

# 承 认 书

Approval Sheet

客户 (Customer): /

客户料号 (Cus .P/N): /

华联威料号 (HLW P/N): U573-2125-G61078

品名规格 (PronameSpec): TYPE C 母座带 PCB 板

送样日期 (Delivery Date): 2022/11/24

承认日期 (Acknowledge Date): 2022/11/24

|   |                  |                           |                    |
|---|------------------|---------------------------|--------------------|
| 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. |                  |                           |                    |
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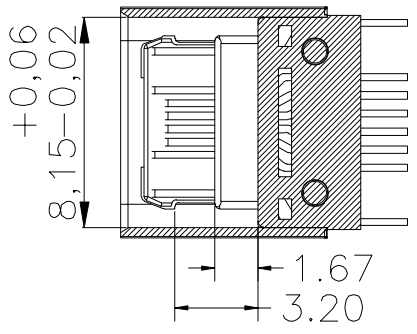
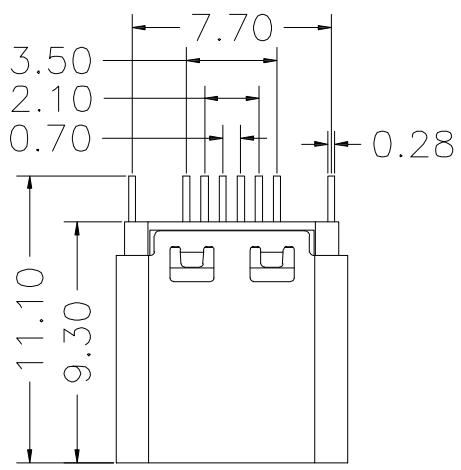


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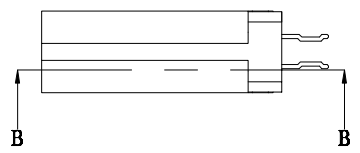
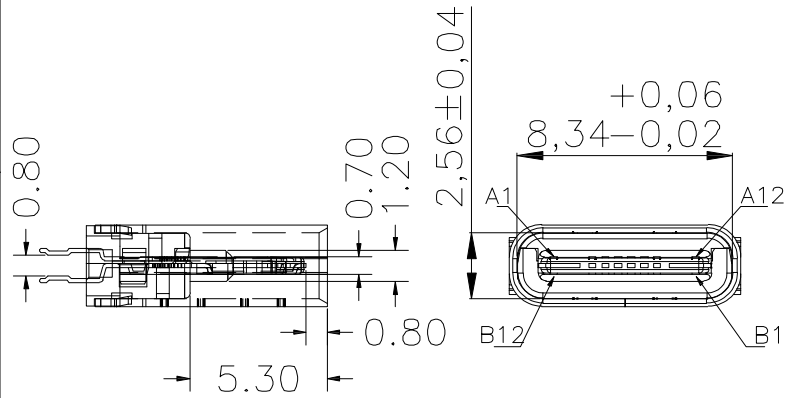
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|------|---------|-------|
| REV. | ECN.NO. | APPD. |
| A    | /       | ZFY   |



SECTION B-B  
SCALE 1:1

- NOTES:
- MATERIAL:
    - Housing:thermoplastic plastics
    - terminals:Copper Alloy  
Gold plated in contact area:  
Tin plated in termination  
Nickel Plated overall
    - Shell:Steel&Copper Alloy  
Nickel/Au Plated overall
  - characteristics:
    - Rating Voltage : 30V AC.
    - Rating Current:  
5A for Vbus PIN;1.25A for Vconn PIN
    - Contact Resistance:40 mΩ MAX.
    - Insulation Resistance:100 MΩ MIN.
    - Withstanding Voltage:AC 100V
    - Mating force: 5~20N MAX
    - Extraction force:8~20N Min
    - Life test:10000Cycles MIN.
    - Temperature Range: -30℃~+80℃.
- The product must be compliance ROHS

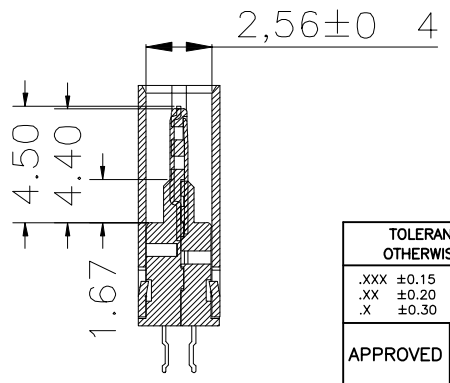
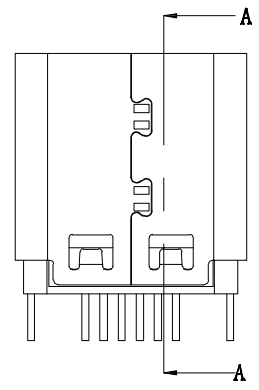


U573-212X-XXX078

- 5. 铜壳镀镍
- 6: LCP
- 7: 袋装
- 1: 黑色
- G: 半金G/Fu

PIN ASSIGNMENT:

| Pin No. | Signal Name | Pin No. | Signal Name |
|---------|-------------|---------|-------------|
| A1      | CND         | B12     | CND         |
| A2      |             | B11     |             |
| A3      |             | B10     |             |
| A4      | VBUS        | B9      | VBUS        |
| A5      | CC1         | B8      | SBU2        |
| A6      | D+          | B7      | D-          |
| A7      | D-          | B6      | D+          |
| A8      | SBU1        | B5      | CC2         |
| A9      | VBUS        | B4      | VBUS        |
| A10     |             | B3      |             |
| A11     |             | B2      |             |
| A12     | CND         | B1      | CND         |



SECTION A-A  
SCALE 1:1

| TOLERANCE UNLESS OTHERWISE SPECIFIED |          |
|--------------------------------------|----------|
| .XXX ±0.15                           | .X' ±5'  |
| .XX ±0.20                            | .XX' ±2' |
| .X ±0.30                             |          |

**FLW** 深圳市华联威电子科技有限公司  
HUA LIAN WEI TECHNOLOGY ELECTRONICS CO;LTD.

|          |            |             |                  |       |       |      |
|----------|------------|-------------|------------------|-------|-------|------|
| APPROVED |            | PART NAME:  | TYPE C 母座带PCB板   |       |       |      |
| CHECKED  |            | PART No:    | U573-2125-G61078 |       | C     |      |
| DRAWN    | Shen       | PROJECTION: | UNIT:            | SCALE | SHEET | REV. |
| DATE     | 2021.09.01 |             | mm               | 1:1   | 10F1  |      |

## USB 3.1 TYPE-C系列产品SPEC

版本版次: C

制定日期 20200707

适用范围 通用

## 1. Scope (范围)

## 1.1 Contents(内容)

This specification covers the performance, tests and quality requirements for the Electronics USB 3.1 TYPE-C Connector.(此份产品规格适用于USB 3.1 TYPE-C连接器的产品功能, 测试方法及质量要求)

## 2. Requirements (要求):

## 2.1 Rating(额定条件)

A. Voltage rating(额定电压):30V AC

B. Current rating(额定电流):1.5A

C. Operation Temperature Range(工作温度范围):-30°C to +80°C

## 3. Test Condition(测试条件):

3.1 Temperature range(温度范围):-15°C to +35°C

3.2 Humidity range (湿度范围):25% to 85%

## 4. Test Methods and Requirements:(测试方法及要求)

## 4.1 Examination of product (产品外观)

|       |                                |              |   |
|-------|--------------------------------|--------------|---|
| 4.1.1 | Examination of Product<br>产品外观 | Visual<br>目视 | No peeling off the plating deformation of the base or damage. 不得有电镀层剥落, 塑料变形或破损 |
|-------|--------------------------------|--------------|---|

## 4.2. Electrical Performance(电气性能)

|       |  |  |  |
|-------|--|--|--|
| 4.2.1 | Contact Resistance<br>接触阻抗               | (EIA-364-06B)<br>适合USB 3.1 TYPE-C嵌合; 开放电压20mv以下; 短路电流100ma的状态下测定。<br>Mate applicable USB 3.1 TYPE-C and measure by dry circuit, 20mv MAX, 100mA. 40mΩMAX | 40mΩ MAX   |
| 4.2.2 | Dielectric Withstanding Voltage<br>(耐电压) | (EIA-364-20C)<br>Unmated connectors, apply 100V AC (RMS.) for 1 minute between adjacent terminals of ground.<br>没有配对的连接器在相邻的端子或接地之间通上100V的交流电压1分钟        | 1. No Breakdown or flashover<br>2. Leakage current:0.5mA Max<br>1. 不能有损坏或跳火花<br>2. 漏电流<0.5mA |
| 4.2.3 | Insulation Resistance<br>绝缘阻抗            | (EIA-364-21C)<br>Unmated connectors, apply 500V DC for 1 minute between adjacent terminals of ground.<br>没有配对的连接器在相邻的端子或接地之间通上500V的直流电压1分钟               | 100MΩ min (unmated)<br>没有配对需大于100 MΩ   |

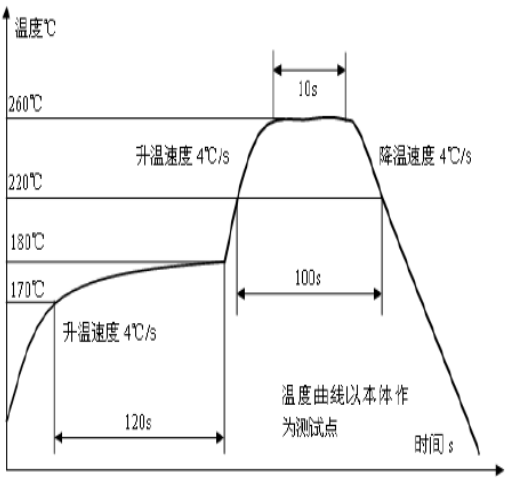
## 4.3 Mechanical Performance(机械性能)

|                               |                                       |   |  |
|-------------------------------|---------------------------------------|---|--|
| 4.3.1                         | Insertion/Withdrawal Force<br>插入力/拔出力 | (EIA-364-13)<br>Insertion and withdrawal speed: 25mm/minute.<br>插入和拔出的速度为25mm/分   | 插入力 Insertion<br>0.50kgf/MIN, 2.0kgf/MAX<br>拔出力 Withdrawal<br>0.80kgf/MIN, 2.0kgf/MAX<br>After 10000 cycles<br>0.6kgf/MIN, 2.0kgf/MAX  |
| 4.3.2                         | Durability<br>寿命测试                    | (EIA-364-09)<br>适合USB 3.1 TYPE-C; 用每分钟12.5mm的速度, 平行的插入, 拔出。<br>Insert and extract applicable USB 3.1 TYPE-C at the speed rate of 12.5 mm/minute.  | 10000 cycles   |
| 4.3.3                         | Vibration<br>振动                       | (EIA-364-28条件3)<br>Amplitude:1.52mm P-P or 147m/s <sup>2</sup> {15G}<br>Sweep time: 50-2000-50Hz in 20 minutes.<br>Duration: 12 times in each (total of 36 times) X, Y, Z, axes.<br>Electrical load DC 100mA current shall be flowed during the test.(ANSI/EIA-364-28 Condition III)<br>在直流100毫安通电状态下测试, 在X,Y,Z垂直3方向上, 频率50-2000-50赫兹(加速度往复20分钟), 全振幅1.52mm P-P或147 m/s <sup>2</sup> {15G}, 每轴12回计36回 | Appearance: No damage<br>外观: 无损坏<br>Contact Resistance 接触阻抗<br>Contact: Change from initial Value:30mΩ Max.<br>端子: 从初始值开始变化量小于30mΩ<br>间断性: 不超过1微秒                              |
| 4.3.4                         | Physical shock<br>冲击性                 | (EIA-364-27条件A)<br>Pulse width: 11msec<br>Waveform: Half-sine<br>490m/s <sup>2</sup> (50G) 3 strokes in each X, Y, Z axes.<br>(ANSI/EIA-364-27 condition A)<br>周期: 11msec<br>冲击波形: 正弦半波490m/s <sup>2</sup> (50G) 3循环在X, Y, Z 轴  | Appearance: No damage<br>外观: 无损坏<br>Contact Resistance 接触阻抗<br>Contact: Change from initial Value 40mΩ Max<br>端子: 从初始值开始变化量小于40mΩ<br>Discontinuity: 1μ sec Max.<br>间断性: 不超过1微秒 |
| 4.4 Environmental Performance |                                       |   |  |
| 4.4.1                         | Thermal shock test<br>冷热冲击            | EIA-364-32C条件1)<br>10 cycles of:<br>a)-55±3℃ for 30 minutes<br>b) +85±3℃ for 30 minutes<br>10个循环,<br>a)-55±3℃ 30分钟<br>b) +85±3℃ 30分钟  | Appearance: No Damage.<br>外观: 没有损坏<br>Contact Resistance 接触阻抗<br>Contact: Change from initial Value 40mΩ Max<br>端子: 从初始值开始变化量小于40mΩ  |

|        |                       |  |  |
|--------|-----------------------|--|--|
| 4.4..2 | Solder ability<br>焊锡性 | (EIA-364-52)<br>To be sipped in the solder bath 260±5°C Coverage for 3 seconds.<br>将焊锡脚浸在260±5°C的锡炉中<3秒  | The inspected area of each lead must have 90% solder coverage minimum  |
| 4.4..3 | Humidity<br>恒温恒湿      | (EIA-364-31B)<br>(A) Mate connectors together and perform the test as follows<br>配对的连接器测试条件<br>Temperature: +25°C to +85°C(温度: +25°C到+85°C)<br>Relative Humidity: 90% to 95%(相对湿度: 90%到95%)<br>Duration:4 cycles(96 hours) (持续时间: 4个循环共96小时)<br>Upon completion of the test, specimens shall be conditioned ambient room conditions for 24 hours, after which the specified measurements shall be performed.<br>试验完成后, 样品放置于室温条件中24小时后再进行测试      | Appearance: No Damage<br>外观, 没有损坏<br>Contact Resistance 接触阻抗<br>Contact: Change from initial Value 30mΩ Max<br>端子: 从初始值开始变化量小于30mΩ     |
|        |                       | (EIA-364-31B)<br>(B) Unmated each connector and perform the test as follows.<br>没有配对的连接器测试条件<br>Temperature: +25°C to +85°C(温度: +25°C到+85°C)<br>Relative Humidity: 90% to 95%(相对湿度: 90%到95%)<br>Duration:4 cycles(96 hours) (持续时间: 4个循环共96小时)<br><br>Upon completion of the test, specimens shall be conditioned ambient room conditions for 24 hours, after which the specified measurements shall be performed.<br>试验完成后, 样品放置于室温条件中24小时后再进行测试 | Appearance: No Damage<br>外观, 没有损坏<br><br>Conform to item of dielectric withstanding Voltage and Insulation Resistance.<br>符合耐电压及绝缘阻抗要求 |

|        |                                  |  |   |
|--------|----------------------------------|--|---|
| 4.4..4 | Salt Spray<br>盐水喷雾               | <p>EIA-364-26B)</p> <p>Temperature: 35±2°C 温度: 35±2°C</p> <p>Concentration for salt: 5% 盐水浓度: 5%</p> <p>(1)Duration: 24H 持续时间: 24小时</p> <p>Condition(条件):</p> <p>Contact plated gold more than 15u" (include 15 u" ),and the material of shell for copper alloy, or stainless.</p> <p>端子镀金厚度大于等于15 u" 且壳体材质是铜合金或是不锈钢</p> <p>(2) Duration: 24H 持续时间: 24小时</p> <p>Condition(条件):</p> <p>Contact plated gold less than 15 u" ,and/or the material of shell for steel</p> <p>端子镀金厚度小于15u" 且/或壳体材质是铁材</p> | <p>No detrimental corrosion( Terminal solder tail unrequested)</p> <p>产品无氧化, 锈蚀 (端子焊脚镀锡处不作要求)</p>   |
| 4.4..5 | Cold resistance (Unmated)<br>冷阻抗 | <p>(EIA-364-17B)</p> <p>Unmated connectors and expose to -25±3°C for168 hours. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room conditions for 1 to 2 hours, after which the specified measurements shall be performed.</p> <p>没配对的连接器放置于-25±3°C温度中168小时, 当完成实验后, 样品放置一般环境中1到2小时后, 在进行测试</p>  | <p>Appearance: No Damage.</p> <p>外观: 没有损坏</p> <p>Contact Resistance 接触阻抗</p> <p>Contact: Change from initial Value 30mΩ Max</p> <p>Shell Part: Change from initial Value 50mΩ Max</p> <p>端子: 从初始值开始变化量小于30mΩ</p> <p>外壳: 从初始值开始变化量小于50mΩ</p> |
| 4.4..6 | Heat resistance (Unmated)<br>热阻抗 | <p>(EIA-364-17B)</p> <p>Mated connectors and expose to 85±2°C for168 hours. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room conditions for 1 to 2 hours, after which the specified measurements shall be performed.</p> <p>配对的连接器放置于85±2°C温度中168小时, 当完成实验后, 样品放置一般环境中1到2小时后, 在进行测试</p>   | <p>Appearance: No Damage.</p> <p>外观: 没有损坏</p> <p>Contact Resistance 接触阻抗</p> <p>Contact: Change from initial Value 30mΩ Max</p> <p>Shell Part: Change from initial Value 50mΩ Max</p> <p>端子: 从初始值开始变化量小于30mΩ</p> <p>外壳: 从初始值开始变化量小于50mΩ</p> |

|       |                       |   |   |
|-------|-----------------------|---|---|
| 4.4.7 | Thermal Aging<br>高温老化 | <p>(EIA-364-31B, Condition 4, Method A)<br/>Unmated connectors and expose to <math>+85\pm 2^{\circ}\text{C}</math> for 250 hours. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room conditions for 1 to 2 hours, after which the specified measurements shall be performed.</p> <p>没配对的连接器放置于<math>+85\pm 2^{\circ}\text{C}</math>温度中250小时，当完成实验后，样品放置一般环境中1到2小时后，在进行测试</p> | <p>Appearance: No Damage.<br/>外观：没有损坏<br/>Contact Resistance 接触阻抗<br/>Contact: Change from initial Value 40mΩ Max<br/>端子：从初始值开始变化量小于40m</p> |
|-------|-----------------------|---|---|

|       |                              |   |  |
|-------|------------------------------|---|--|
| 4.4.8 | Resistance to Soldering Heat | <p>for wave soldering : mil-std-202f,method 210 A,test condition B<br/>波峰焊: mil-std-202f, method 210 A, 试验条件B<br/>Pre-heat : <math>80^{\circ}\text{C}</math>, 60 Seconds 预热:<math>80^{\circ}\text{C}</math>, 60秒<br/>Temperature : <math>260 \pm 5^{\circ}\text{C}</math> 温度:<math>260\pm 5^{\circ}\text{C}</math><br/>Immersion duration : <math>10 \pm 1</math> sec. 浸泡时间:<math>10\pm 1</math>秒</p> <p>for manual soldering :手动焊接:<br/>mil-std-202f,method 210 A,test condition A<br/>Pre-heat : No 预热:没有<br/>Temperature : <math>350 \pm 10^{\circ}\text{C}</math> 温度:<math>350\pm 10^{\circ}\text{C}</math><br/>Immersion duration : <math>3.5\pm 0.5</math> sec. 浸泡时间:<math>3.5\pm 0.5</math>秒</p> <p>Solder Temp: <math>260\pm 5^{\circ}\text{C}</math>, <math>10\pm 0.5</math>sec<br/>焊锡温度: <math>260\pm 5^{\circ}\text{C}</math>, <math>10\pm 0.5</math>sec</p>  | No physical damage shall occur.<br>不可有损坏 |
|-------|------------------------------|---|--|

Note 1: Shall meet visual requirements, show no physical damage, and meet requirement of additional tests as specified in the test sequence in Figures 2

说明1: 测试要求不能有物理损坏，测试依据表格二的顺序进行

3.Product Qualification And Requalification Test:产品测试顺序表 Figure 2

| Test or Examination               | Test Group |     |     |   |     |     |     |     |   |     |     |     |     |   |
|-----------------------------------|------------|-----|-----|---|-----|-----|-----|-----|---|-----|-----|-----|-----|---|
|                                   | A          | B   | C   | D | E   | F   | G   | H   | I | J   | K   | L   | M   | N |
| Test Sequence                     |            |     |     |   |     |     |     |     |   |     |     |     |     |   |
| 4.1.1.Examination of Product 产品外观 | 1,9        | 1,3 | 1,5 | 1 | 1,5 | 1,5 | 1,5 | 1,3 |   | 1,5 | 1,5 | 1,5 | 1,5 | 1 |



|                                      |     |   |     |   |     |     |     |   |     |     |     |     |     |   |
|--------------------------------------|-----|---|-----|---|-----|-----|-----|---|-----|-----|-----|-----|-----|---|
| 4.2.1.Contact Resistance 接触阻         | 2,8 |   | 2,4 |   | 2,4 | 2,4 | 2,4 |   | 2,4 | 2,4 | 2,4 | 2,4 | 2,4 |   |
| 4.2.2.Dielectric Withstanding        | 3,7 |   |     |   |     |     |     |   |     |     |     |     |     |   |
| 4.2.3.Insulation Resistance 绝缘阻      | 4,6 |   |     |   |     |     |     |   |     |     |     |     |     |   |
| 4.3.1.Insertion/Withdrawal force 插拔力 |     | 2 |     |   |     |     |     |   |     |     |     |     |     |   |
| 4.3.2.Durability 寿命测试                |     |   | 3   |   |     |     |     |   |     |     |     |     |     |   |
| 4.3.3.Vibration 振动性                  |     |   |     | 3 |     |     |     |   |     |     |     |     |     |   |
| 4.3.4.Physical shock 冲击性             |     |   |     |   | 3   |     |     |   |     |     |     |     |     |   |
| 4.4.1.Thermal shock test 冷热冲击        |     |   |     |   |     | 3   |     |   |     |     |     |     |     |   |
| 4.4.2.Solderability 焊锡性              |     |   |     |   |     |     | 2   |   |     |     |     |     |     |   |
| 4.4.3.Humidity 恒温恒湿                  | 5   |   |     |   |     |     |     |   | 3   |     |     |     |     |   |
| 4.4.4.Salt Spray 盐水喷雾                |     |   |     |   |     |     |     |   |     | 3   |     |     |     |   |
| 4.4.5.Cold resistance 冷阻抗            |     |   |     |   |     |     |     |   |     |     | 3   |     |     |   |
| 4.4.6.Heat resistance 热阻抗            |     |   |     |   |     |     |     |   |     |     |     | 3   |     |   |
| 4.4.7.Thermal Aging 高温老化             |     |   |     |   |     |     |     |   |     |     |     |     | 3   |   |
| 4.4.8.IR-reflow 回流焊测试                |     |   |     |   |     |     |     |   |     |     |     |     |     | 2 |
| NO. of Test samples(Min.) 测试         | 5   | 5 | 5   | 5 | 5   | 5   | 5   | 5 | 5   | 5   | 5   | 5   | 5   | 5 |

NOTE 2: (a) Numbers indicate sequence in which tests are performed.

(b) Discontinuities shall not take place in this test group, during tests.

说明 2: (a)测试依照矩阵要求数量进行。

(b)在测试中，群组测试不能间断

核准：唐竹君

制作人：魏红

測試報告

**TEST REPORT**

|                   |                  |                         |                          |                            |                                    |
|-------------------|------------------|-------------------------|--------------------------|----------------------------|------------------------------------|
| 產品名稱<br>Part Name | TYPE C 母座帶 PCB 板 | 測試日期<br>Date of Testing | 2022.11.16<br>2022.11.16 | 報告編號 Report NO.            | MD20221116-01                      |
| 產品型號<br>Part Name | U573-2125-G61078 | 樣品數量<br>Quantity        | 5PCS                     | 測試環境 Measuring Environment | 濕度 Temp:18 ±11C 相對濕度 R.H.:49% f57% |

**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        | Pass        | Fail |
| 1         | Contact resistance           | Test current:100mA max  | DIGITAL MICRO—OHMMETER      | 40 mΩ Max                       | 14.77 mΩ            | 15.42 mΩ | 15.86 mΩ | 16.37 mΩ | 17.53 mΩ | P           |      |
| 2         | Insulation resistance        | Test voltage:500VDC Operation stated:1min                           | ULTRA HIGH RESISTANCE METER | 100T Ω Min                      | Pass                | Pass     | Pass     | Pass     | Pass     | P           |      |
| 3         | Dielectric withstand voltage | Test voltage:100VAC Cut—off current:0.5mA<br>Operation stated:1 min | BREAKDOWN TESTER            | No discharge or flashover occur | Pass                | Pass     | Pass     | Pass     | Pass     | P           |      |

**二. 機械特性測試 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    | Pass        | Fail |
| 1         | Durability test      | Rate:200cycles/hour<br>Total: 10000 cycles                    | LIFE TESTER FOR CONNECTOR       | No physical damage | Pass                | Pass | Pass | Pass | Pass | P           |      |
| 2         | Mating Force         | 5N-20Newtons maximum at a maximum rate of 12.5mm per minute   | Insertion force testing machine | No physical damage | Pass                | Pass | Pass | Pass | Pass | P           |      |
| 3         | Un—Mating Force      | 8N-20N Newtons minimum at a maximum rate of 12.5mm per minute | Insertion force testing machine | No physical damage | Pass                | Pass | Pass | Pass | Pass | P           |      |

**三. 環境特性測試 ENVIRONMENTAL 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    | Pass        | Fail |
| 1         | Humidity—Temperature cycle | Temperature: 40±2°C<br>Duration :168H | PROGRAM CONTROLLED TEMP. & HUMIDTY CHAMBER | No physical damage | Pass                | Pass | Pass | Pass | Pass | P           |      |
| 2         | Heat test                  | Temperature: 70±2°C<br>Duration :168H | OVEN                                       | No physical damage | Pass                | Pass | Pass | Pass | Pass | P           |      |

|   |                          |  |  |                    |      |      |      |      |      |   |  |
|---|--------------------------|--|--|--------------------|------|------|------|------|------|---|--|
| 3 | Cold test                | Temperature: -25 ±3°C<br>Duration :168H  | PROGRAM CONTROLLED TEMP. & HUMIDTY CHAMBER | No physical damage | Pass | Pass | Pass | Pass | Pass | P |  |
| 4 | Temperature cycling test | Temperature: 70—25°C<br>Duration:5 cycle | PROGRAM CONTROLLED TEMP. & HUMIDTY CHAMBER | No physical damage | Pass | Pass | Pass | Pass | Pass | P |  |

#### 四.物理測試 PHYSICAL TEST

| 序<br>NO.     | 測試項目<br>Testing Item | 測試條件<br>Testing Con di tions  | 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    | Pass        | Fail |
| 1            | Salt spray test      | Temperature: 35±2°C<br>Concentration:5±1 %<br>Duration:12H                          | SALT SPRAY TESTER                   | No Oxidation         | Pass                | Pass | Pass | Pass | Pass | P           |      |
| 2            | Solder ability test  | Temperature: 260 ± 5°C<br>Duration:10 ±1 sec  | OVEN                                | NO physical damage   | Pass                | Pass | Pass | Pass | Pass | P           |      |
| 3            | Solder ability test  | Temperature: 260 ±10 C<br>Duration :10 ±1 sec                                       | CONTROLLED CONSTANT-TEMP SOLDER POT | Soldering area 三 95% | Pass                | Pass | Pass | Pass | Pass | P           |      |
| 判定<br>Result |                      | <input checked="" type="checkbox"/> 合格(ACCEPT) <input type="checkbox"/> 不合格(REJECT) |                                     |                      |                     |      |      |      |      |             |      |

核准(Approver): 欠必锋

測試(Tester): 但芬



# 深圳市华联威电子科技有限公司

## 檢驗報告

首件檢驗
 入庫檢驗
 出貨檢驗
 客退檢驗
 退料檢驗
 其他

2022年1月7日 版次:A1

|                  |                  |  |   |          |         |       |          |          |
|------------------|------------------|--|---|----------|---------|-------|----------|----------|
| 料號               | U573-2125-G61078 | 制令單號   | / | 送檢單位     | 工程部     | 首件製作者 | 裝配       |          |
| 品名               | TYPE C 母座帶PCB板   | 客戶代號   | / | 批 量      | /       | 送檢時間  | /        |          |
|                  |                  |  |   | 數 量      | 5PCS    | 確認時間  | /        |          |
| 抽樣標準             |                  | <input checked="" type="checkbox"/> 單次 <input type="checkbox"/> 雙次                             |   | 抽樣數      | AQL     | CRI:0 | MAJ:0.40 | MIN:0.65 |
| MIL-STD-105E(II) |                  | <input checked="" type="checkbox"/> 正常 <input type="checkbox"/> 加嚴 <input type="checkbox"/> 減量 |   | ( 5PCS ) | ACC/REJ | 0     | /        | /        |

不良數: CRI ( / ) MAJ ( / ) MIN ( / ) 不良率(%) /

| NO.              | 檢驗項目<br>單位:MM/G  | 檢測<br>儀器 | 檢 驗 記 錄 |       |       |       |       | 品管判定 |    | CRI | MAJ | MIN | 備注 |
|------------------|------------------|----------|---------|-------|-------|-------|-------|------|----|-----|-----|-----|----|
|                  |                  |          | 1       | 2     | 3     | 4     | 5     | AC   | RE |     |     |     |    |
| 尺<br>寸<br>測<br>量 | 9.00±0.05        | D        | 8.97    | 8.98  | 8.99  | 9.00  | 9.01  | √    |    |     |     |     |    |
|                  | 14.45+0.15/-0.10 | D        | 14.36   | 14.39 | 14.42 | 14.45 | 14.48 | √    |    |     |     |     |    |
|                  | 3.16±0.05        | D        | 3.13    | 3.14  | 3.15  | 3.16  | 3.17  | √    |    |     |     |     |    |
|                  | 0.80±0.10        | D        | 0.78    | 0.79  | 0.80  | 0.81  | 0.82  | √    |    |     |     |     |    |
|                  | 9.10±0.10        | D        | 9.05    | 9.06  | 9.07  | 9.08  | 9.09  | √    |    |     |     |     |    |
|                  | 5.80±0.10        | D        | 5.77    | 5.79  | 5.81  | 5.83  | 5.85  | √    |    |     |     |     |    |
|                  |                  |          |         |       |       |       |       |      |    |     |     |     |    |
|                  |                  |          |         |       |       |       |       |      |    |     |     |     |    |
|                  |                  |          |         |       |       |       |       |      |    |     |     |     |    |
|                  |                  |          |         |       |       |       |       |      |    |     |     |     |    |
|                  |                  |          |         |       |       |       |       |      |    |     |     |     |    |
|                  |                  |          |         |       |       |       |       |      |    |     |     |     |    |
|                  |                  |          |         |       |       |       |       |      |    |     |     |     |    |
|                  |                  |          |         |       |       |       |       |      |    |     |     |     |    |
|                  |                  |          |         |       |       |       |       |      |    |     |     |     |    |

檢驗依據: 工程圖紙 檢驗規範 承認書 樣品 其它

檢測儀器:A游標卡尺 B千分尺 C厚薄儀 D投影鏡 E放大鏡 F顯微鏡 G錫爐 H插拔力器 I間位尺 J其它

品保判定: 合格Accept 退貨Reject 特采Waive 挑選Sort

核准: 欠必鋒

審核: 李娟

檢驗員: 但芬

|                              |          |               |    |            |          |
|------------------------------|----------|---------------|----|------------|----------|
| 品名:TYPE C 母座带PCB板(端子)        |          | 版次:A.0        |    |            |          |
| 电镀规格:Ni30u",Sn100u",Au G/Fu" |          | 日期:2022/10/17 |    |            |          |
| 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)  |    |            |          |
| 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 | 2022/10/17 | 10:20:15 |
| 2                            | 30u"MIN  | 52.3u"        | OK | 2022/10/17 | 10:20:17 |
| 3                            | 30u"MIN  | 60.5u"        | OK | 2022/10/17 | 10:20:19 |
| 4                            | 30u"MIN  | 63.4u"        | OK | 2022/10/17 | 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 | 2022/10/17 | 10:25:10 |
| 2                            | 100u"MIN | 104.7u"       | OK | 2022/10/17 | 10:25:12 |
| 3                            | 100u"MIN | 106.9u"       | OK | 2022/10/17 | 10:25:14 |
| 4                            | 100u"MIN | 103.4u"       | OK | 2022/10/17 | 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 | 0.65u"        | OK | 2022/10/17 | 10:30:32 |
| 2                            | 0.5u"MIN | 0.54u"        | OK | 2022/10/17 | 10:30:34 |
| 3                            | 0.5u"MIN | 0.56u"        | OK | 2022/10/17 | 10:30:36 |
| 4                            | 0.5u"MIN | 0.54u"        | OK | 2022/10/17 | 10:30:38 |

核准: 欠必锋

审核: 李娟

检验员: 但芬

## 电镀报告表

|                       |         |               |    |            |          |
|-----------------------|---------|---------------|----|------------|----------|
| 品名:TYPE C 母座带PCB板(外壳) |         | 版次:A.0        |    |            |          |
| 电镀规格:Ni:50u"MIN       |         | 日期:2022/10/17 |    | 页次:1/1     |          |
| 厂商:金和源                |         |               |    |            |          |
| 测试设备:CMI X-射线膜厚测试仪    |         |               |    |            |          |
| 1、表层电镀测试(Ni)          |         |               |    |            |          |
| 数据                    | 测试标准    | 实测值           | 判定 | 测试日期       | 测试时间     |
| 1                     | 50u"min | 55.3u"        | OK | 2022/10/17 | 14:35:25 |
| 2                     | 50u"min | 54.8u"        | OK | 2022/10/17 | 14:35:27 |
| 3                     | 50u"min | 53.4u"        | OK | 2022/10/17 | 14:35:29 |
| 4                     | 50u"min | 52.5u"        | OK | 2022/10/17 | 14:35:31 |

核准: 欠必锋

审核: 李娟

检验员: 但芬



# 深圳市华联威电子科技有限公司

## 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 | 2022年11月17日 20:00 时起 |
|        |                                  | DATE   | 2022年11月18日 20:00 时止 |
| 样品名称   | TYPE C 母座带PCB板                   | 试验数量   | 5PCS                 |
| P/N    | U573-2125-G61078                 | QTY    |                      |

### 试验条件 (TEST CONDITION)

- 1、盐水溶解 (SALT SOLUTION: 浓度 $50 \pm 10\text{g/L}$ , PH值6.5-7.2).
- 2、试验室温度 (TEMP. IN THE SPRAY CHAMBER):  $35 \pm 1^\circ\text{C}$ .
- 3、盐水桶温度 (TEMP. OF SALT SOLUTION TANK):  $35 \pm 1^\circ\text{C}$ .
- 4、压力桶温度 (TEMP. OF AIR SUPPLY):  $47 \pm 1^\circ\text{C}$ .
- 5、试验室相对湿度 (R.H IN THE CHAMBER) 85%.
- 6、压缩空气压力 (COMPRESSED AIR PRESSURE):  $1.00 \pm 0.01\text{Kg/cm}^2$ .
- 7、样品放置位置 (SPECIMEN SUPPORTED ANGLE): 尼龙绳吊挂 $70^\circ - 90^\circ$ .
- 8、喷雾收集量 (COLLECT RATE OF SALT SOLUTION)  $1-2\text{mL}/(8\text{ cm}^2\text{hr})$ .
- 9、盐雾测试时间: 24小时 (H)

### 判定方法 (ADJUSTED 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. (Inspect the specimen at 20 magnification 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

## Materials Information

**PRODUCT NAME: LCP M-401 BK**

**COMPOSITION/INFORMATION OF LCP M-401 BK**

**SUBSTANCE/MIXTURE: Mixture**

**SYNONYM(S): Aromatic Liquid Crystal Polymer(LCP)**

| 品名         | 比例    | 用途         |
|------------|-------|------------|
| 德众泰 LCP 树脂 | 0.565 | 构成材料主要成分   |
| 抗氧化剂       | 0.002 | 抗氧化        |
| 科莱恩热稳定剂    | 0.003 | 增加高温稳定性    |
| 黑色母        | 0.01  | 着色         |
| 滑石粉        | 0.2   | 增强剂, 增加流动性 |
| 玻纤         | 0.22  | 增强         |

NAME OF COMPANY: DZT Engineering Plastics Tech. Co.,Ltd

ADDRESS: Building 2 Zhichong Industrial Park, Hi-Tech Zone, Jiangmen City,  
Guangdong Province, China

SECTION IN CHARGE: Quality Assurance Department

TEL/FAX: +86-750-3689920/+86-750-3689921

EMERGENCY TEL: +86-750-3689708





# 鉅鼎銅材廠檢驗報告單

|                              |                          |                      |                                |                        |                                   |                             |                                      |                       |      |    |
|------------------------------|--------------------------|----------------------|--------------------------------|------------------------|-----------------------------------|-----------------------------|--------------------------------------|-----------------------|------|----|
| 公司名稱<br>Customer             | 鉅鼎銅材廠檢驗報告單               |                      |                                |                        | 重量<br>Weight(kg)                  | 1078                        | 出貨日期<br>Date                         | 2021/11/23            |      |    |
| 品名<br>Article                | 標準<br>Standard No        |                      |                                |                        | 尺寸<br>Dimension                   |                             | 狀態<br>Tenper                         | 銅卷編號<br>Coil No       |      |    |
| C2680                        | JISH3100:2017            |                      |                                |                        | 0.18*400                          |                             | EH                                   | 1021-C-08             |      |    |
| 化學成分Chemical Compositions(%) |                          |                      |                                |                        |                                   |                             |                                      |                       |      |    |
| 元素<br>Element                | Cu %                     | Zn%                  | Pb%                            | Fe%                    | \                                 | \                           | \                                    | \                     | 化學成分 | 雜質 |
| 規範<br>Spec                   | 64.0-68.0                | 餘量                   | <0.05                          | <0.05                  | \                                 | \                           | \                                    | \                     | 合格   | 合格 |
| 實測<br>Actual                 | 64.32                    | 餘量                   | 0.0036                         | 0.0136                 | \                                 | \                           | \                                    | \                     | 合格   | 合格 |
| 機械性質Mechanical Properties    |                          |                      |                                |                        |                                   |                             |                                      |                       |      |    |
| 項目<br>Item                   | 結晶粒度<br>Grain Size<br>Mm | 硬度<br>Hardness<br>Hv | 抗拉強度<br>TensionStrength<br>Mpa | 伸長度<br>Elongation<br>% | 導電率<br>Electrical Conduc<br>%IACS | 彎曲試驗<br>Bending Test<br>180 | 表面粗度<br>Surface Roughness<br>Ra(u m) | 彎曲度<br>Camber<br>mm/n |      |    |
| 規範MAX<br>Spec                | \                        | 170-190              | 490-610                        | \                      | \                                 | \                           | \                                    | \                     |      |    |
| 實測<br>Actual                 | \                        | 178                  | 574                            | 5                      | \                                 | \                           | \                                    | \                     |      |    |

品質部





# Test Report

No. CANEC2222380708

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 : LCP plastic black color

Model No. : LCP 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

scan to see the report



689ECF7B



## Test Report

No. CANEC2222380708

Date: 26 Oct 2022

Page 2 of 6

Test Result(s) :

Test Part Description :

| Specimen No. | SGS Sample ID    | Description   |
|--------------|------------------|---------------|
| SN1          | CAN22-223807.008 | 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 .

| <u>Test Item(s)</u>        | <u>Limit</u> | <u>Unit</u> | <u>MDL</u> | <u>008</u> |
|----------------------------|--------------|-------------|------------|------------|
| Cadmium (Cd)               | 100          | mg/kg       | 2          | ND         |
| Lead (Pb)                  | 1000         | mg/kg       | 2          | 6          |
| 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. CANEC2222380708

Date: 26 Oct 2022

Page 3 of 6

| <u>Test Item(s)</u>                 | <u>Limit</u> | <u>Unit</u> | <u>MDL</u> | <u>008</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.



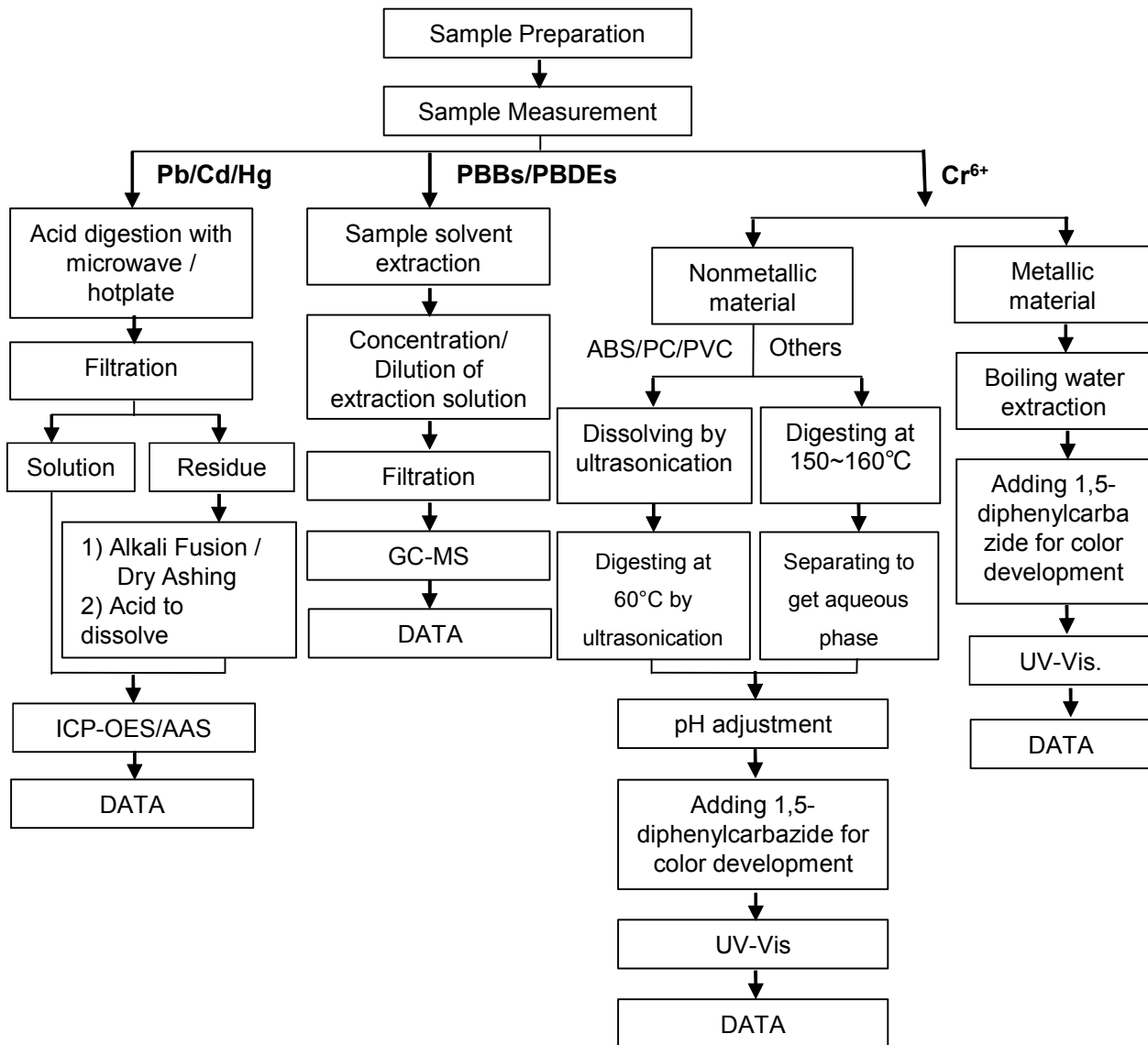
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ATTACHMENTS

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

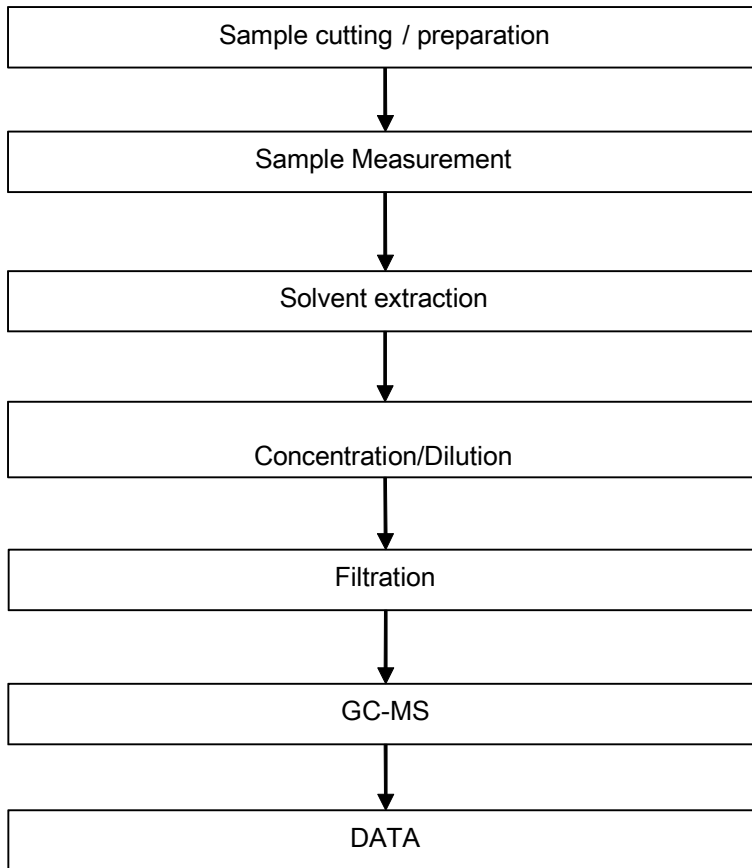
1) These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr<sup>6+</sup> and PBBs/PBDEs test method excluded).





## ATTACHMENTS

### Phthalates Testing Flow Chart



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## Test Report

No. CANEC2222380702

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 Copper shell

Model No. : C2680 shell 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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# Test Report

No. CANEC2222380702

Date: 26 Oct 2022

Page 2 of 4

Test Result(s) :

Test Part Description :

| Specimen No. | SGS Sample ID    | Description              |
|--------------|------------------|--------------------------|
| SN1          | CAN22-223807.002 | Silver-grey 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 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>002</u> |
|-------------------------------|--------------|--------------------|------------|------------|
| Cadmium (Cd)                  | 100          | mg/kg              | 2          | ND         |
| Lead (Pb)                     | 1000         | mg/kg              | 2          | 37         |
| 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.



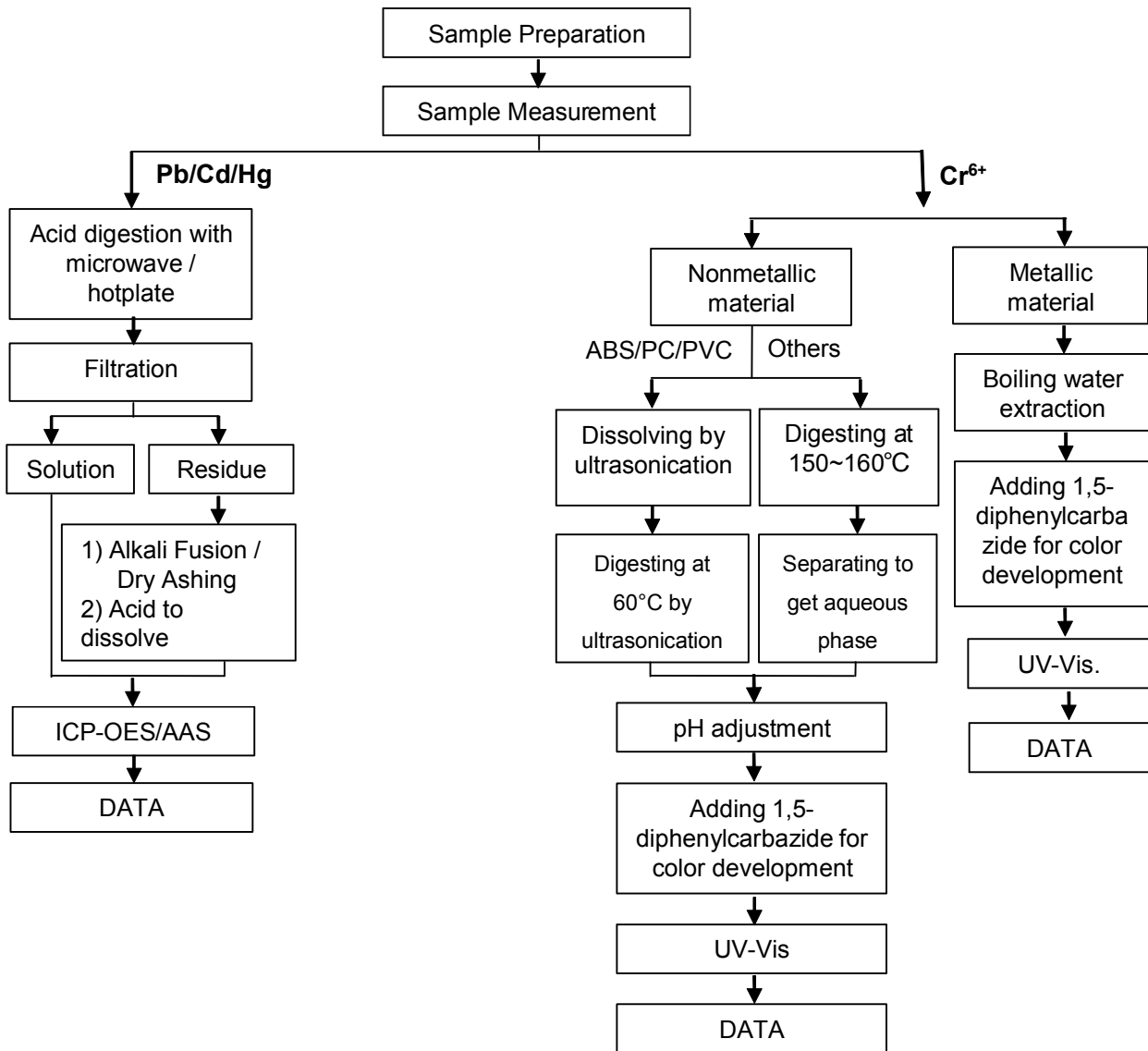
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Pb/Cd/Hg/Cr<sup>6+</sup> Testing Flow Chart

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



Sample photo:



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## 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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Guangzhou Branch Testing Center Chemical Laboratory

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## Test Report

No. CANEC2222380701

Date: 26 Oct 2022

Page 2 of 4

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 .

| Test Item(s)                  | Limit | Unit               | MDL  | 001 |
|-------------------------------|-------|--------------------|------|-----|
| 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.



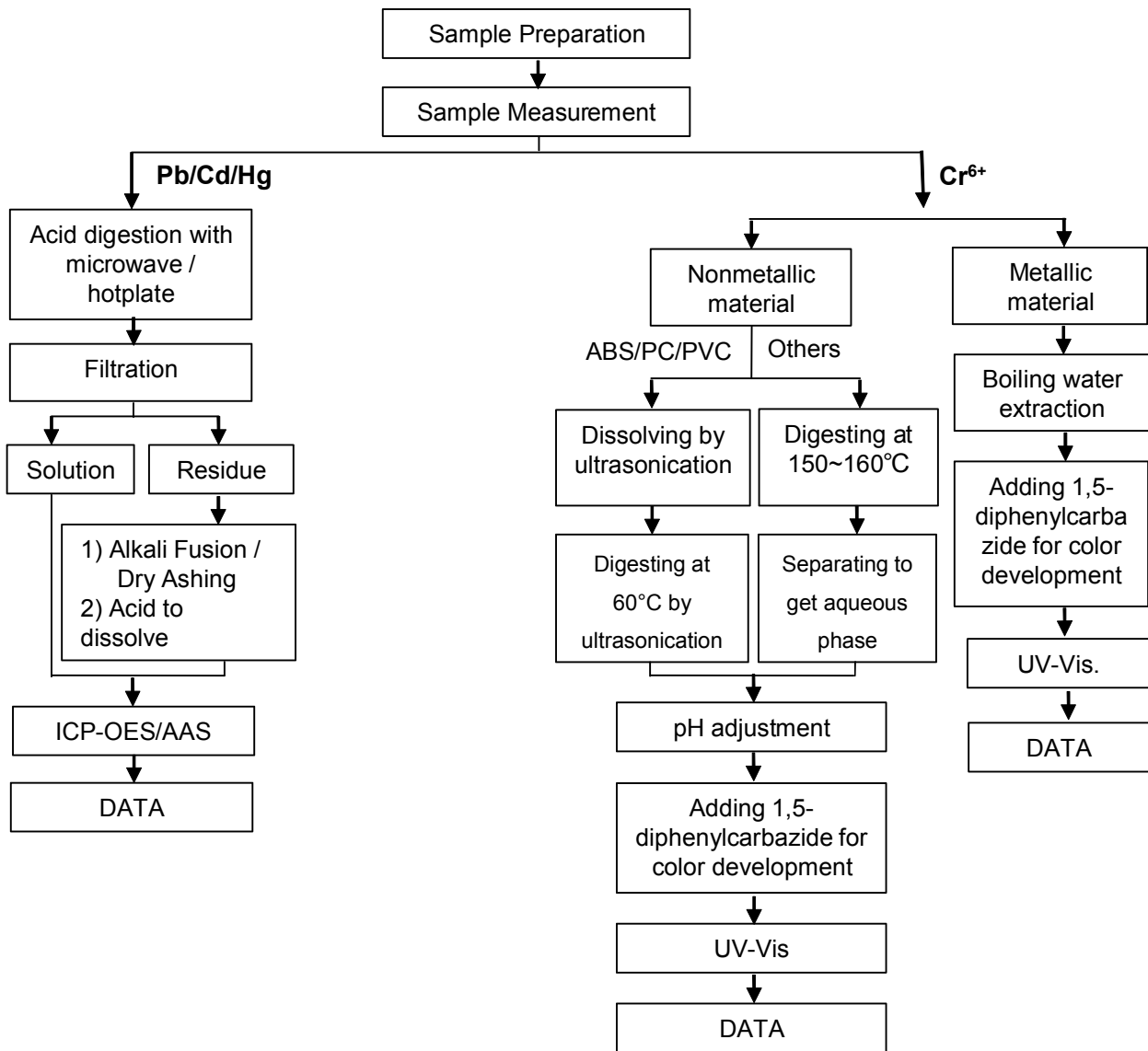
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ATTACHMENTS

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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## 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

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## 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 .

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

Page 3 of 8

| <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.



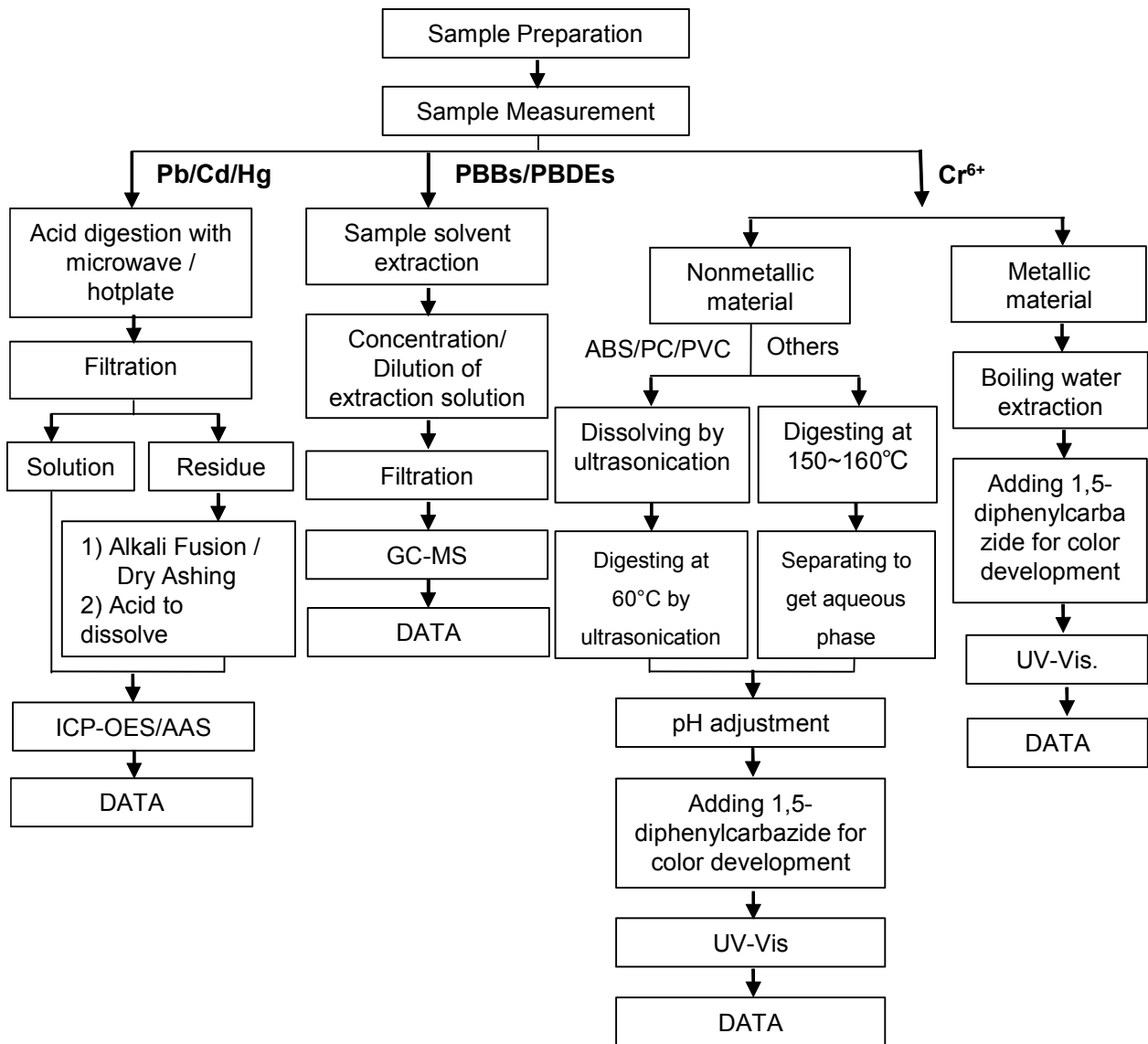
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Pb/Cd/Hg/Cr<sup>6+</sup>/PBBs/PBDEs Testing Flow Chart

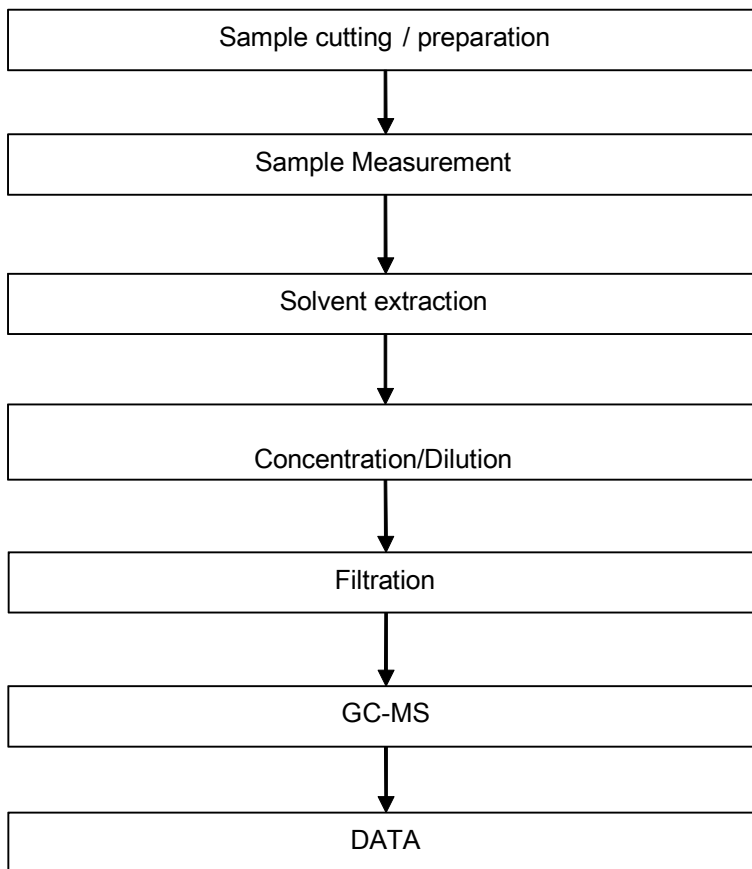
1) These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr<sup>6+</sup> and PBBs/PBDEs test method excluded).





## ATTACHMENTS

### Phthalates Testing Flow Chart

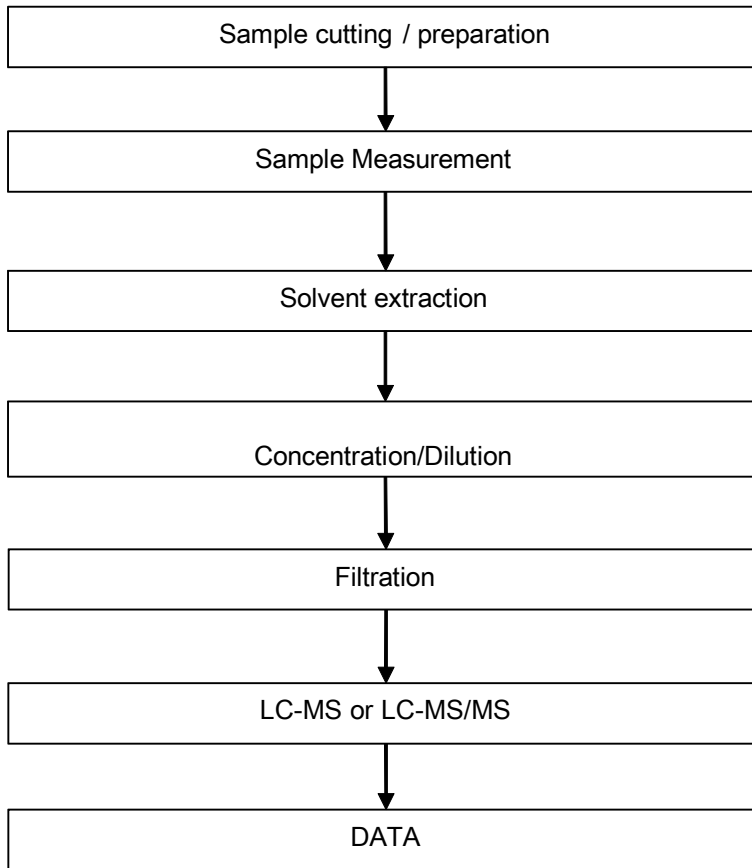


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PFOA / PFOS Testing Flow Chart



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## Test Report

No. 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

scan to see the report



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## Test Report

No. CANEC2218227001

Date: 30 Aug 2022

Page 2 of 8

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 .

| Test Item(s)                  | Limit | Unit               | MDL  | 001 |
|-------------------------------|-------|--------------------|------|-----|
| 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

No. CANEC2218227001

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.



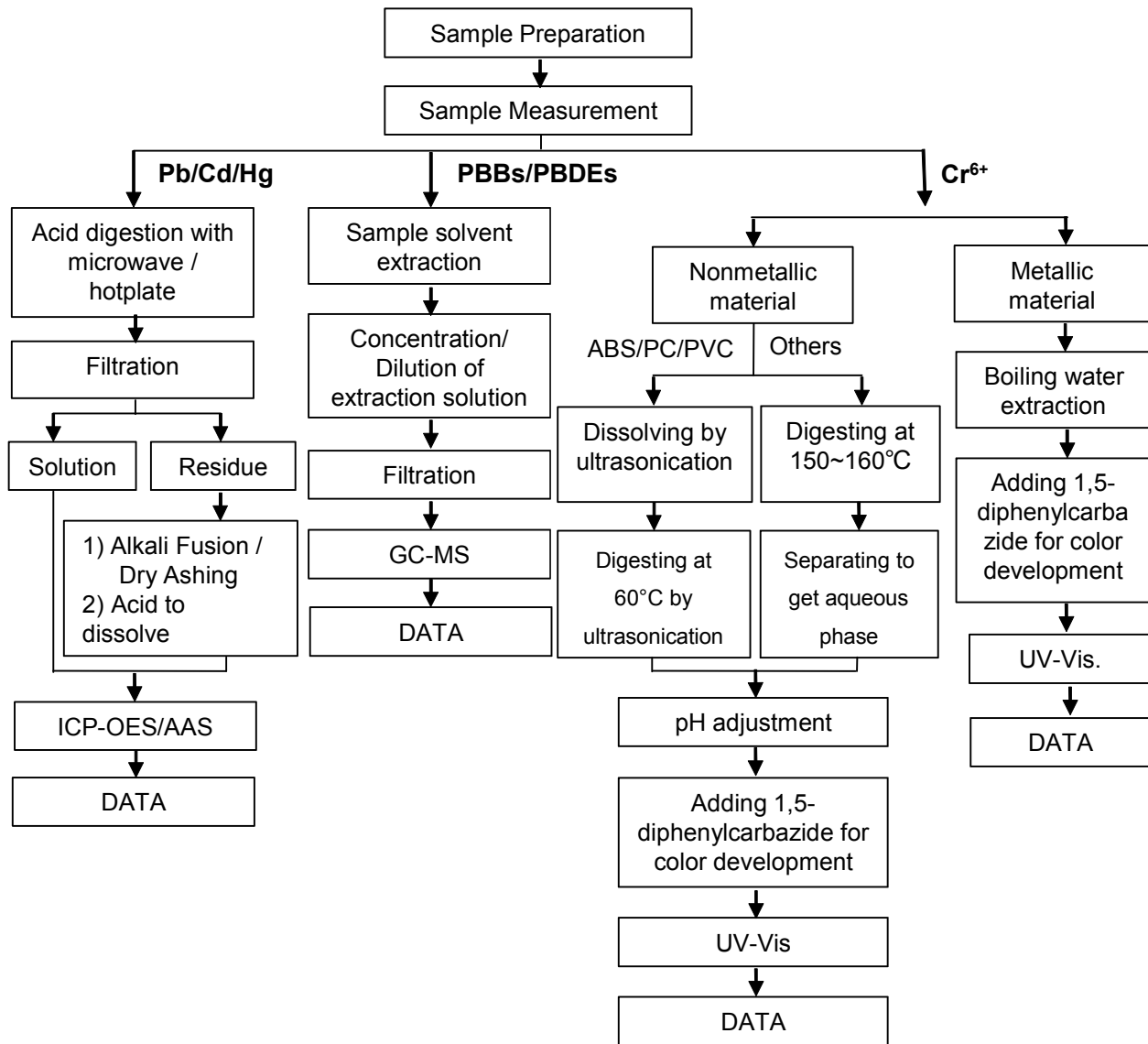
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**Pb/Cd/Hg/Cr<sup>6+</sup>/PBBs/PBDEs Testing Flow Chart**

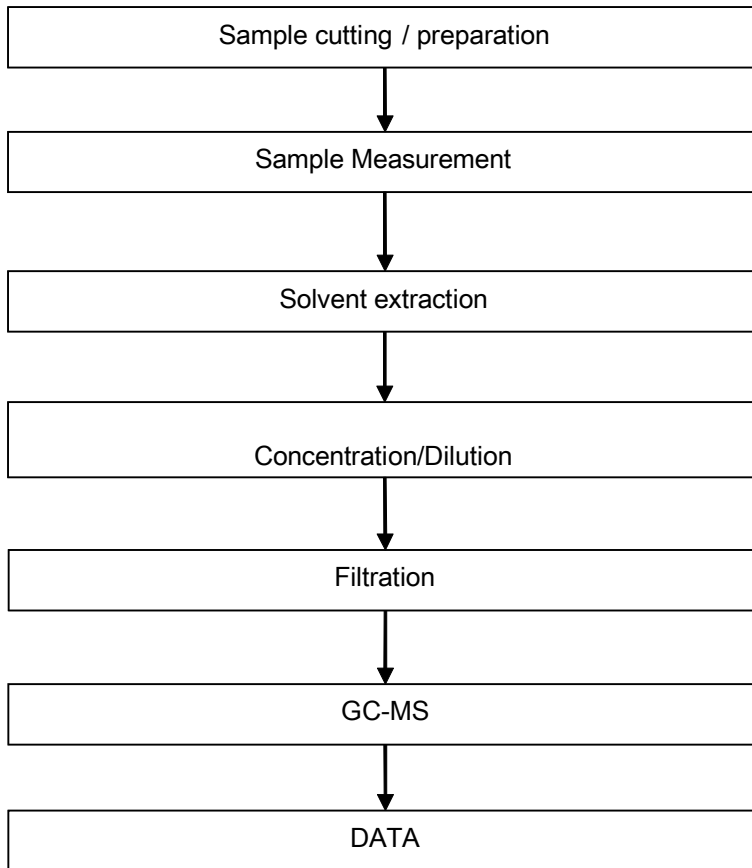
1) These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr<sup>6+</sup> and PBBs/PBDEs test method excluded).





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Phthalates Testing Flow Chart

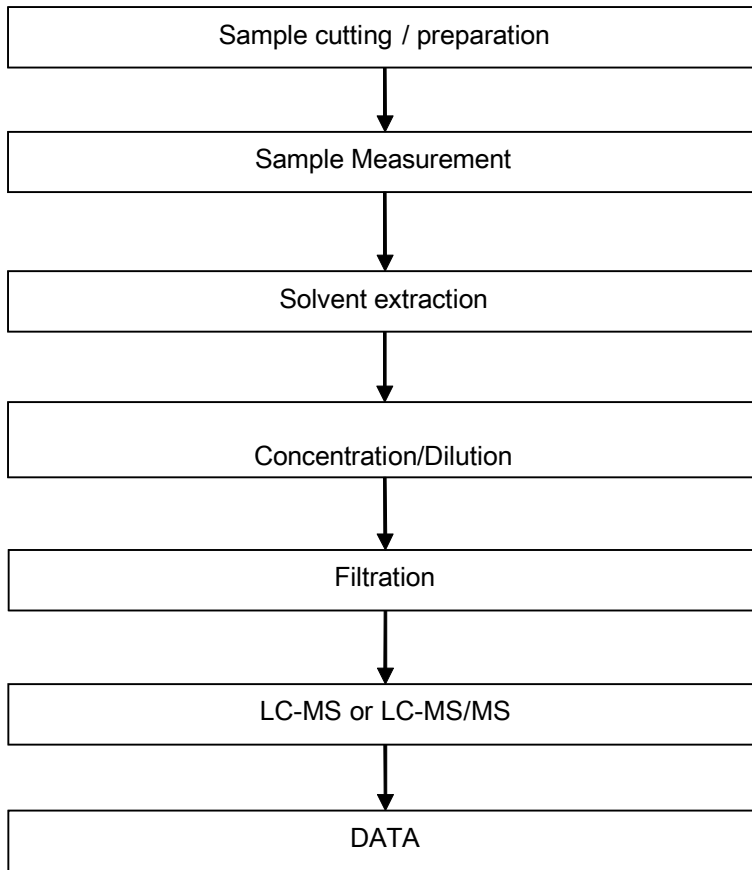


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PFOA / PFOS Testing Flow Chart



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# Test Report

No. 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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| <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 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>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.



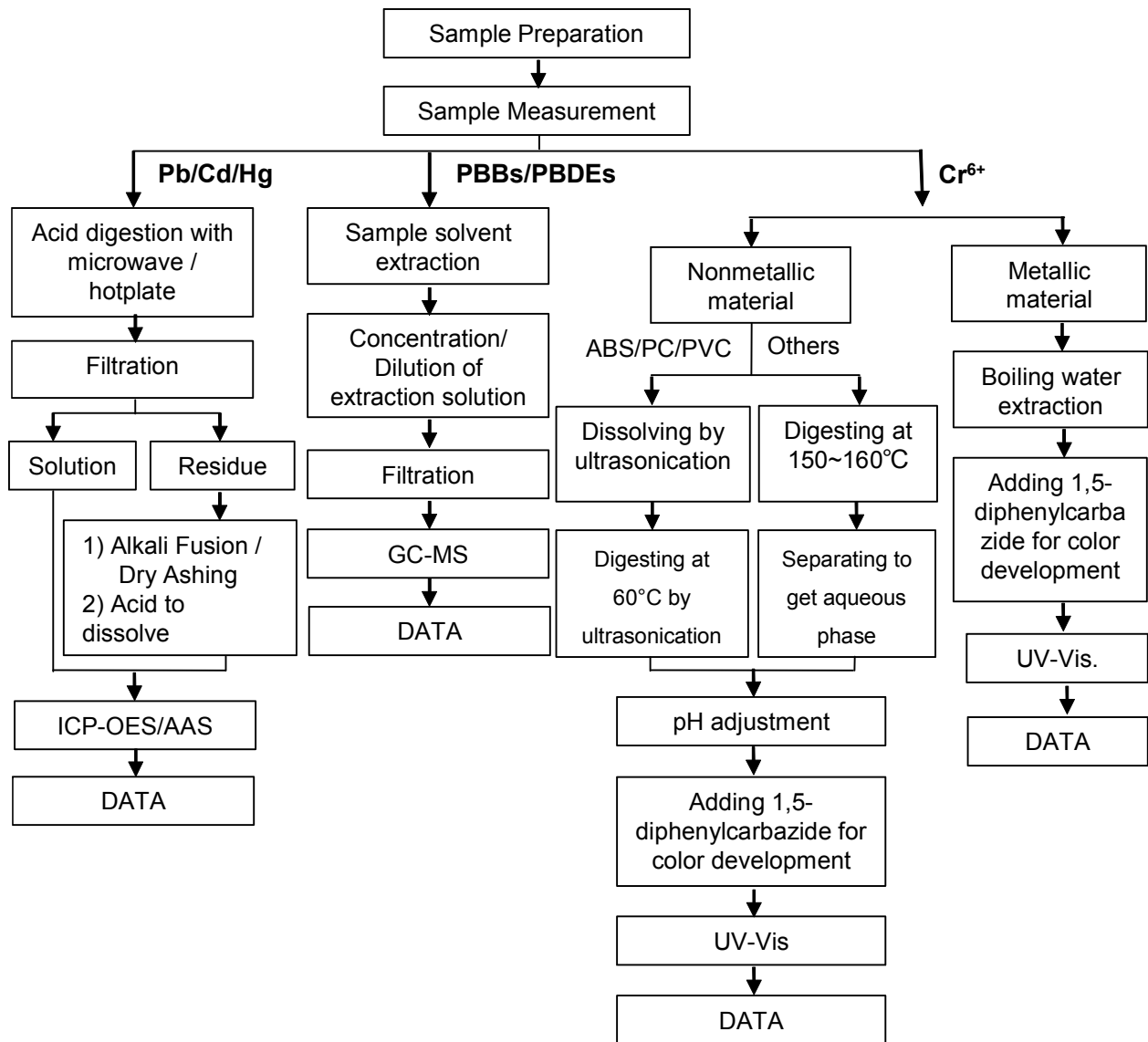
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**Pb/Cd/Hg/Cr<sup>6+</sup>/PBBs/PBDEs Testing Flow Chart**

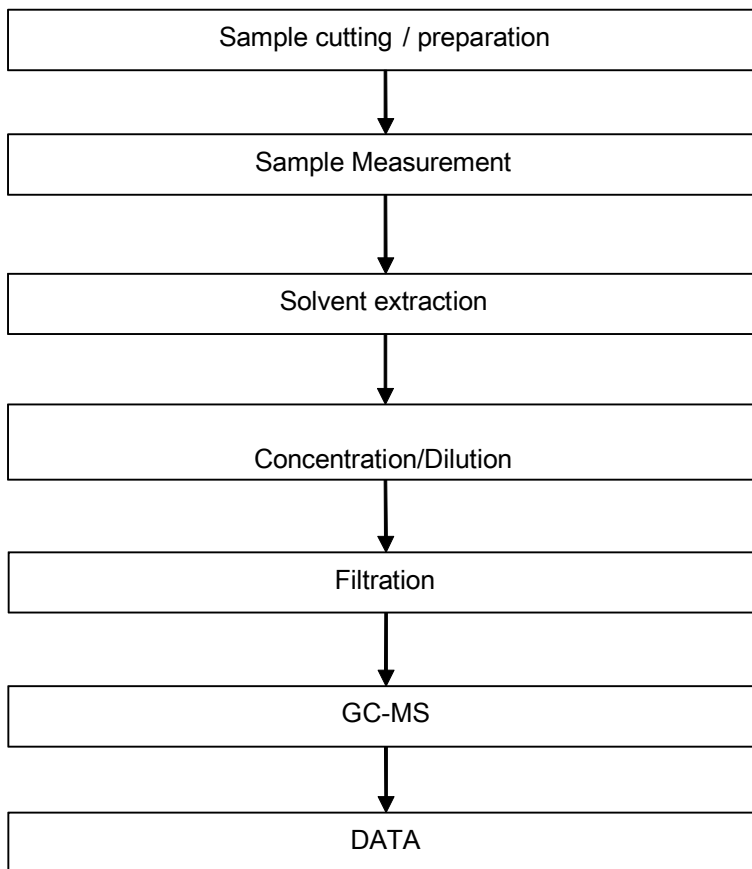
1) These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr<sup>6+</sup> and PBBs/PBDEs test method excluded).





## ATTACHMENTS

### Phthalates Testing Flow Chart

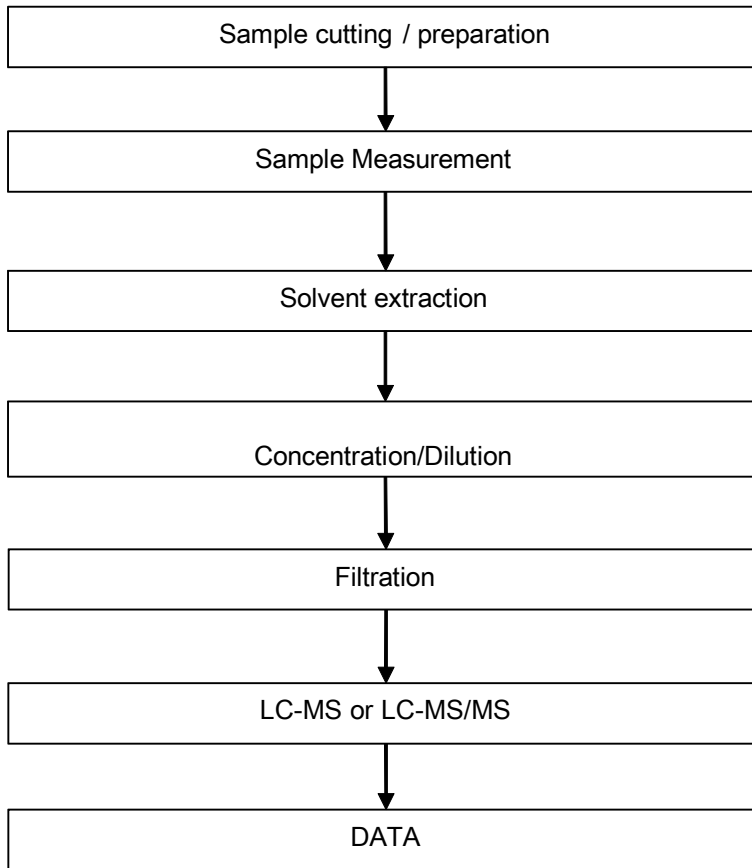


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### PFOA / PFOS Testing Flow Chart



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