OK                 | OK | OK | OK | OK | V           |    |
| 10       | 湿温循环                    | 温度85℃±5℃，<br>持续时间:250H           | 湿温循环机                        | 最大接触阻抗<br>20mΩ | OK                 | OK | OK | OK | OK | V           |    |
| 11       | 盐雾试验                    | 温度:35±2℃<br>12小时                 | 盐雾试验箱                        | 最大接触阻抗<br>20mΩ | OK                 | OK | OK | OK | OK | V           |    |
| 12       | 可焊性                     | 焊锡温度:<br>260±5℃                  | 熔锡炉                          | 沾锡面积达90%<br>以上 | OK                 | OK | OK | OK | OK | V           |    |
| 13       | 焊接耐热试验                  | 260±5℃<br>10秒                    | 工业烘烤箱                        | 不得发生物理损坏       | OK                 | OK | OK | OK | OK | V           |    |
| 14       | 耐高温                     | 265℃±5℃                          | 回流焊                          | 不得有高温不良        | OK                 | OK | OK | OK | OK | V           |    |
| 15       | 耐低温                     | -55±3℃                           | 恒温恒湿                         | 不得有不良          | OK                 | OK | OK | OK | OK | V           |    |

綜合判定  
TEST JUDGMENT

合格 (Acceptable)

不合格 (Reject)

核准(Approver): 欠必锋

測試(Tester): 但芬



## 电镀报告表

|                                    |          |                |    |          |          |
|------------------------------------|----------|----------------|----|----------|----------|
| 品名: 排母 2.54间距 1x5P 单排双塑L=11.0 (端子) |          | 版次:A.0         |    |          |          |
| 电镀规格: Ni30u", Sn100u", Au0.5u"     |          | 日期: 2023/03/04 |    |          |          |
| 页次: 1/1                            |          |                |    |          |          |
| 厂商: 同华                             |          |                |    |          |          |
| 测试设备: CMI X-射线膜厚测试仪                |          |                |    |          |          |
| 1、底层电镀测试 (Ni)                      |          |                |    |          |          |
| 数据                                 | 测试标准     | 实测值            | 判定 | 测试日期     | 测试时间     |
| 1                                  | 30u"MIN  | 53.5u"         | OK | 2023/3/4 | 10:20:15 |
| 2                                  | 30u"MIN  | 52.3u"         | OK | 2023/3/4 | 10:20:17 |
| 3                                  | 30u"MIN  | 60.5u"         | OK | 2023/3/4 | 10:20:19 |
| 4                                  | 30u"MIN  | 63.4u"         | OK | 2023/3/4 | 10:20:21 |
| 2、表层电镀测试 (Sn)                      |          |                |    |          |          |
| 数据                                 | 测试标准     | 实测值            | 判定 | 测试日期     | 测试时间     |
| 1                                  | 100u"MIN | 107.3u"        | OK | 2023/3/4 | 10:25:10 |
| 2                                  | 100u"MIN | 104.7u"        | OK | 2023/3/4 | 10:25:12 |
| 3                                  | 100u"MIN | 106.9u"        | OK | 2023/3/4 | 10:25:14 |
| 4                                  | 100u"MIN | 103.4u"        | OK | 2023/3/4 | 10:25:16 |
| 3、表层电镀测试 (Au)                      |          |                |    |          |          |
| 数据                                 | 测试标准     | 实测值            | 判定 | 测试日期     | 测试时间     |
| 1                                  | 0.5u"MIN | 0.55u"         | OK | 2023/3/4 | 10:30:32 |
| 2                                  | 0.5u"MIN | 0.58u"         | OK | 2023/3/4 | 10:30:34 |
| 3                                  | 0.5u"MIN | 0.56u"         | OK | 2023/3/4 | 10:30:36 |
| 4                                  | 0.5u"MIN | 0.59u"         | OK | 2023/3/4 | 10:30:38 |

核准: 欠必锋

审核: 李娟

检验员: 但芬

## 盐水喷雾实验报告

|                                                                                                                                         |                                  |        |                      |
|-----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|--------|----------------------|
| 试验方法                                                                                                                                    | 盐水喷雾腐蚀试验法                        | 参考资料   | MIL-STD-1345         |
| METHOD                                                                                                                                  | NEUTRL SALT SPRAY CORROSION TEST | REF    |                      |
| 客户                                                                                                                                      |                                  | 试验起始日期 | 2023年08月10日 20:00 时起 |
|                                                                                                                                         |                                  | DATE   | 2023年08月11日 08:00 时止 |
| 样品名称                                                                                                                                    | 排母 2.54间距 1x5P 单排双塑<br>L=11.0    | 试验数量   | 5PCS                 |
| P/N                                                                                                                                     | 216104-1248-G31018               | QTY    |                      |
| 试验条件 (TEST CONDITION)                                                                                                                   |                                  |        |                      |
| 1、盐水溶解 (SALT SOLUTION: 浓度 $50 \pm 10$ g/L, PH值6.5-7.2.                                                                                  |                                  |        |                      |
| 2、试验室温度 (TEMP. IT THE SPRAY DHAMBR): $35 \pm 1$ °C.                                                                                     |                                  |        |                      |
| 3、盐水桶温度 (TEMP. OF SALE SOL' N TANK): $35 \pm 1$ °C.                                                                                     |                                  |        |                      |
| 4、压力桶温度 (TEMP. OF SAR SUPPLIERY) : $47 \pm 1$ °C.                                                                                       |                                  |        |                      |
| 5、试验室相对湿度 (R. H IN THE CHAMBER ) 85%.                                                                                                   |                                  |        |                      |
| 6、压缩空气压力 (COMPRESSED AIR PRESSURE) : $1.00 \pm 0.01$ Kg/cm <sup>2</sup> .                                                               |                                  |        |                      |
| 7、样品放置位置 (SPECIMEN SUPPORTED ANGLE ) : 尼龙绳吊挂70° -90° .                                                                                  |                                  |        |                      |
| 8、喷雾收集量 (COLLECT RATE OF SALT SOL' N) 1-2mL/(8 cm <sup>2</sup> hr).                                                                     |                                  |        |                      |
| 9、盐雾测试时间: 12小时 (H)                                                                                                                      |                                  |        |                      |
| 判定方法 (ADFUSGD METHOD )                                                                                                                  |                                  |        |                      |
| 试验后以20倍放大镜观察、无蓝、绿色腐蚀物之现象 (不包含折弯处) , 即判定合格. (Inspext the ecimen at 20 xmagnification no blue or green corrosion products are acceptable) |                                  |        |                      |
| 样品序号                                                                                                                                    | 试验后现象                            |        | 判定                   |
|                                                                                                                                         | PHENOMENON AFTER TEST            |        | COMMENT              |
| 1                                                                                                                                       | 无蓝、绿色腐蚀物之现象                      |        | OK                   |
| 2                                                                                                                                       | 无蓝、绿色腐蚀物之现象                      |        | OK                   |
| 3                                                                                                                                       | 无蓝、绿色腐蚀物之现象                      |        | OK                   |
| 4                                                                                                                                       | 无蓝、绿色腐蚀物之现象                      |        | OK                   |
| 5                                                                                                                                       | 无蓝、绿色腐蚀物之现象                      |        | OK                   |
|                                                                                                                                         |                                  |        |                      |

核准: 欠必锋

审核: 李娟

试验员: 但芬

# 材质证明

Material identification

厂商 Customer: 东莞市三鑫塑胶原料有限公司

名称 Material name: 聚己二酰丁二胺

规格 Specifications: PA46 黑色 防火 V0

说明 Description: 材料包含 PA46 纯树脂+波纤及少量添加剂。

## 物料成份表

Chemical composition of

| 规格<br>Grade                |                          | PA46 BK V0            |         |
|----------------------------|--------------------------|-----------------------|---------|
| 组成<br>Chemical composition | 分子式<br>Molecular formula | 含量 (%)<br>Content (%) |         |
| 1                          | PA46 树脂                  | 聚己二酰丁二胺               | ≧69.69% |
| 2                          | 波纤                       | SiO <sub>2</sub>      | 30%     |
| 3                          | 添加剂                      | N.A.                  | ≦0.31   |





# 产品质量证明书

INSPECTION CERTIFICATE

QIAN YI

DONGGUAN QIANYI METAL MATERIAL CO., LTD

客户 CUSTOMER: 华联威

牌号: C2680 R 状态: EH 规格 (mm): 0.18

化学成分 CHEMICAL COMPOSITION% 化学标准 GB/T5231-2001

| 成份  | Cu        | Pb      | Fe      | Zn  | 杂质    |
|-----|-----------|---------|---------|-----|-------|
| 标准值 | 63.5-68.0 | max0.03 | max0.10 | rem | ..... |
| 实测值 | 64.36     | 0.0067  | 0.0276  | rem | ..... |

物理性能 PHYSICAL PROPERTY 性能标准 GB/T5231-2001

| 性能  | 抗拉 (Mpa)         | 延伸率 (%)    | 维氏硬度 (HV)     | 厚度公差 (mm) | 宽度公差 (mm) |
|-----|------------------|------------|---------------|-----------|-----------|
|     | Tensile strength | Elongation | Hardness Test | Thickness | Width     |
| 标准值 | 530-620          | ≥4         | 160-190       | +0        | +0        |
| 实测值 | 558.4            | good       | 178.4         | -0.01     | -0.05     |

发货日期: 2023-07-11





# Test Report

No. CANEC2222380712

Date: 26 Oct 2022

Page 1 of 6

Client Name : SHENZHEN HUALIANWEI ELECTRONICS TECHNOLOGY CO.,LTD

Client Address : 101, 201, PLANT 1, NO.307, GUANLAN GUIHUA ROAD, GUIXIANG COMMUNITY, GUANLAN SUB-DISTRICT, LONGHUA DISTRICT, SHENZHEN CITY, GUANGDONG PROVINCE, CHINA

Sample Name : PA46 black plastic

Model No. : PA46 black plastic

Client Ref. Info. : Used for USB series, HDMI series, RJ series, 1394 series, MICRO series, MINI series, DISPLAYPORT series, VGA series, DVI series, TYPE-C series, JACK series

The above sample(s) and information were provided by the client.

SGS Job No. : CP22-057100 - GZ

Date of Sample Received : 20 Oct 2022

Testing Period : 20 Oct 2022 - 26 Oct 2022

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

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

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

Result Summary :

| Test Requested                                                                                                                                                                                                                                                                                                             | Conclusion |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU- Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP) | PASS       |

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

*Dongyu Xie*

Dongyu Xie  
Approved Signatory

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## Test Report

No. CANEC2222380712

Date: 26 Oct 2022

Page 2 of 6

Test Result(s) :

### Test Part Description :

| Specimen No. | SGS Sample ID    | Description   |
|--------------|------------------|---------------|
| SN1          | CAN22-223807.012 | Black plastic |

Remarks :

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

**EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU- Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP)**

Test Method : With reference to IEC 62321-4:2013+A1:2017, IEC 62321-5:2013, IEC 62321-7-2:2017 , IEC 62321-6:2015 and IEC 62321-8:2017, analyzed by ICP-OES , UV-Vis and GC-MS .

| Test Item(s)               | Limit | Unit  | MDL | 012 |
|----------------------------|-------|-------|-----|-----|
| Cadmium (Cd)               | 100   | mg/kg | 2   | ND  |
| Lead (Pb)                  | 1000  | mg/kg | 2   | 5   |
| Mercury (Hg)               | 1000  | mg/kg | 2   | ND  |
| Hexavalent Chromium (CrVI) | 1000  | mg/kg | 8   | ND  |
| Sum of PBBs                | 1000  | mg/kg | -   | ND  |
| Monobromobiphenyl          | -     | mg/kg | 5   | ND  |
| Dibromobiphenyl            | -     | mg/kg | 5   | ND  |
| Tribromobiphenyl           | -     | mg/kg | 5   | ND  |
| Tetrabromobiphenyl         | -     | mg/kg | 5   | ND  |
| Pentabromobiphenyl         | -     | mg/kg | 5   | ND  |
| Hexabromobiphenyl          | -     | mg/kg | 5   | ND  |
| Heptabromobiphenyl         | -     | mg/kg | 5   | ND  |
| Octabromobiphenyl          | -     | mg/kg | 5   | ND  |
| Nonabromobiphenyl          | -     | mg/kg | 5   | ND  |
| Decabromobiphenyl          | -     | mg/kg | 5   | ND  |
| Sum of PBDEs               | 1000  | mg/kg | -   | ND  |
| Monobromodiphenyl ether    | -     | mg/kg | 5   | ND  |
| Dibromodiphenyl ether      | -     | mg/kg | 5   | ND  |
| Tribromodiphenyl ether     | -     | mg/kg | 5   | ND  |
| Tetrabromodiphenyl ether   | -     | mg/kg | 5   | ND  |



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# Test Report

No. CANEC2222380712

Date: 26 Oct 2022

Page 3 of 6

| <u>Test Item(s)</u>                 | <u>Limit</u> | <u>Unit</u> | <u>MDL</u> | <u>012</u> |
|-------------------------------------|--------------|-------------|------------|------------|
| 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         |
| Dibutyl phthalate (DBP)             | 1000         | mg/kg       | 50         | ND         |
| Butyl benzyl phthalate (BBP)        | 1000         | mg/kg       | 50         | ND         |
| Bis (2-ethylhexyl) phthalate (DEHP) | 1000         | mg/kg       | 50         | ND         |
| Diisobutyl Phthalates (DIBP)        | 1000         | mg/kg       | 50         | ND         |

**Notes :**

- (1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.
- (2) IEC 62321 series is equivalent to EN 62321 series
- (3) The restriction of DEHP, BBP, DBP and DIBP shall apply to medical devices, including in vitro medical devices, and monitoring and control instruments, including industrial monitoring and control instruments, from 22 July 2021.

Unless otherwise stated, the decision rule for conformity reporting is based on Binary Statement for Simple Acceptance Rule (  $w=0$ ) stated in ILAC-G8:09/2019.



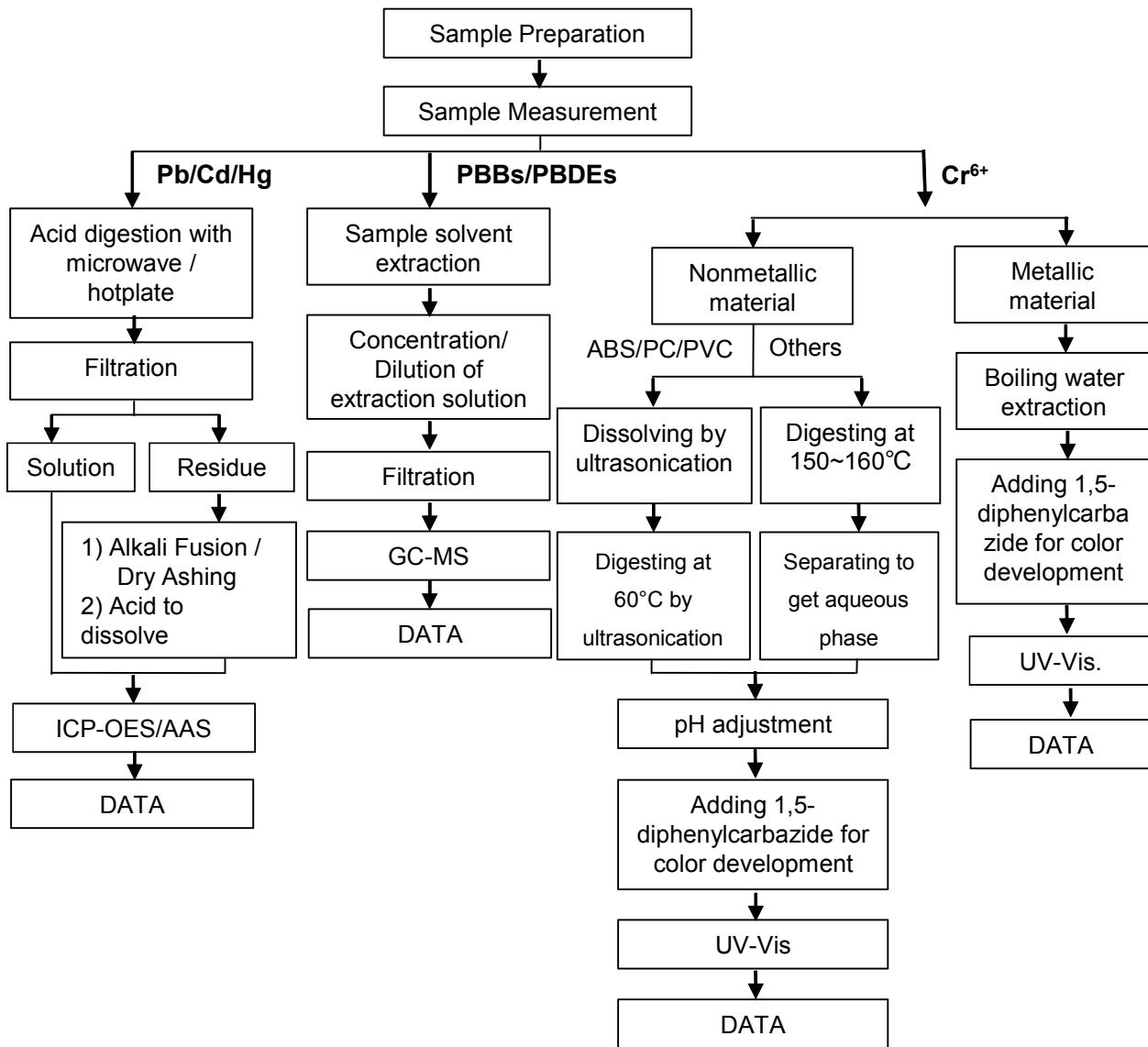
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ATTACHMENTS

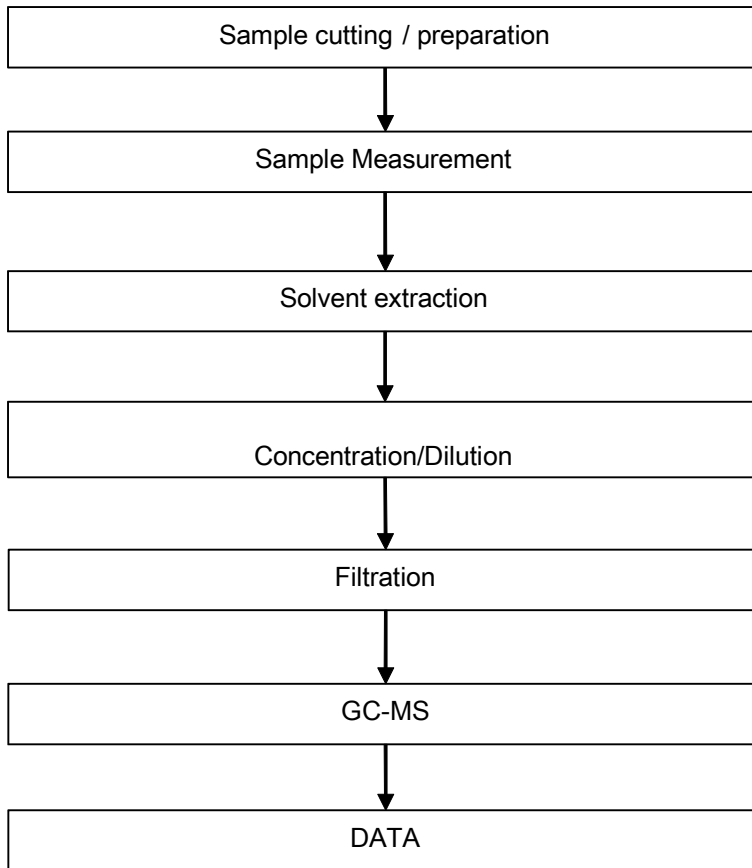
**Pb/Cd/Hg/Cr<sup>6+</sup>/PBBs/PBDEs Testing Flow Chart**

1) These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr<sup>6+</sup> and PBBs/PBDEs test method excluded).



## ATTACHMENTS

### Phthalates Testing Flow Chart



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Sample photo:



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\*\*\* End of Report \*\*\*



## Test Report

No. CANEC2222380701

Date: 26 Oct 2022

Page 1 of 4

Client Name : SHENZHEN HUALIANWEI ELECTRONICS TECHNOLOGY CO.,LTD

Client Address : 101, 201, PLANT 1, NO.307, GUANLAN GUIHUA ROAD, GUIXIANG COMMUNITY, GUANLAN SUB-DISTRICT, LONGHUA DISTRICT, SHENZHEN CITY, GUANGDONG PROVINCE, CHINA

Sample Name : C2680 Terminal

Model No. : C2680 terminal after plating

Client Ref. Info. : Used for USB series, HDMI series, RJ series, 1394 series, MICRO series, MINI series, DISPLAYPORT series, VGA series, DVI series, TYPE-C series, JACK series

The above sample(s) and information were provided by the client.

SGS Job No. : CP22-057100 - GZ

Date of Sample Received : 20 Oct 2022

Testing Period : 20 Oct 2022 - 26 Oct 2022

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

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

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

### Result Summary :

| Test Requested                                                                                                            | Conclusion |
|---------------------------------------------------------------------------------------------------------------------------|------------|
| EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU- Lead, Mercury, Cadmium and Hexavalent chromium | PASS       |

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

*Dongyu Xie*

Dongyu Xie  
Approved Signatory

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

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198 Kezhu Road, Sciencetech Park Guangzhou Economic & Technology Development District, Guangzhou, China 510663

中国·广州·经济技术开发区科学城科珠路198号

邮编: 510663

t (86-20) 82155555

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Test Result(s) :

Test Part Description :

| Specimen No. | SGS Sample ID    | Description              |
|--------------|------------------|--------------------------|
| SN1          | CAN22-223807.001 | Silver-grey/brassy metal |

Remarks :

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

**EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU- Lead, Mercury, Cadmium and Hexavalent chromium**

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

| <u>Test Item(s)</u>           | <u>Limit</u> | <u>Unit</u>        | <u>MDL</u> | <u>001</u> |
|-------------------------------|--------------|--------------------|------------|------------|
| Cadmium (Cd)                  | 100          | mg/kg              | 2          | ND         |
| Lead (Pb)                     | 1000         | mg/kg              | 2          | 3          |
| Mercury (Hg)                  | 1000         | mg/kg              | 2          | ND         |
| Hexavalent Chromium (Cr(VI))▼ | -            | µg/cm <sup>2</sup> | 0.10       | ND         |

Notes :

- (1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.
  - (2) IEC 62321 series is equivalent to EN 62321 series
  - (3) ▼= a. The sample is positive for CrVI if the CrVI concentration is greater than 0.13 µg/cm<sup>2</sup>. The sample coating is considered to contain CrVI  
 b. The sample is negative for CrVI if CrVI is ND (concentration less than 0.10 µg/cm<sup>2</sup>). The coating is considered a non-CrVI based coating  
 c. The result between 0.10 µg/cm<sup>2</sup> and 0.13 µg/cm<sup>2</sup> is considered to be inconclusive - unavoidable coating variations may influence the determination
- Information on storage conditions and production date of the tested sample is unavailable and thus Cr(VI) results represent status of the sample at the time of testing.

Unless otherwise stated, the decision rule for conformity reporting is based on Binary Statement for Simple Acceptance Rule ( w=0) stated in ILAC-G8:09/2019.



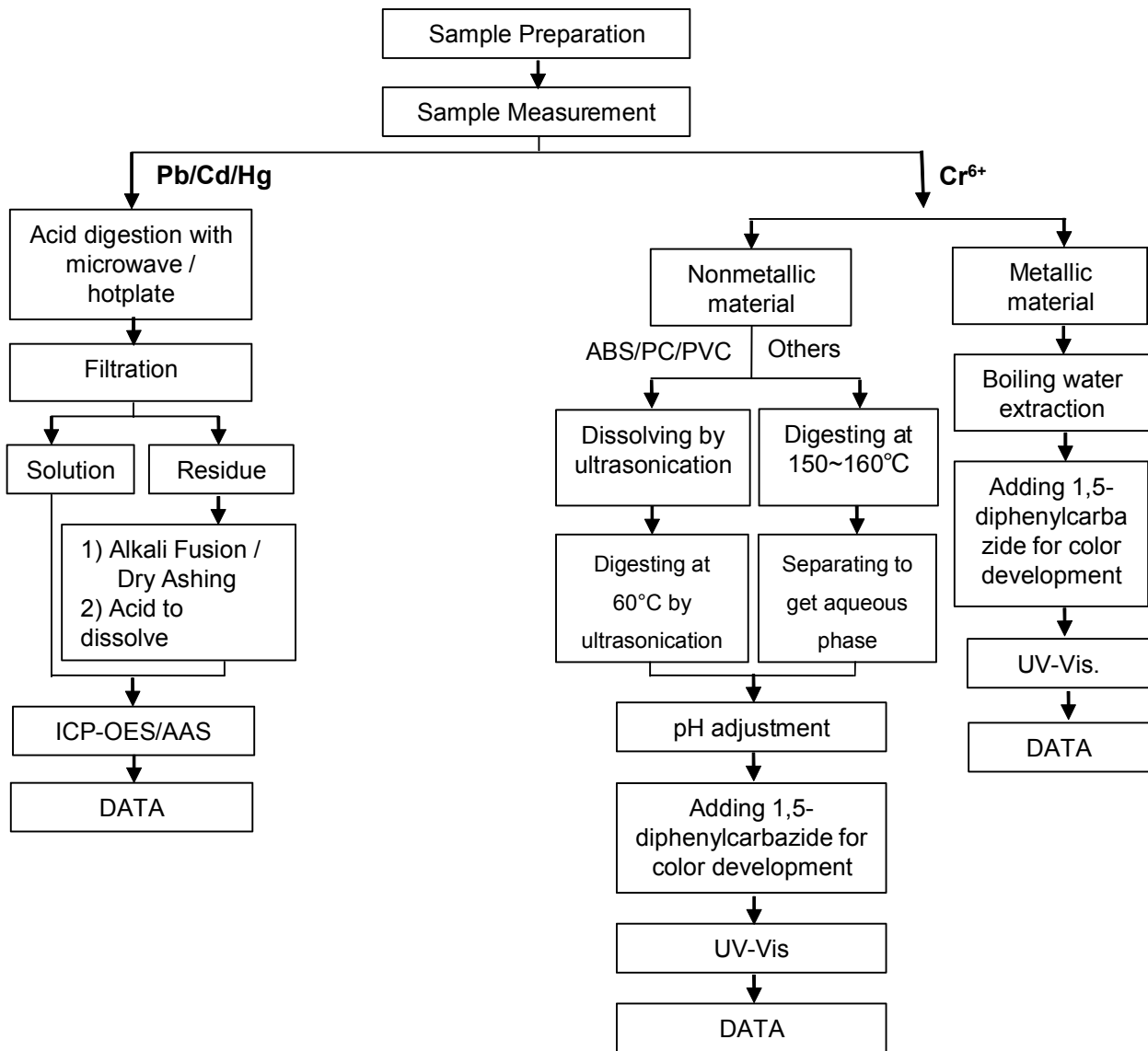
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Pb/Cd/Hg/Cr<sup>6+</sup> Testing Flow Chart

1) These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr<sup>6+</sup> test method excluded).



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Sample photo:



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## Test Report

No. CANEC2218227001

Date: 30 Aug 2022

Page 1 of 8

Client Name : SHENZHEN CITY TONGHUA INDUSTRY CO.,LTD

Client Address : TONGHUA MANSIN TONGLE XINBU VILLANG TOWN SHENZHEN CITY CHINA

Sample Name : Nickel(Ni)

The above sample(s) and information were provided by the client.

SGS Job No. : CP22-047169 - SZ  
 Date of Sample Received : 25 Aug 2022  
 Testing Period : 25 Aug 2022 - 30 Aug 2022  
 Test Requested : Selected test(s) as requested by the client.  
 Test Method(s) : Please refer to next page(s).  
 Test Result(s) : Please refer to next page(s).

Result Summary :

| Test Requested                                                                                                                                                                                                                                                                                                             | Conclusion  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU- Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP) | PASS        |
| Perfluorooctanoic acid (PFOA) and its salts & Perfluorooctane sulfonates (PFOS) and its derivatives                                                                                                                                                                                                                        | See Results |

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

*Dongyu Xie*

Dongyu Xie  
 Approved Signatory

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## Test Report

No. CANEC2218227001

Date: 30 Aug 2022

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Test Result(s) :

Test Part Description :

| Specimen No. | SGS Sample ID    | Description              |
|--------------|------------------|--------------------------|
| SN1          | CAN22-182270.001 | Silver-gray plated metal |

Remarks :

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

**EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU- Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP)**

Test Method : With reference to IEC 62321-4:2013+A1:2017, IEC 62321-5:2013, IEC 62321-7-1:2015 , IEC 62321-6:2015 and IEC 62321-8:2017, analyzed by ICP-OES , UV-Vis and GC-MS .

| <u>Test Item(s)</u>           | <u>Limit</u> | <u>Unit</u>        | <u>MDL</u> | <u>001</u> |
|-------------------------------|--------------|--------------------|------------|------------|
| Cadmium (Cd)                  | 100          | mg/kg              | 2          | ND         |
| Lead (Pb)                     | 1000         | mg/kg              | 2          | 49         |
| Mercury (Hg)                  | 1000         | mg/kg              | 2          | ND         |
| Hexavalent Chromium (Cr(VI))▼ | -            | µg/cm <sup>2</sup> | 0.10       | ND         |
| Sum of PBBs                   | 1000         | mg/kg              | -          | ND         |
| Monobromobiphenyl             | -            | mg/kg              | 5          | ND         |
| Dibromobiphenyl               | -            | mg/kg              | 5          | ND         |
| Tribromobiphenyl              | -            | mg/kg              | 5          | ND         |
| Tetrabromobiphenyl            | -            | mg/kg              | 5          | ND         |
| Pentabromobiphenyl            | -            | mg/kg              | 5          | ND         |
| Hexabromobiphenyl             | -            | mg/kg              | 5          | ND         |
| Heptabromobiphenyl            | -            | mg/kg              | 5          | ND         |
| Octabromobiphenyl             | -            | mg/kg              | 5          | ND         |
| Nonabromobiphenyl             | -            | mg/kg              | 5          | ND         |
| Decabromobiphenyl             | -            | mg/kg              | 5          | ND         |
| Sum of PBDEs                  | 1000         | mg/kg              | -          | ND         |
| Monobromodiphenyl ether       | -            | mg/kg              | 5          | ND         |
| Dibromodiphenyl ether         | -            | mg/kg              | 5          | ND         |
| Tribromodiphenyl ether        | -            | mg/kg              | 5          | ND         |
| Tetrabromodiphenyl ether      | -            | mg/kg              | 5          | ND         |



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## Test Report

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Date: 30 Aug 2022

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

### Notes :

- (1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.
- (2) IEC 62321 series is equivalent to EN 62321 series
- (3) ▼= a. The sample is positive for CrVI if the CrVI concentration is greater than 0.13 µg/cm<sup>2</sup>. The sample coating is considered to contain CrVI  
 b. The sample is negative for CrVI if CrVI is ND (concentration less than 0.10 µg/cm<sup>2</sup>). The coating is considered a non-CrVI based coating  
 c. The result between 0.10 µg/cm<sup>2</sup> and 0.13 µg/cm<sup>2</sup> is considered to be inconclusive - unavoidable coating variations may influence the determination  
 Information on storage conditions and production date of the tested sample is unavailable and thus Cr(VI) results represent status of the sample at the time of testing.

### Perfluorooctanoic acid (PFOA) and its salts & Perfluorooctane sulfonates (PFOS) and its derivatives

Test Method : With reference to CEN/TS15968:2010, analysis was performed by LC-MS or LC-MS/MS.

| <u>Test Item(s)</u>                                       | <u>CAS NO.</u> | <u>Unit</u> | <u>MDL</u> | <u>001</u> |
|-----------------------------------------------------------|----------------|-------------|------------|------------|
| Perfluorooctanoic acid (PFOA) and its salts+              | 335-67-1       | mg/kg       | 0.010      | ND         |
| Perfluorooctane sulfonates (PFOS) ^                       | 1763-23-1      | mg/kg       | 0.010      | ND         |
| Perfluorooctane Sulfonamide (PFOSA)                       | 754-91-6       | mg/kg       | 0.010      | ND         |
| N-methylperfluoro-1-octanesulfonamide(MeFOSA)             | 31506-32-8     | mg/kg       | 0.010      | ND         |
| N-ethylperfluoro-1-octanesulfonamide (EtFOSA)             | 4151-50-2      | mg/kg       | 0.010      | ND         |
| 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol(MeFOSE) | 24448-09-7     | mg/kg       | 0.010      | ND         |
| 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol(EtFOSE)  | 1691-99-2      | mg/kg       | 0.010      | ND         |
| Perfluorooctane sulfonates (PFOS) and its derivatives     | -              | mg/kg       | -          | ND         |

### Notes :



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- (1) + PFOA and its salts including PFOA-Na (CAS No.: 335-95-5), PFOA-K (CAS No.: 2395-00-8), PFOA-Ag (CAS No.: 335-93-3), PFOA-F (CAS No.: 335-66-0) and APFO (CAS No.: 3825-26-1);
- (2) ^ PFOS including PFOS-K (CAS No.: 2795-39-3), PFOS-Li (CAS No.: 29457-72-5), PFOS-NH<sub>4</sub> (CAS No.: 29081-56-9), PFOS-NH(OH)<sub>2</sub> (CAS No.: 70225-14-8), PFOS-N(C<sub>2</sub>H<sub>5</sub>)<sub>4</sub> (CAS No.: 56773-42-3), PFOS-DDA (CAS No.: 251099-16-8) and POSF (CAS No.: 307-35-7)

Unless otherwise stated, the decision rule for conformity reporting is based on Binary Statement for Simple Acceptance Rule ( $w=0$ ) stated in ILAC-G8:09/2019.



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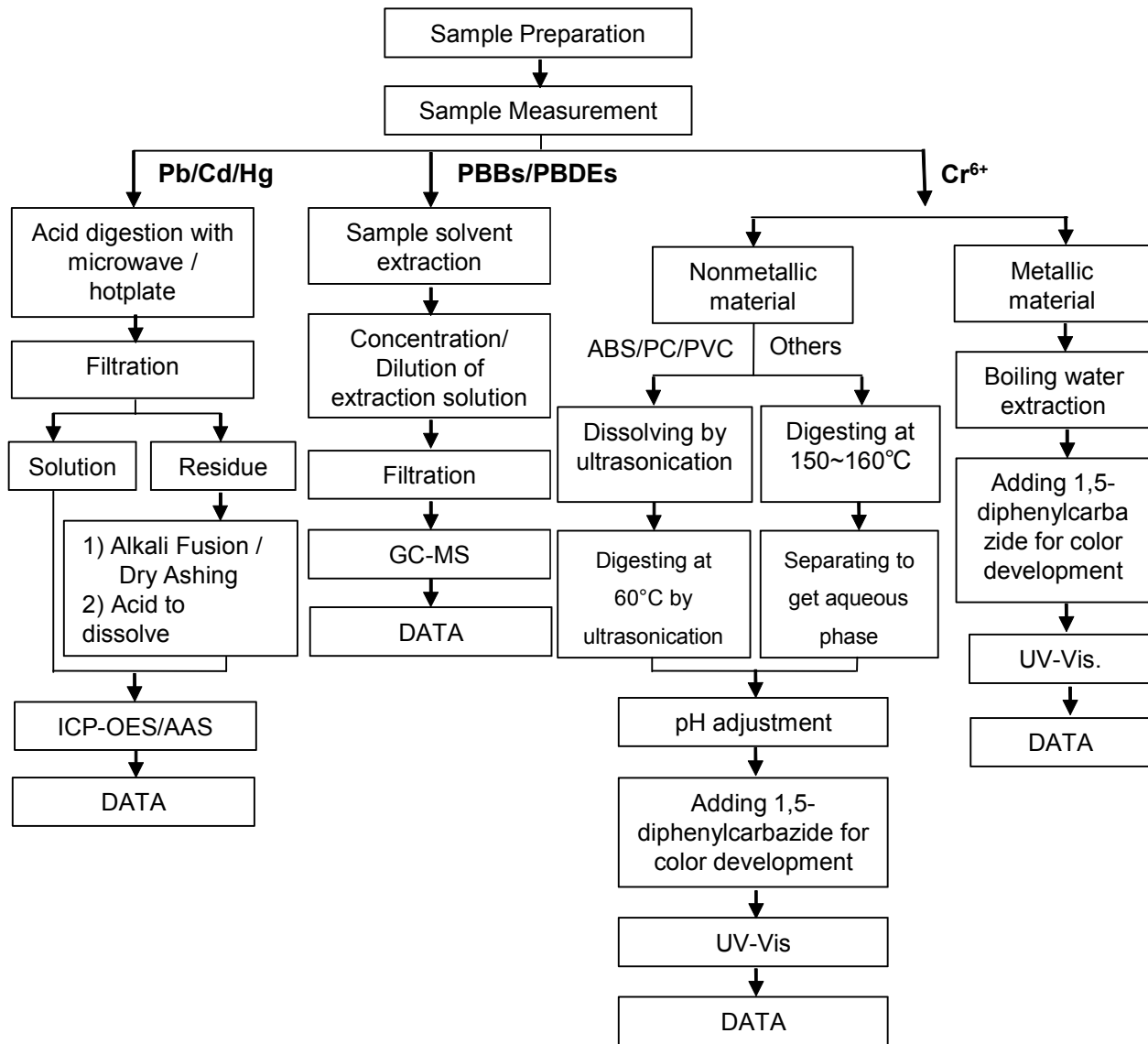
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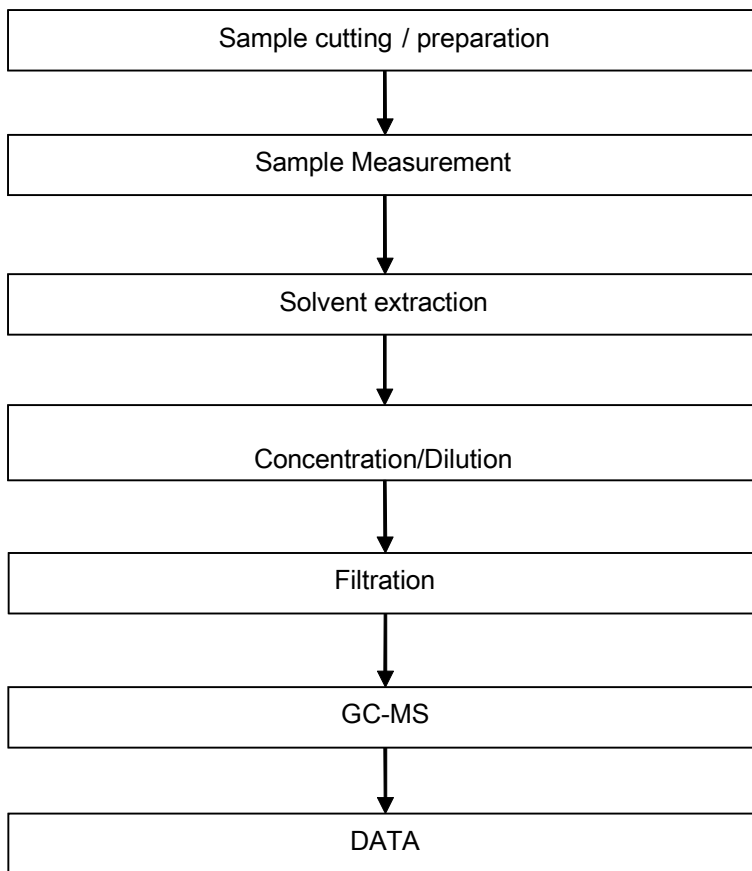
**Pb/Cd/Hg/Cr<sup>6+</sup>/PBBs/PBDEs Testing Flow Chart**

1) These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr<sup>6+</sup> and PBBs/PBDEs test method excluded).



## ATTACHMENTS

### Phthalates Testing Flow Chart

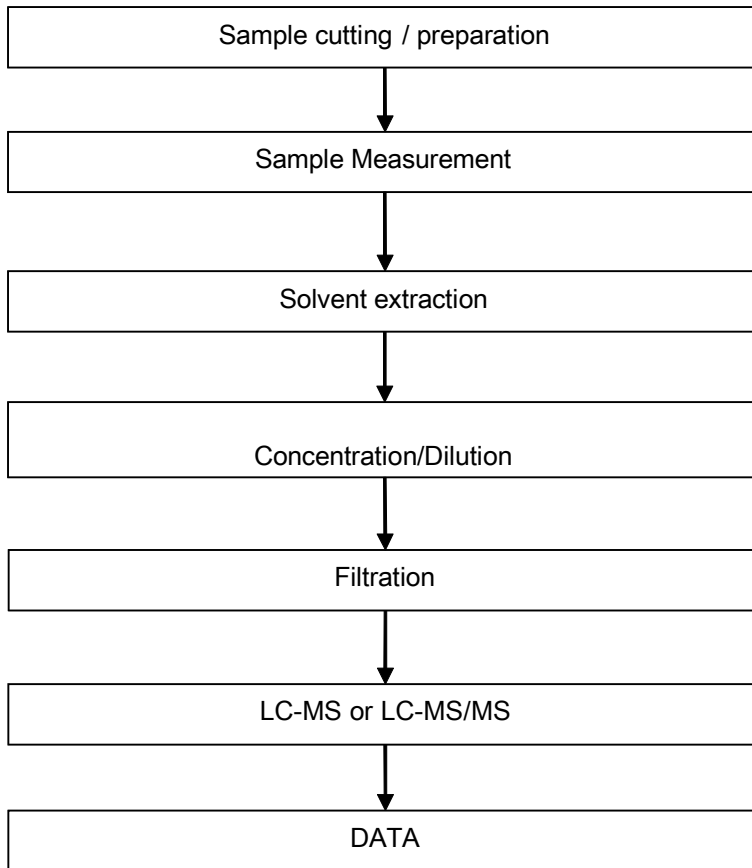


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PFOA / PFOS Testing Flow Chart



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# Test Report

No. CANEC2218227003

Date: 30 Aug 2022

Page 1 of 8

Client Name : SHENZHEN CITY TONGHUA INDUSTRY CO.,LTD

Client Address : TONGHUA MANSIN TONGLE XINBU VILLANG TOWN SHENZHEN CITY CHINA

Sample Name : Bright Tin(SN)

The above sample(s) and information were provided by the client.

SGS Job No. : CP22-047169 - SZ  
 Date of Sample Received : 25 Aug 2022  
 Testing Period : 25 Aug 2022 - 30 Aug 2022  
 Test Requested : Selected test(s) as requested by the client.  
 Test Method(s) : Please refer to next page(s).  
 Test Result(s) : Please refer to next page(s).

Result Summary :

| Test Requested                                                                                                                                                                                                                                                                                                             | Conclusion  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU- Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP) | PASS        |
| Perfluorooctanoic acid (PFOA) and its salts & Perfluorooctane sulfonates (PFOS) and its derivatives                                                                                                                                                                                                                        | See Results |

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

*Dongyu Xie*

Dongyu Xie  
 Approved Signatory

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## Test Report

No. CANEC2218227003

Date: 30 Aug 2022

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Test Result(s) :

### Test Part Description :

| Specimen No. | SGS Sample ID    | Description              |
|--------------|------------------|--------------------------|
| SN1          | CAN22-182270.003 | Silver-gray plated metal |

Remarks :

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

**EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU- Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP)**

Test Method : With reference to IEC 62321-4:2013+A1:2017, IEC 62321-5:2013, IEC 62321-7-1:2015 , IEC 62321-6:2015 and IEC 62321-8:2017, analyzed by ICP-OES , UV-Vis and GC-MS .

| Test Item(s)                  | Limit | Unit               | MDL  | 003 |
|-------------------------------|-------|--------------------|------|-----|
| Cadmium (Cd)                  | 100   | mg/kg              | 2    | ND  |
| Lead (Pb)                     | 1000  | mg/kg              | 2    | 44  |
| Mercury (Hg)                  | 1000  | mg/kg              | 2    | ND  |
| Hexavalent Chromium (Cr(VI))▼ | -     | µg/cm <sup>2</sup> | 0.10 | ND  |
| Sum of PBBs                   | 1000  | mg/kg              | -    | ND  |
| Monobromobiphenyl             | -     | mg/kg              | 5    | ND  |
| Dibromobiphenyl               | -     | mg/kg              | 5    | ND  |
| Tribromobiphenyl              | -     | mg/kg              | 5    | ND  |
| Tetrabromobiphenyl            | -     | mg/kg              | 5    | ND  |
| Pentabromobiphenyl            | -     | mg/kg              | 5    | ND  |
| Hexabromobiphenyl             | -     | mg/kg              | 5    | ND  |
| Heptabromobiphenyl            | -     | mg/kg              | 5    | ND  |
| Octabromobiphenyl             | -     | mg/kg              | 5    | ND  |
| Nonabromobiphenyl             | -     | mg/kg              | 5    | ND  |
| Decabromobiphenyl             | -     | mg/kg              | 5    | ND  |
| Sum of PBDEs                  | 1000  | mg/kg              | -    | ND  |
| Monobromodiphenyl ether       | -     | mg/kg              | 5    | ND  |
| Dibromodiphenyl ether         | -     | mg/kg              | 5    | ND  |
| Tribromodiphenyl ether        | -     | mg/kg              | 5    | ND  |
| Tetrabromodiphenyl ether      | -     | mg/kg              | 5    | ND  |



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## Test Report

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| <u>Test Item(s)</u>                 | <u>Limit</u> | <u>Unit</u> | <u>MDL</u> | <u>003</u> |
|-------------------------------------|--------------|-------------|------------|------------|
| 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         |
| Dibutyl phthalate (DBP)             | 1000         | mg/kg       | 50         | ND         |
| Butyl benzyl phthalate (BBP)        | 1000         | mg/kg       | 50         | ND         |
| Bis (2-ethylhexyl) phthalate (DEHP) | 1000         | mg/kg       | 50         | ND         |
| Diisobutyl Phthalates (DIBP)        | 1000         | mg/kg       | 50         | ND         |

### Notes :

- (1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.
- (2) IEC 62321 series is equivalent to EN 62321 series
- (3) ▼= a. The sample is positive for CrVI if the CrVI concentration is greater than 0.13  $\mu\text{g}/\text{cm}^2$ . The sample coating is considered to contain CrVI  
 b. The sample is negative for CrVI if CrVI is ND (concentration less than 0.10  $\mu\text{g}/\text{cm}^2$ ). The coating is considered a non-CrVI based coating  
 c. The result between 0.10  $\mu\text{g}/\text{cm}^2$  and 0.13  $\mu\text{g}/\text{cm}^2$  is considered to be inconclusive - unavoidable coating variations may influence the determination  
 Information on storage conditions and production date of the tested sample is unavailable and thus Cr(VI) results represent status of the sample at the time of testing.

### Perfluorooctanoic acid (PFOA) and its salts & Perfluorooctane sulfonates (PFOS) and its derivatives

Test Method : With reference to CEN/TS15968:2010, analysis was performed by LC-MS or LC-MS/MS.

| <u>Test Item(s)</u>                                       | <u>CAS NO.</u> | <u>Unit</u> | <u>MDL</u> | <u>003</u> |
|-----------------------------------------------------------|----------------|-------------|------------|------------|
| Perfluorooctanoic acid (PFOA) and its salts+              | 335-67-1       | mg/kg       | 0.010      | ND         |
| Perfluorooctane sulfonates (PFOS) ^                       | 1763-23-1      | mg/kg       | 0.010      | ND         |
| Perfluorooctane Sulfonamide (PFOSA)                       | 754-91-6       | mg/kg       | 0.010      | ND         |
| N-methylperfluoro-1-octanesulfonamide(MeFOSA)             | 31506-32-8     | mg/kg       | 0.010      | ND         |
| N-ethylperfluoro-1-octanesulfonamide (EtFOSA)             | 4151-50-2      | mg/kg       | 0.010      | ND         |
| 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol(MeFOSE) | 24448-09-7     | mg/kg       | 0.010      | ND         |
| 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol(EtFOSE)  | 1691-99-2      | mg/kg       | 0.010      | ND         |
| Perfluorooctane sulfonates (PFOS) and its derivatives     | -              | mg/kg       | -          | ND         |

### Notes :



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- (1) + PFOA and its salts including PFOA-Na (CAS No.: 335-95-5), PFOA-K (CAS No.: 2395-00-8), PFOA-Ag (CAS No.: 335-93-3), PFOA-F (CAS No.: 335-66-0) and APFO (CAS No.: 3825-26-1);
- (2) ^ PFOS including PFOS-K (CAS No.: 2795-39-3), PFOS-Li (CAS No.: 29457-72-5), PFOS-NH<sub>4</sub> (CAS No.: 29081-56-9), PFOS-NH(OH)<sub>2</sub> (CAS No.: 70225-14-8), PFOS-N(C<sub>2</sub>H<sub>5</sub>)<sub>4</sub> (CAS No.: 56773-42-3), PFOS-DDA(CAS No.:251099-16-8) and POSF (CAS No.: 307-35-7)

Unless otherwise stated, the decision rule for conformity reporting is based on Binary Statement for Simple Acceptance Rule ( $w=0$ ) stated in ILAC-G8:09/2019.



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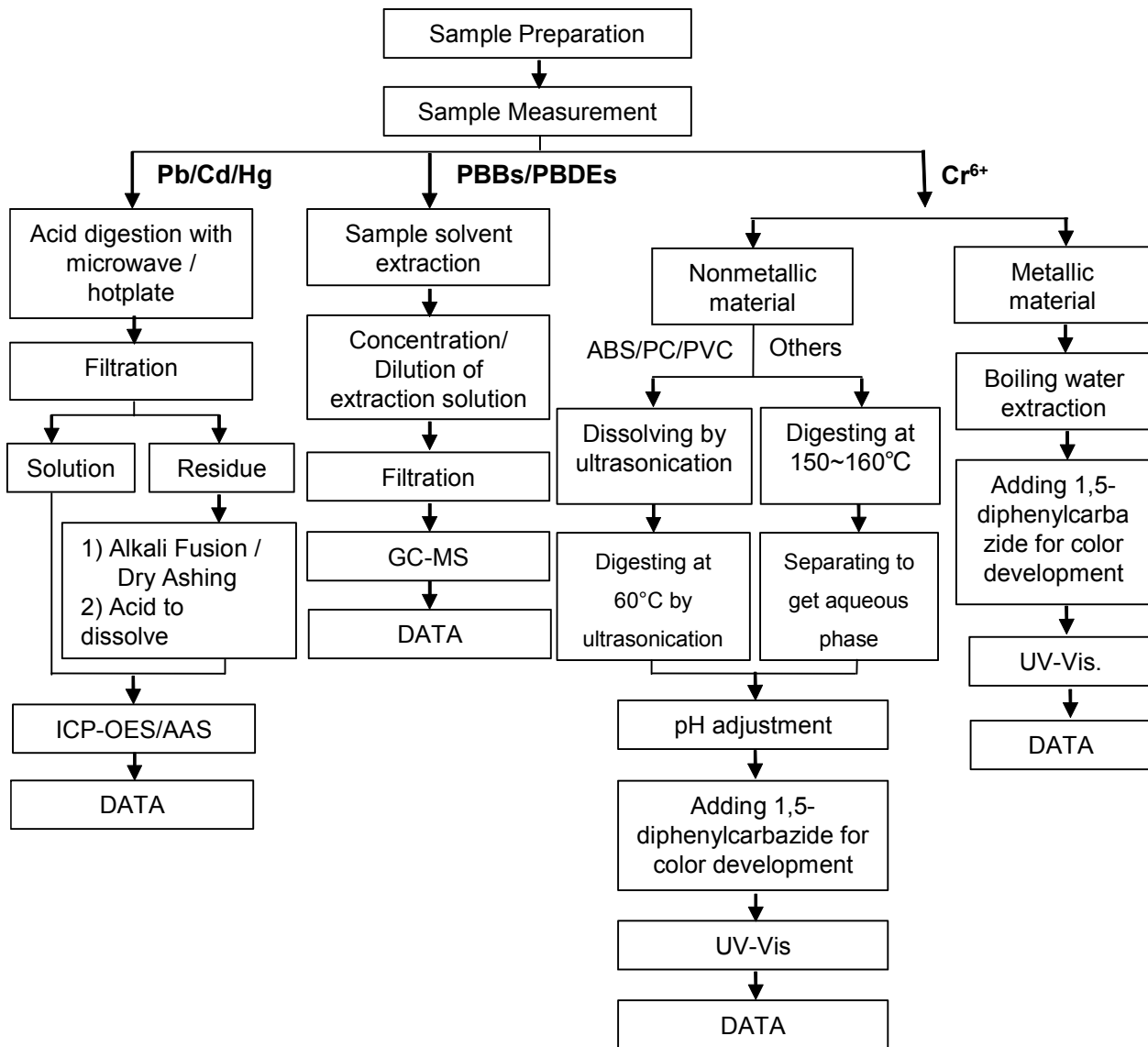
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Pb/Cd/Hg/Cr<sup>6+</sup>/PBBs/PBDEs Testing Flow Chart

1) These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr<sup>6+</sup> and PBBs/PBDEs test method excluded).

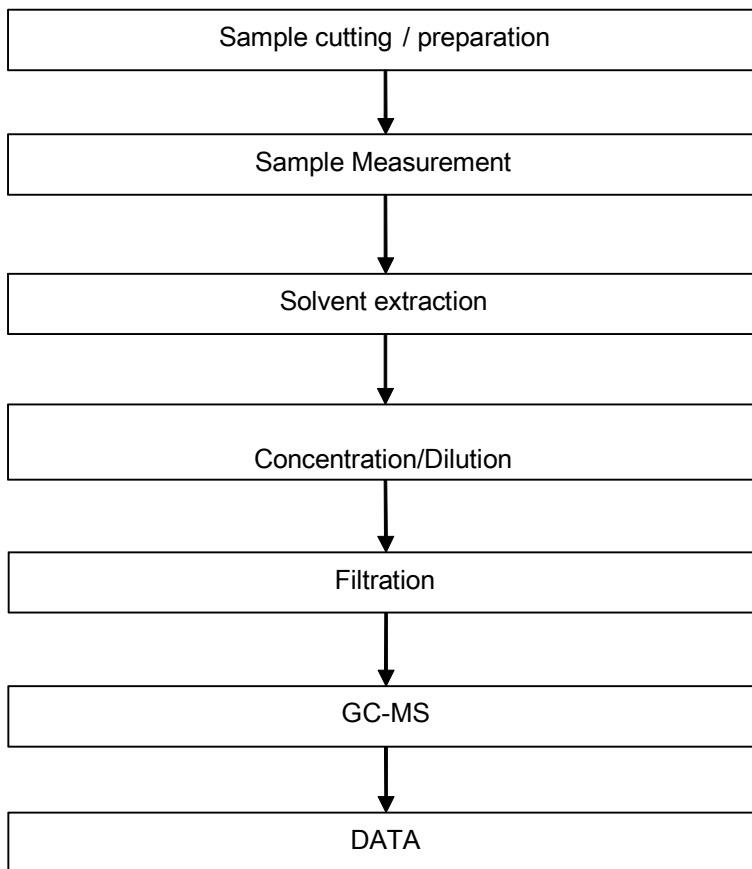


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Phthalates Testing Flow Chart

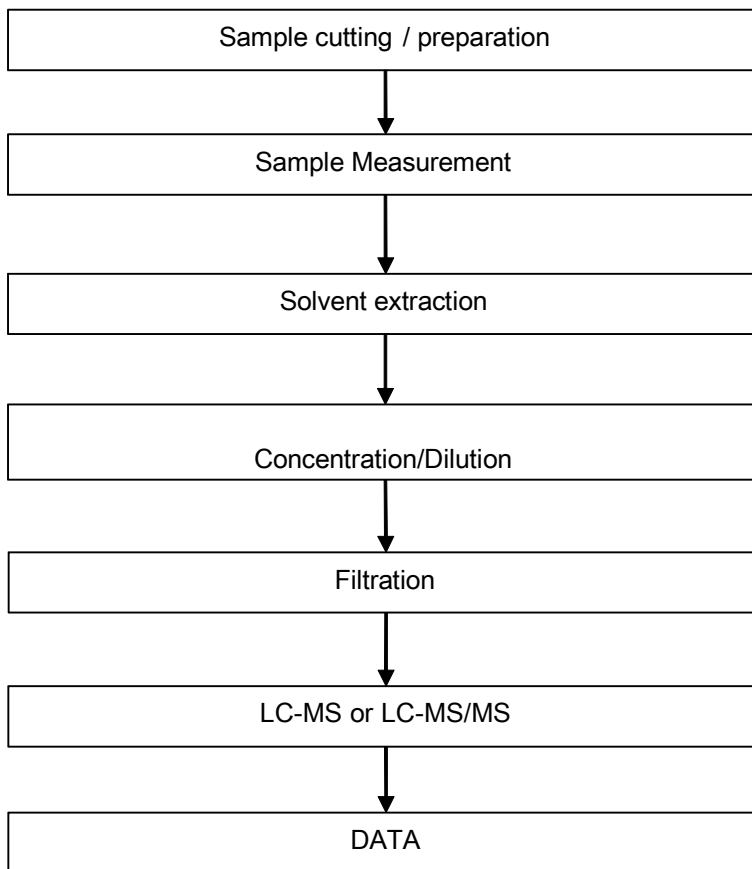


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PFOA / PFOS Testing Flow Chart



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## Test Report

No. CANEC2218227002

Date: 30 Aug 2022

Page 1 of 8

Client Name : SHENZHEN CITY TONGHUA INDUSTRY CO.,LTD

Client Address : TONGHUA MANSIN TONGLE XINBU VILLANG TOWN SHENZHEN CITY CHINA

Sample Name : Gold (AU)

The above sample(s) and information were provided by the client.

SGS Job No. : CP22-047169 - SZ  
 Date of Sample Received : 25 Aug 2022  
 Testing Period : 25 Aug 2022 - 30 Aug 2022  
 Test Requested : Selected test(s) as requested by the client.  
 Test Method(s) : Please refer to next page(s).  
 Test Result(s) : Please refer to next page(s).

Result Summary :

| Test Requested                                                                                                                                                                                                                                                                                                             | Conclusion  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU- Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP) | PASS        |
| Perfluorooctanoic acid (PFOA) and its salts & Perfluorooctane sulfonates (PFOS) and its derivatives                                                                                                                                                                                                                        | See Results |

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

*Dongyu Xie*

Dongyu Xie  
 Approved Signatory

scan to see the report



9B230D54



## Test Report

No. CANEC2218227002

Date: 30 Aug 2022

Page 2 of 8

Test Result(s) :

### Test Part Description :

| Specimen No. | SGS Sample ID    | Description       |
|--------------|------------------|-------------------|
| SN1          | CAN22-182270.002 | Gold plated metal |

Remarks :

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

**EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU- Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP)**

Test Method : With reference to IEC 62321-4:2013+A1:2017, IEC 62321-5:2013, IEC 62321-7-1:2015 , IEC 62321-6:2015 and IEC 62321-8:2017, analyzed by ICP-OES , UV-Vis and GC-MS .

| Test Item(s)                  | Limit | Unit               | MDL  | 002 |
|-------------------------------|-------|--------------------|------|-----|
| Cadmium (Cd)                  | 100   | mg/kg              | 2    | ND  |
| Lead (Pb)                     | 1000  | mg/kg              | 2    | 50  |
| Mercury (Hg)                  | 1000  | mg/kg              | 2    | ND  |
| Hexavalent Chromium (Cr(VI))▼ | -     | µg/cm <sup>2</sup> | 0.10 | ND  |
| Sum of PBBs                   | 1000  | mg/kg              | -    | ND  |
| Monobromobiphenyl             | -     | mg/kg              | 5    | ND  |
| Dibromobiphenyl               | -     | mg/kg              | 5    | ND  |
| Tribromobiphenyl              | -     | mg/kg              | 5    | ND  |
| Tetrabromobiphenyl            | -     | mg/kg              | 5    | ND  |
| Pentabromobiphenyl            | -     | mg/kg              | 5    | ND  |
| Hexabromobiphenyl             | -     | mg/kg              | 5    | ND  |
| Heptabromobiphenyl            | -     | mg/kg              | 5    | ND  |
| Octabromobiphenyl             | -     | mg/kg              | 5    | ND  |
| Nonabromobiphenyl             | -     | mg/kg              | 5    | ND  |
| Decabromobiphenyl             | -     | mg/kg              | 5    | ND  |
| Sum of PBDEs                  | 1000  | mg/kg              | -    | ND  |
| Monobromodiphenyl ether       | -     | mg/kg              | 5    | ND  |
| Dibromodiphenyl ether         | -     | mg/kg              | 5    | ND  |
| Tribromodiphenyl ether        | -     | mg/kg              | 5    | ND  |
| Tetrabromodiphenyl ether      | -     | mg/kg              | 5    | ND  |



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# Test Report

No. CANEC2218227002

Date: 30 Aug 2022

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| <u>Test Item(s)</u>                 | <u>Limit</u> | <u>Unit</u> | <u>MDL</u> | <u>002</u> |
|-------------------------------------|--------------|-------------|------------|------------|
| 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         |
| Dibutyl phthalate (DBP)             | 1000         | mg/kg       | 50         | ND         |
| Butyl benzyl phthalate (BBP)        | 1000         | mg/kg       | 50         | ND         |
| Bis (2-ethylhexyl) phthalate (DEHP) | 1000         | mg/kg       | 50         | ND         |
| Diisobutyl Phthalates (DIBP)        | 1000         | mg/kg       | 50         | ND         |

**Notes :**

- (1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.
- (2) IEC 62321 series is equivalent to EN 62321 series
- (3) ▼= a. The sample is positive for CrVI if the CrVI concentration is greater than 0.13 µg/cm<sup>2</sup>. The sample coating is considered to contain CrVI  
 b. The sample is negative for CrVI if CrVI is ND (concentration less than 0.10 µg/cm<sup>2</sup>). The coating is considered a non-CrVI based coating  
 c. The result between 0.10 µg/cm<sup>2</sup> and 0.13 µg/cm<sup>2</sup> is considered to be inconclusive - unavoidable coating variations may influence the determination  
 Information on storage conditions and production date of the tested sample is unavailable and thus Cr(VI) results represent status of the sample at the time of testing.

**Perfluorooctanoic acid (PFOA) and its salts & Perfluorooctane sulfonates (PFOS) and its derivatives**

Test Method : With reference to CEN/TS15968:2010, analysis was performed by LC-MS or LC-MS/MS.

| <u>Test Item(s)</u>                                       | <u>CAS NO.</u> | <u>Unit</u> | <u>MDL</u> | <u>002</u> |
|-----------------------------------------------------------|----------------|-------------|------------|------------|
| Perfluorooctanoic acid (PFOA) and its salts+              | 335-67-1       | mg/kg       | 0.010      | ND         |
| Perfluorooctane sulfonates (PFOS) ^                       | 1763-23-1      | mg/kg       | 0.010      | ND         |
| Perfluorooctane Sulfonamide (PFOSA)                       | 754-91-6       | mg/kg       | 0.010      | ND         |
| N-methylperfluoro-1-octanesulfonamide(MeFOSA)             | 31506-32-8     | mg/kg       | 0.010      | ND         |
| N-ethylperfluoro-1-octanesulfonamide (EtFOSA)             | 4151-50-2      | mg/kg       | 0.010      | ND         |
| 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol(MeFOSE) | 24448-09-7     | mg/kg       | 0.010      | ND         |
| 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol(EtFOSE)  | 1691-99-2      | mg/kg       | 0.010      | ND         |
| Perfluorooctane sulfonates (PFOS) and its derivatives     | -              | mg/kg       | -          | ND         |

**Notes :**



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- (1) + PFOA and its salts including PFOA-Na (CAS No.: 335-95-5), PFOA-K (CAS No.: 2395-00-8), PFOA-Ag (CAS No.: 335-93-3), PFOA-F (CAS No.: 335-66-0) and APFO (CAS No.: 3825-26-1);
- (2) ^ PFOS including PFOS-K (CAS No.: 2795-39-3), PFOS-Li (CAS No.: 29457-72-5), PFOS-NH<sub>4</sub> (CAS No.: 29081-56-9), PFOS-NH(OH)<sub>2</sub> (CAS No.: 70225-14-8), PFOS-N(C<sub>2</sub>H<sub>5</sub>)<sub>4</sub> (CAS No.: 56773-42-3), PFOS-DDA (CAS No.: 251099-16-8) and POSF (CAS No.: 307-35-7)

Unless otherwise stated, the decision rule for conformity reporting is based on Binary Statement for Simple Acceptance Rule ( $w=0$ ) stated in ILAC-G8:09/2019.



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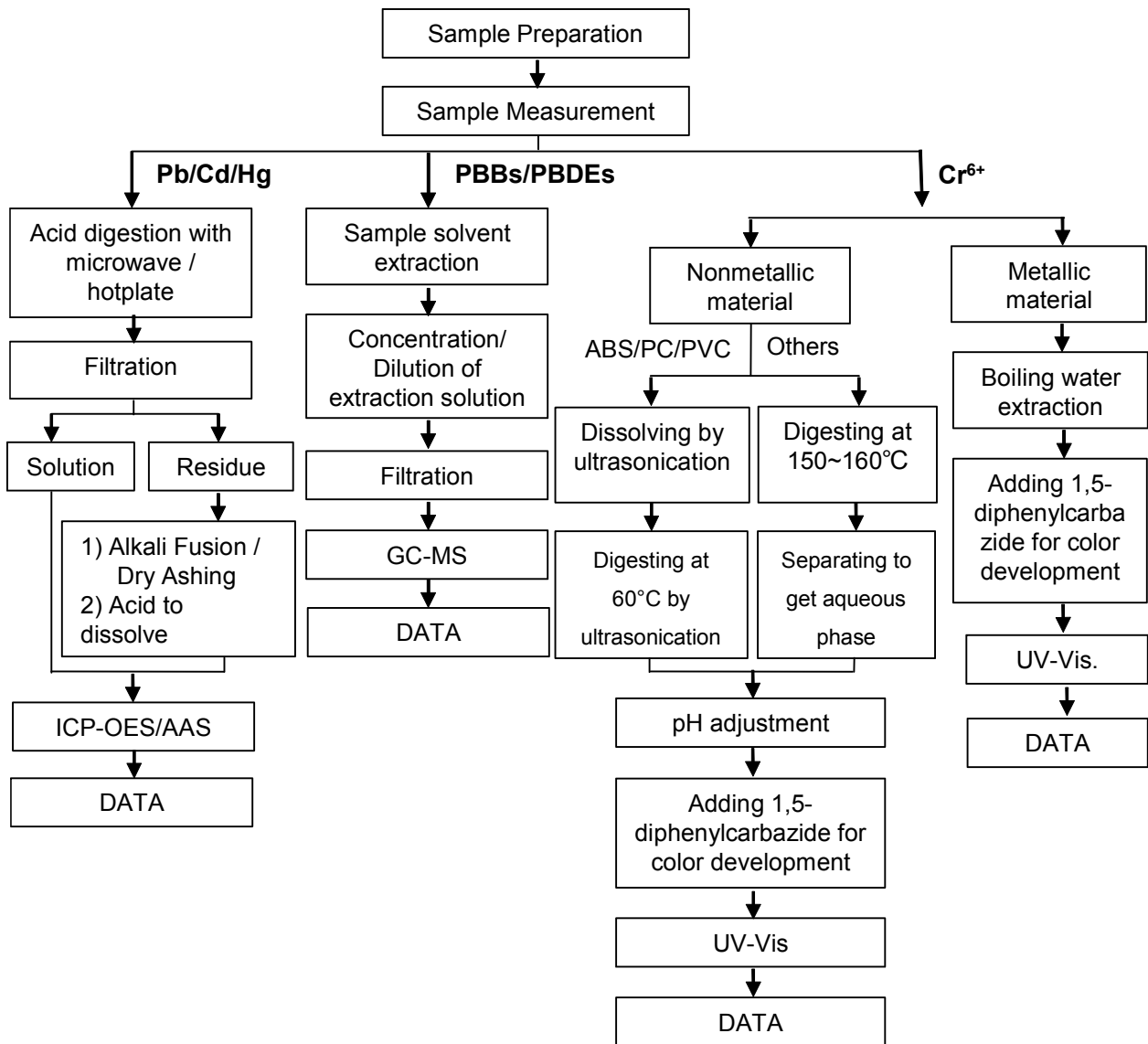
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Pb/Cd/Hg/Cr<sup>6+</sup>/PBBs/PBDEs Testing Flow Chart

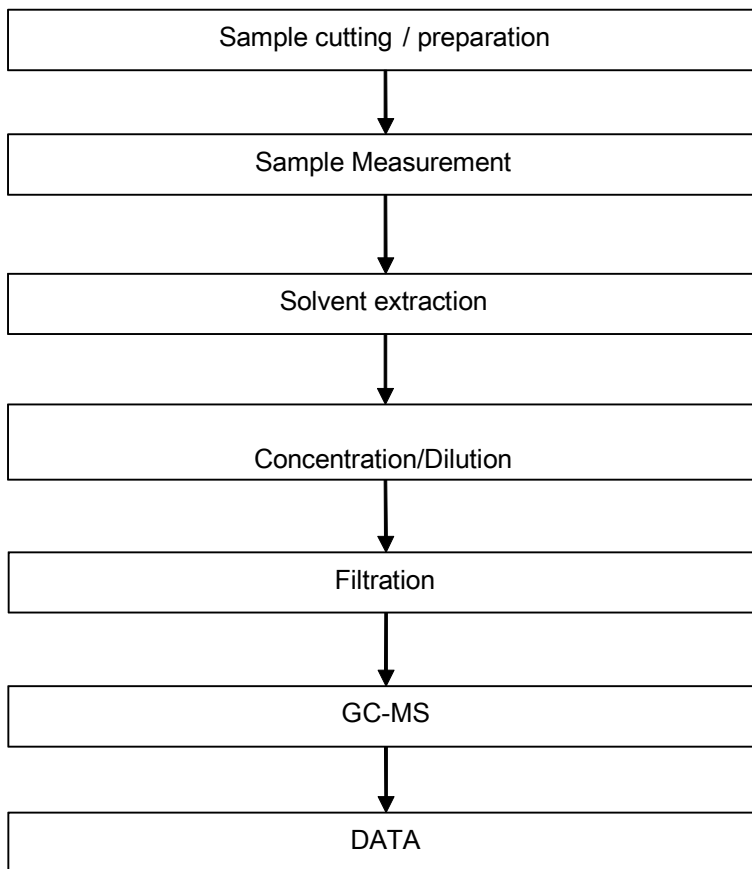
1) These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr<sup>6+</sup> and PBBs/PBDEs test method excluded).





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Phthalates Testing Flow Chart

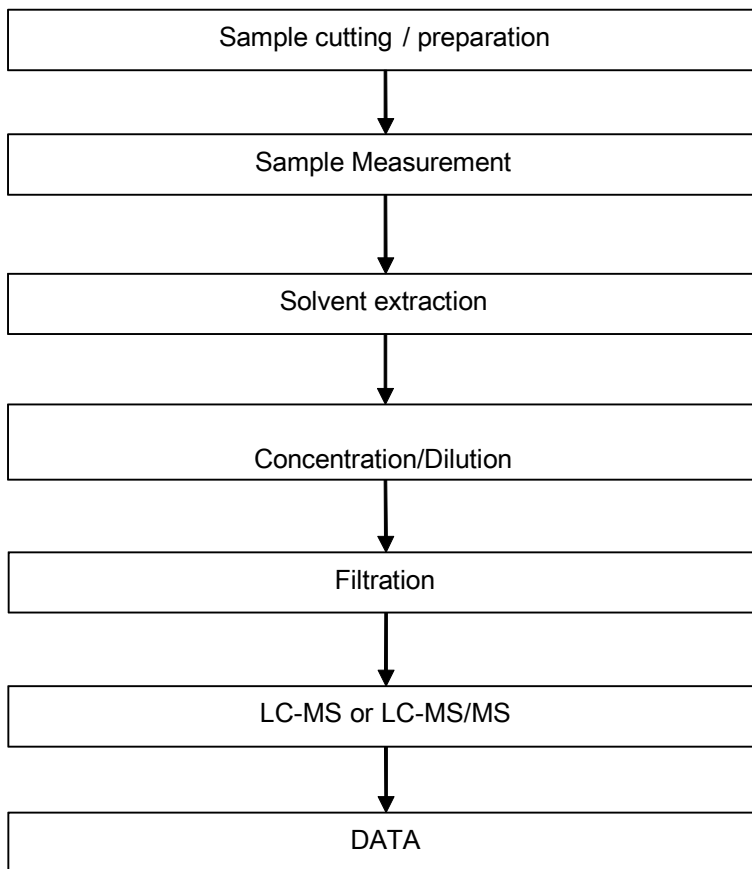


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PFOA / PFOS Testing Flow Chart



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