

## 承 认 书

Approval Sheet

客户 (Customer): /

客户料号 (Cus .P/N): /

华联威料号 (HLW P/N): U573-061B-G61018

品名规格 (PronameSpec): TYPE C 6P SMT

送样日期 (Delivery Date): 2021/12/1

承认日期 (Acknowledge Date): 2021/12/1

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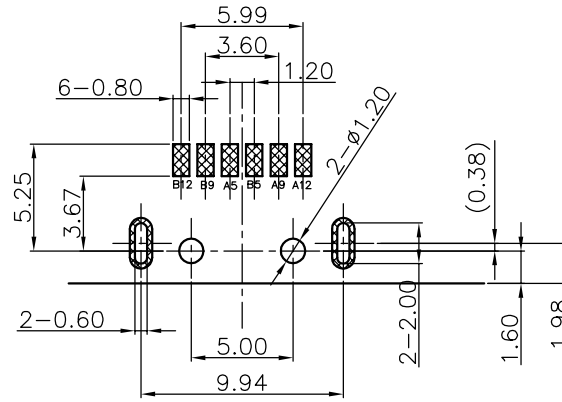
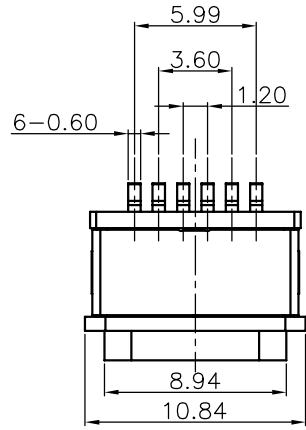
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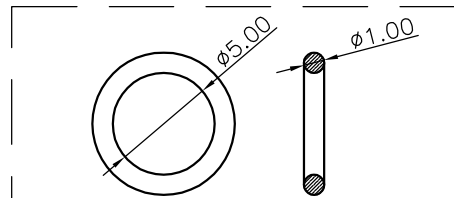
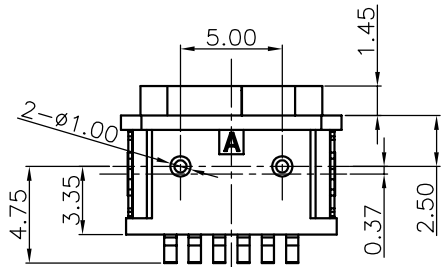
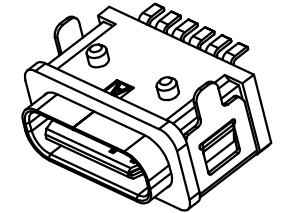
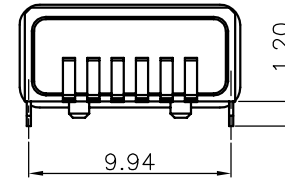
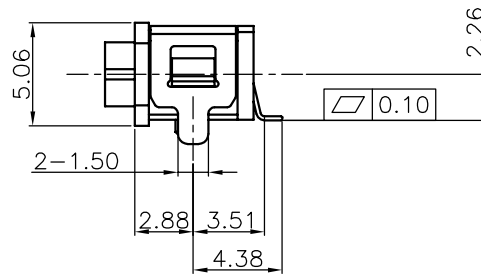
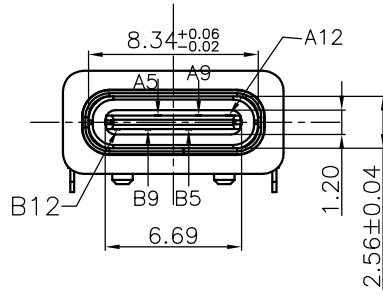
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|      |         |       |
|------|---------|-------|
| REV. | ECN.NO. | APPD. |
| A    | /       | /     |



Recommended P.C.B. Layout  
Unspecified tolerance: ±0.05  
(Top view)



注：防水圈是圆形截面，直径为1.0mm的硅胶圈，防水圈挤压量，由1.0mm挤压到0.5mm ~ 0.6mm，防水效果好

U573-061B-XXX0X8

- G: 半金G/F
- 1: 半金1u"
- 3: 半金3u"
- 5: 半金5u"
- 8: 半金15u"
- 9: 镀全金1u"
- 1: PA66
- 2: PBT
- 6: LCP
- 1: 吸塑盒
- 3: 载带冷封
- 8: 载带热封
- 1: 黑色
- 2: 白色
- 3: 米黄色
- E: 蓝色300C-3
- 7: 蓝色300C

|     |             |     |             |
|-----|-------------|-----|-------------|
| A5  | CC1         | B12 | GND         |
| A9  | VBUS        | B9  | VBUS        |
| A12 | GND         | B5  | CC2         |
| PIN | SIGNAL NAME | PIN | SIGNAL NAME |

| 5    | Shell2    | 1     | SUS301 Ni Plating T=0.20mm                          | Ni:40~120u";   |
|------|-----------|-------|---|--|
| 4    | Shell1    | 1     | SUS301 Ni Plating T=0.25mm                          | Ni:40~120u";   |
| 3    | Housing2  | 1     | PA10T(G.F30%)                                       |  |
| 2    | Contact   | 5     | Phosphor bronze_C5210R-EH<br>Au/Ni Plating T=0.20mm | Ni:40~160u";<br>Au:CONTACT AREA:1u",<br>OTHER AREA:G/F |
| 1    | Housing   | 1     | PA10T (G.F30%)                                      |  |
| ITEM | PART NAME | Q' TY | FINISH  | NOTE   |

| TOLERANCE UNLESS OTHERWISE SPECIFIED |          |
|--------------------------------------|----------|
| .XXX ±0.10                           | .X' ±3'  |
| .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 6P SMT    |        |        |      |
| CHECKED  | PART No:    | U573-061B-X61018 |        |        | C    |
| DRAWN    | PROJECTION: | UNIT:            | SCALE: | SHEET: | REV. |
| DATE     |             | mm               | 1:1    | 10F1   | A    |

## 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 | Examination of Product<br>1. 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 | Contact Resistance<br>1. 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 | Dielectric Withstanding Voltage<br>2. (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 | Insulation Resistance<br>3. 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   |

## 4.3Mechanical Performance(机械性能)

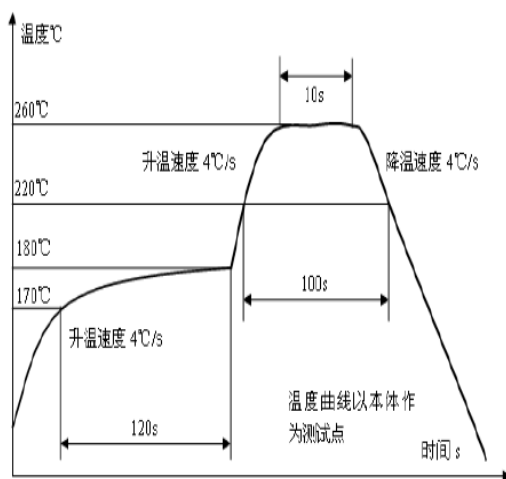
|                               |   |   |  |
|-------------------------------|---|---|--|
| 4.<br>3.<br>1                 | Insertion/Withdrawal Force<br>插入力/拔出<br>力 | (EIA-364-13)<br>Insertion and withdrawal speed:<br>25mm/minute.<br>插入和拔出的速度为25mm/分  | 插入力 Insertion<br>0.50kgf/MIN, 2.0kgf/MAX<br>拔出力 Withdrawal<br>0.80kgf/MIN, 2.0kgf/MAX<br>After 10000 cycles<br>0.6kgf/MIN, 2.0kgf/MAX  |
| 4.<br>3.<br>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.<br>3.<br>3                 | Humidity-Temperature cycle<br>温湿度循环       |   |  |
| 4.<br>3.<br>4                 | 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.<br>3.<br>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.<br>4.<br>.1 | Thermal shock<br>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.<br>4.<br>.2 | Solder ability<br>焊锡性         | (EIA-364-52)<br>To be sipped in the solder bath 245±5℃ Coverage for 3 seconds.<br>将焊锡脚浸在245±5℃的锡炉中<3秒   | The inspected area of each lead must have 90% solder coverage minimum   |
| 4.<br>4.<br>.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℃ to +85℃(温度: +25℃到+85℃)<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  |
| 4.<br>4.<br>.4 | Salt Spray<br>盐水喷雾            | EIA-364-26B)<br>Temperature: 35±2℃ 温度: 35±2℃<br>Concentration for salt: 5% 盐水浓度: 5%<br>(1)Duration: 24H 持续时间: 24小时<br>Condition(条件):<br>Contact plated gold more than 15u" (include 15 u" ),and the material of shell for copper alloy, or stainless.<br>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<br>(2) Duration: 12H 持续时间: 12小时<br>Condition(条件):<br>Contact plated gold less than 15 u" ,and/or the material of shell for steel<br>端子镀金厚度小于15u" 且/或壳体材质是铁材 | No detrimental corrosion(<br>Terminal solder tail unrequested)<br>产品无氧化, 锈蚀(端子焊脚镀锡处不作要求)  |

|     |                                  |  |  |
|-----|----------------------------------|--|--|
| 4.5 | Cold resistance (Unmated)<br>冷阻抗 | <p>(EIA-364-17B)</p> <p>Unmated connectors and expose to <math>-25\pm 3^{\circ}\text{C}</math> for 168 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>-25\pm 3^{\circ}\text{C}</math>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> |
| 4.6 | Heat resistance (Unmated)<br>热阻抗 | <p>(EIA-364-17B)</p> <p>Mated connectors and expose to <math>85\pm 2^{\circ}\text{C}</math> for 168 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<math>85\pm 2^{\circ}\text{C}</math>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> |
| 4.7 | Thermal Aging<br>高温老化            | <p>(EIA-364-31B, Condition 4, Method A)</p> <p>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.</p> <p>外观：没有损坏</p> <p>Contact Resistance 接触阻抗</p> <p>Contact: Change from initial Value 40mΩ Max</p> <p>端子：从初始值开始变化量小于40m</p>  |
| 4.8 | Resistance to Soldering Heat     | <p>for wave soldering : mil-std-202f,method 210 A,test condition B</p> <p>波峰焊: mil-std-202f, method 210 A, 试验条件B</p> <p>Pre-heat : <math>80^{\circ}\text{C}</math>, 60 Seconds 预热:<math>80^{\circ}\text{C}</math>, 60秒</p> <p>Temperature : <math>260 \pm 5^{\circ}\text{C}</math> 温度:<math>260\pm 5^{\circ}\text{C}</math></p> <p>Immersion duration : <math>10 \pm 1</math> sec. 浸泡时间:<math>10\pm 1</math>秒。</p> <hr/> <p>for manual soldering :手动焊接:</p> <p>mil-std-202f,method 210 A,test condition A</p> <p>Pre-heat : No 预热:没有</p> <p>Temperature : <math>350 \pm 10^{\circ}\text{C}</math> 温度:<math>350\pm 10^{\circ}\text{C}</math></p> <p>Immersion duration : <math>3.5\pm 0.5</math> sec. 浸泡时间:<math>3.5\pm 0.5</math>秒</p> | <p>No physical damage shall occur.</p> <p>不可有损坏</p> <p>Reflow welding is not applicable to PBT</p> <p>回流焊不适用于PBT</p>   |

Solder Temp: 260±5°C,10±0.5sec

焊锡温度: 260±5°C,10±0.5sec



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   | 1,9        | 1,3 | 1,5 | 1 | 1,5 | 1,5 | 1,5 | 1,3 |   | 1,5 | 1,5 | 1,5 | 1,5 | 1,5 | 1 |
| 4.2.1.Contact Resistance 接触      | 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   | 4,6        |     |     |   |     |     |     |     |   |     |     |     |     |     |   |
| 4.3.1.Insertion/Withdrawal force |            | 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      |            |     |     |   |     |     | 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         |            |     |     |   |     |     |     |     |   |     | 3   |     |     |     |   |



|                             |   |   |   |   |   |   |   |   |  |   |   |   |   |   |
|-----------------------------|---|---|---|---|---|---|---|---|--|---|---|---|---|---|
| 4.4.6.Heat resistance 热阻    |   |   |   |   |   |   |   |   |  |   |   | 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 | 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 6PIN SMT  | 測試日期<br>Date of Testing | 2021.11.30<br>2021.12.1 | 報告編號 Report NO.            | MD20211201-01                      |
| 產品型號<br>Part Name | U573-061B-G61018 | 樣品數量<br>Quantity        | 5PCS                    | 測試環境 Measuring Environment | 濕度 Temp:18 ±1°C 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 | 100 mΩ 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. & HUMIDITY 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. & HUMIDITY 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): 欠必鋒

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

2021年12月1日 版次:A1

| 料號  | U573-061B-G61018 | 制令單號  | /       |           |       |           |          | 送檢單位    | 工程部   | 首件製作者   | 裝配       |     |    |
|---|------------------|---|---------|-----------|-------|-----------|----------|---------|-------|---------|----------|-----|----|
| 品名  | TYPE C 6PIN SMT  | 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:0.4 | 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  | 5.99±0.20        | D   | 6.03    | 6.05      | 6.07  | 6.06      | 6.08     | √       |       |         |          |     |    |
|   | 3.60±0.20        | D   | 3.65    | 3.67      | 3.68  | 3.70      | 3.68     | √       |       |         |          |     |    |
|   | 1.20±0.20        | D   | 1.23    | 1.25      | 1.23  | 1.26      | 1.24     | √       |       |         |          |     |    |
|   | 8.94±0.20        | D   | 8.96    | 8.99      | 9.02  | 9.03      | 9.01     | √       |       |         |          |     |    |
|   | 10.84±0.20       | D   | 10.90   | 10.89     | 10.92 | 10.91     | 10.93    | √       |       |         |          |     |    |
|   | 8.34+0.06/-0.02  | D   | 8.36    | 8.40      | 8.39  | 8.37      | 8.39     | √       |       |         |          |     |    |
|   | 6.69±0.20        | D   | 6.70    | 6.72      | 6.70  | 6.69      | 6.71     | √       |       |         |          |     |    |
|   | 2.56±0.04        | D   | 2.58    | 2.60      | 2.59  | 2.62      | 2.63     | √       |       |         |          |     |    |
|   | 5.00±0.20        | D   | 5.03    | 5.06      | 5.05  | 5.04      | 5.03     | √       |       |         |          |     |    |
|   | 4.75±0.20        | D   | 4.80    | 4.78      | 4.79  | 4.81      | 4.82     | √       |       |         |          |     |    |
|   | 3.35±0.20        | D   | 3.38    | 3.36      | 3.37  | 3.40      | 3.37     | √       |       |         |          |     |    |
|   | 2.50±0.20        | D   | 2.56    | 2.58      | 2.60  | 2.62      | 2.61     | √       |       |         |          |     |    |
|   | 5.06±0.20        | D   | 5.12    | 5.10      | 5.08  | 5.09      | 5.12     | √       |       |         |          |     |    |
| 4.38±0.20   | D                | 4.39  | 4.40    | 4.42      | 4.38  | 4.42      | √        |         |       |         |          |     |    |
| 檢驗依據: <input checked="" type="checkbox"/> 《工程圖紙》 <input type="checkbox"/> 《檢驗規範》 <input type="checkbox"/> 《承認書》 <input type="checkbox"/> 樣品 <input type="checkbox"/> 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:   |                  | <input checked="" type="checkbox"/> 合格Accept <input type="checkbox"/> 退貨Reject <input type="checkbox"/> 特采Waive <input type="checkbox"/> 挑選Sort |         |           |       |           |          |         |       |         |          |     |    |

核准: 欠必鋒

審核: 刘联英

檢驗員: 但芬

## 电镀报告表

|                               |          |               |        |           |          |
|-------------------------------|----------|---------------|--------|-----------|----------|
| 品名:TYPE C 6PIN (端子)           |          | 版次:A. 0       |        |           |          |
| 电镀规格:Ni40u", Sn40u", Au G/Fu" |          | 日期:2021-08-25 | 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                             | 40u"MIN  | 60.5u"        | OK     | 2021/8/25 | 10:20:15 |
| 2                             | 40u"MIN  | 58.3u"        | OK     | 2021/8/25 | 10:20:17 |
| 3                             | 40u"MIN  | 67.5u"        | OK     | 2021/8/25 | 10:20:19 |
| 4                             | 40u"MIN  | 62.4u"        | OK     | 2021/8/25 | 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                             | 40u"MIN  | 115.3u"       | OK     | 2021/8/25 | 10:25:10 |
| 2                             | 40u"MIN  | 124.7u"       | OK     | 2021/8/25 | 10:25:12 |
| 3                             | 40u"MIN  | 118.9u"       | OK     | 2021/8/25 | 10:25:14 |
| 4                             | 40u"MIN  | 112.4u"       | OK     | 2021/8/25 | 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     | 2021/8/25 | 10:30:32 |
| 2                             | 0.5u"MIN | 0.53u"        | OK     | 2021/8/25 | 10:30:34 |
| 3                             | 0.5u"MIN | 0.58u"        | OK     | 2021/8/25 | 10:30:36 |
| 4                             | 0.5u"MIN | 0.59u"        | OK     | 2021/8/25 | 10:30:38 |

核准: 欠必锋

审核: 刘联英

检验员: 但芬



电镀报告表

| 品名:TYPE C 6PIN外壳   |               | 版次:A.0 |    |           |          |    |      |      |   |         |        |    |           |          |   |         |        |    |           |          |   |         |        |    |           |          |   |         |        |    |           |          |
|--|---------------|--------|----|-----------|----------|----|------|------|---|---------|--------|----|-----------|----------|---|---------|--------|----|-----------|----------|---|---------|--------|----|-----------|----------|---|---------|--------|----|-----------|----------|
| 电镀规格:Ni:50u"MIN  | 日期:2021/09/24 | 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)  |               |        |    |           |          |    |      |      |   |         |        |    |           |          |   |         |        |    |           |          |   |         |        |    |           |          |   |         |        |    |           |          |
| <table border="1"><thead><tr><th>数据</th><th>测试标准</th><th>实测值</th><th>判定</th><th>测试日期</th><th>测试时间</th></tr></thead><tbody><tr><td>1</td><td>50u"min</td><td>55.2u"</td><td>OK</td><td>2021/9/24</td><td>14:35:05</td></tr><tr><td>2</td><td>50u"min</td><td>51.3u"</td><td>OK</td><td>2021/9/24</td><td>14:35:07</td></tr><tr><td>3</td><td>50u"min</td><td>58.6u"</td><td>OK</td><td>2021/9/24</td><td>14:35:09</td></tr><tr><td>4</td><td>50u"min</td><td>56.8u"</td><td>OK</td><td>2021/9/24</td><td>14:35:11</td></tr></tbody></table> |               |        | 数据 | 测试标准      | 实测值      | 判定 | 测试日期 | 测试时间 | 1 | 50u"min | 55.2u" | OK | 2021/9/24 | 14:35:05 | 2 | 50u"min | 51.3u" | OK | 2021/9/24 | 14:35:07 | 3 | 50u"min | 58.6u" | OK | 2021/9/24 | 14:35:09 | 4 | 50u"min | 56.8u" | OK | 2021/9/24 | 14:35:11 |
| 数据   | 测试标准          | 实测值    | 判定 | 测试日期      | 测试时间     |    |      |      |   |         |        |    |           |          |   |         |        |    |           |          |   |         |        |    |           |          |   |         |        |    |           |          |
| 1  | 50u"min       | 55.2u" | OK | 2021/9/24 | 14:35:05 |    |      |      |   |         |        |    |           |          |   |         |        |    |           |          |   |         |        |    |           |          |   |         |        |    |           |          |
| 2  | 50u"min       | 51.3u" | OK | 2021/9/24 | 14:35:07 |    |      |      |   |         |        |    |           |          |   |         |        |    |           |          |   |         |        |    |           |          |   |         |        |    |           |          |
| 3  | 50u"min       | 58.6u" | OK | 2021/9/24 | 14:35:09 |    |      |      |   |         |        |    |           |          |   |         |        |    |           |          |   |         |        |    |           |          |   |         |        |    |           |          |
| 4  | 50u"min       | 56.8u" | OK | 2021/9/24 | 14:35:11 |    |      |      |   |         |        |    |           |          |   |         |        |    |           |          |   |         |        |    |           |          |   |         |        |    |           |          |

核准: 欠必锋

审核: 刘联英

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-1216         |
| METHOD | NEUTRL SALT SPRAY CORROSION TEST | REF    |                      |
| 客户     | /                                | 试验起始日期 | 2021年11月30日 20:00 时起 |
|        |                                  | DATE   | 2021年12月1日 08:00 时止  |
| 样品名称   | TYPE C 6PIN SMT                  | 试验数量   | 5PCS                 |
| P/N    | U573-061B-G61018                 |        |                      |

### 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. IT THE SPRAY DHAMBR):  $35 \pm 1^\circ\text{C}$ .
- 3、盐水桶温度 (TEMP. OF SALE SOL' N TANK):  $35 \pm 1^\circ\text{C}$ .
- 4、压力桶温度 (TEMP. OF SAR SUPPLIERY):  $47 \pm 1^\circ\text{C}$ .
- 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 SOL' N)  $1-2\text{mL}/(8 \text{ cm}^2\text{hr})$ .
- 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: 刘联英

试验员: 但芬



# 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


 聯繫電話:0755-28111847  
 傳真: 0755-28110077  
 送貨專用章



## 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

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EMERGENCY TEL: +86-750-3689708



# 材 质 证 明 书 (2020/A)

## MATERIAL CERTIFICATE

| 生产厂家   |                 | SHNZHEN CITY XINQIA METAL PRODUCTS CO. LTD |                 |              |                    | 生产编号                  |               | B20191101 |  | 开立日期 |                  | 2019.11、5   |  | 证明书编号  |                             | 20191105-01       |  |
|--|-----------------|--|-----------------|--------------|--------------------|-----------------------|---------------|-----------|--|------|------------------|---|--|--|-----------------------------|-------------------|--|
| 钢种名称   |                 | SUS 304 1\2H                               |                 |              |                    | 订单编号                  |               | JIS       |  | 依据规范 |                  |   |  |  |                             |                   |  |
| Order No   |                 |  |                 |              |                    | By Standard           |               |           |  |      |                  |   |  |  |                             |                   |  |
| 项目<br>Item   | 钢卷编号<br>Coil No | 厚度(mm)<br>Thickness                        | 宽度(mm)<br>Width | 长度<br>Length | 数量(卷)<br>Quantity© | 重量(Kg)<br>Weight (Kg) |               | 成品表面加工    |  |      |                  |   |  |  |                             |                   |  |
| 1  |                 | 0.3  | 296             | COIL         | 1                  | 1400                  |               |           |  |      |                  |   |  |  |                             |                   |  |
| 2  |                 |  |                 |              |                    |                       |               |           |  |      |                  |   |  |  |                             |                   |  |
| 3  |                 |  |                 |              |                    |                       |               |           |  |      |                  |   |  |  |                             |                   |  |
| 4  |                 |  |                 |              |                    |                       |               |           |  |      |                  |   |  |  |                             |                   |  |
| 5  |                 |  |                 |              |                    |                       |               |           |  |      |                  |   |  |  |                             |                   |  |
| 6  |                 |  |                 |              |                    |                       |               |           |  |      |                  |   |  |  |                             |                   |  |
| 化学成份Chemical Composition (%)   |                 |  |                 |              |                    |                       |               |           |  |      | 标准<br>Spec       | 硬度<br>Hardness  | 降伏强度<br>(N/mm <sup>2</sup> )<br>Yield stress | 引张强度<br>(N/mm <sup>2</sup> )<br>Tensile Stress | 伸长率(%)<br>Elongation        | 弯曲试验<br>Bend Test |  |
| C  | Si              | Mn   | P               | S            | Cr                 | Ni                    | Mo            | N         |  |      |                  |   |  |  |                             |                   |  |
| 标准<br>Spec   | 0.080<br>max    | 0.750<br>max                               | 2.000<br>max    | 0.045<br>max | 0.030<br>max       | 18.00<br>20.00        | 8.00<br>10.50 |           |  |      | 试片编号<br>Specimen | 270-290HV   | 865<br>min                                   | 1059<br>min                                    | -<br>-                      |                   |  |
| 1  | 0.042           | 0.320                                      | 1.180           | 0.031        | 0.006              | 18.03                 | 8.01          |           |  |      | 20140328-01      | 270   | 497  | 870  | -                           | OK                |  |
| 2  |                 |  |                 |              |                    |                       |               |           |  |      |                  |   |  |  |                             |                   |  |
| 3  |                 |  |                 |              |                    |                       |               |           |  |      |                  |   |  |  |                             |                   |  |
| 4  |                 |  |                 |              |                    |                       |               |           |  |      |                  |   |  |  |                             |                   |  |
| 5  |                 |  |                 |              |                    |                       |               |           |  |      |                  |   |  |  |                             |                   |  |
| 6  |                 |  |                 |              |                    |                       |               |           |  |      |                  |   |  |  |                             |                   |  |
| <p>以上列出的典型数据,仅供参考,并不代表技术数据的最大值或最小值,也不用于最终设计.任一具体材料的数据可能与此表中所列出的数据有所不同.</p> <p>Data shown are typical,For reference only,and should not be construed as maximum or minimum values for specification or for final design data. On any particular piece of material may vary from those shown herein.</p> |                 |  |                 |              |                    |                       |               |           |  |      |                  | <p>如有异常,请于三天内回复</p> <p>Only discrepacy pls contact us within 3 days</p> |  |  | <p>技术部经理</p> <p>Manager</p> |                   |  |



## Test Report

No. CANEC2119174201

Date: 22 Oct 2021

Page 1 of 4

SHENZHEN HUALIANWEI ELECTRONICS TECHNOLOGY CO.,LTD

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

The following sample(s) was/were submitted and identified on behalf of the clients as : C2680 Terminal

SGS Job No. : CP21-055214 - GZ  
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  
Date of Sample Received : 18 Oct 2021  
Testing Period : 18 Oct 2021 - 22 Oct 2021  
Test Requested : Selected test(s) as requested by client.  
Test Method : Please refer to next page(s).  
Test Results : Please refer to next page(s).  
Conclusion : Based on the performed tests on submitted sample(s), the results of Lead, Mercury, Cadmium, Hexavalent chromium comply with the limits as set by RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.

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

Allie Chen

Allie Chen  
Approved Signatory

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Guangzhou Branch Testing Center Chemical Laboratory.

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## Test Report

No. CANEC2119174201

Date: 22 Oct 2021

Page 2 of 4

Test Results :

### Test Part Description :

| Specimen No. | SGS Sample ID    | Description              |
|--------------|------------------|--------------------------|
| SN1          | CAN21-191742.001 | Silver-grey/brassy metal |

Remarks :

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

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

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)                     | 1,000 | mg/kg              | 2    | 44  |
| Mercury (Hg)                  | 1,000 | mg/kg              | 2    | ND  |
| Hexavalent Chromium (Cr(VI))▼ | -     | µg/cm <sup>2</sup> | 0.10 | ND  |

Notes :

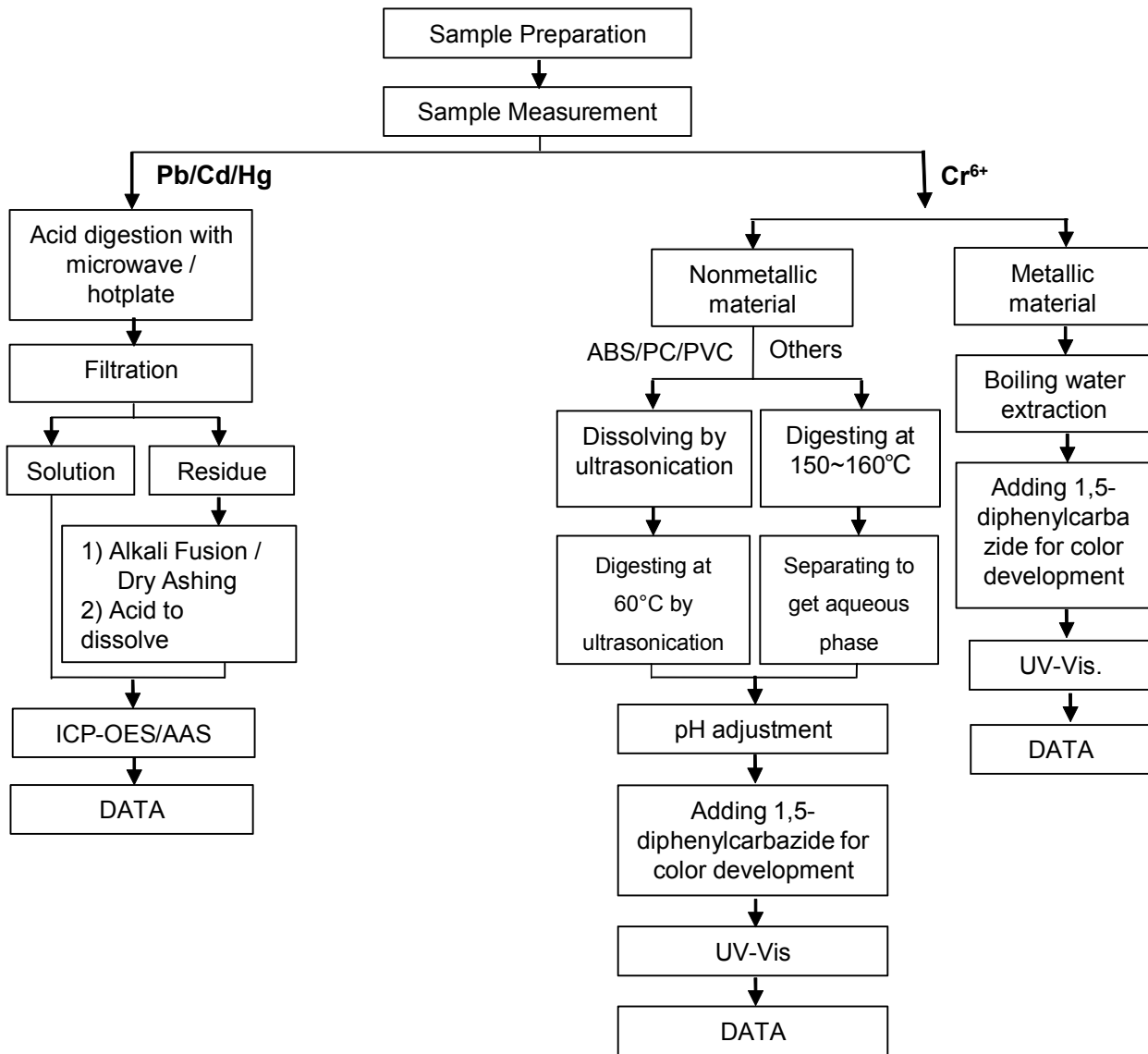
- (1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.
- (2) IEC 62321 series is equivalent to EN 62321 series  
[https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP\\_ORG\\_ID,FSP\\_LANG\\_ID:1258637,25](https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP_ORG_ID,FSP_LANG_ID:1258637,25)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



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).



Sample photo:



SGS authenticate the photo on original report only

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



## Test Report

No. CANEC2119174205

Date: 22 Oct 2021

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

The following sample(s) was/were submitted and identified on behalf of the clients as : SUS304 hardware

SGS Job No. : CP21-055214 - GZ  
Model No. : SUS304  
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  
Date of Sample Received : 18 Oct 2021  
Testing Period : 18 Oct 2021 - 22 Oct 2021  
Test Requested : Selected test(s) as requested by client.  
Test Method : Please refer to next page(s).  
Test Results : Please refer to next page(s).  
Conclusion : Based on the performed tests on submitted sample(s), the results of Lead, Mercury, Cadmium, Hexavalent chromium comply with the limits as set by RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.

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

Allie Chen

Allie Chen  
Approved Signatory

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SGS-CSTC Standards Technical Services Co., Ltd.  
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## Test Report

No. CANEC2119174205

Date: 22 Oct 2021

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Test Results :

### Test Part Description :

| Specimen No. | SGS Sample ID    | Description       |
|--------------|------------------|-------------------|
| SN1          | CAN21-191742.005 | Silver-grey metal |

Remarks :

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

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

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

| Test Item(s)                  | Limit | Unit               | MDL  | 005 |
|-------------------------------|-------|--------------------|------|-----|
| Cadmium (Cd)                  | 100   | mg/kg              | 2    | ND  |
| Lead (Pb)                     | 1,000 | mg/kg              | 2    | ND  |
| Mercury (Hg)                  | 1,000 | mg/kg              | 2    | ND  |
| Hexavalent Chromium (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  
[https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP\\_ORG\\_ID,FSP\\_LANG\\_ID:1258637,25](https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP_ORG_ID,FSP_LANG_ID:1258637,25)
- (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.

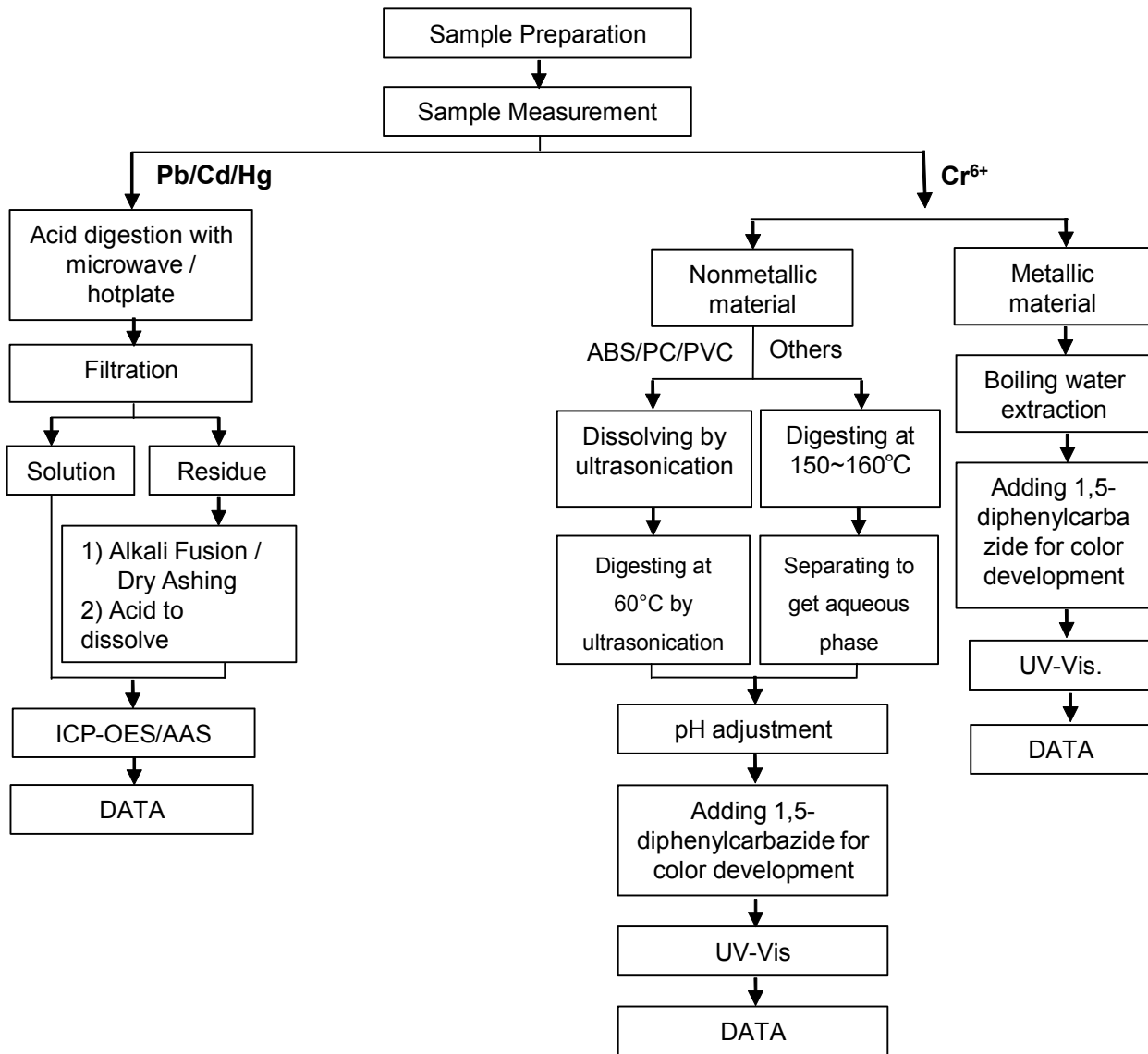




ATTACHMENTS

**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).



Sample photo:



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



## Test Report

No. CANEC2119174208

Date: 22 Oct 2021

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SHENZHEN HUALIANWEI ELECTRONICS TECHNOLOGY CO.,LTD

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

The following sample(s) was/were submitted and identified on behalf of the clients as : LCP plastic black color

SGS Job No. : CP21-055214 - GZ  
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  
Date of Sample Received : 18 Oct 2021  
Testing Period : 18 Oct 2021 - 22 Oct 2021  
Test Requested : Selected test(s) as requested by client.  
Test Method : Please refer to next page(s).  
Test Results : Please refer to next page(s).  
Conclusion : Based on the performed tests on submitted sample(s), the results of Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs) and Phthalates such as Bis(2-ethylhexyl) phthalate (DEHP) , Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) , and Diisobutyl phthalate (DIBP) comply with the limits as set by RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.

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

Allie Chen

Allie Chen  
Approved Signatory

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## Test Report

No. CANEC2119174208

Date: 22 Oct 2021

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Test Results :

### Test Part Description :

| Specimen No. | SGS Sample ID    | Description   |
|--------------|------------------|---------------|
| SN1          | CAN21-191742.008 | Black plastic |

Remarks :

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

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

Test Method : With reference to IEC 62321-4:2013+A1:2017, 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 | 008 |
|----------------------------|-------|-------|-----|-----|
| Cadmium (Cd)               | 100   | mg/kg | 2   | ND  |
| Lead (Pb)                  | 1,000 | mg/kg | 2   | 6   |
| Mercury (Hg)               | 1,000 | mg/kg | 2   | ND  |
| Hexavalent Chromium (CrVI) | 1,000 | mg/kg | 8   | ND  |
| Sum of PBBs                | 1,000 | mg/kg | -   | ND  |
| Monobromobiphenyl          | -     | mg/kg | 5   | ND  |
| Dibromobiphenyl            | -     | mg/kg | 5   | ND  |
| Tribromobiphenyl           | -     | mg/kg | 5   | ND  |
| Tetrabromobiphenyl         | -     | mg/kg | 5   | ND  |
| Pentabromobiphenyl         | -     | mg/kg | 5   | ND  |
| Hexabromobiphenyl          | -     | mg/kg | 5   | ND  |
| Heptabromobiphenyl         | -     | mg/kg | 5   | ND  |
| Octabromobiphenyl          | -     | mg/kg | 5   | ND  |
| Nonabromobiphenyl          | -     | mg/kg | 5   | ND  |
| Decabromobiphenyl          | -     | mg/kg | 5   | ND  |
| Sum of PBDEs               | 1,000 | mg/kg | -   | ND  |
| Monobromodiphenyl ether    | -     | mg/kg | 5   | ND  |
| Dibromodiphenyl ether      | -     | mg/kg | 5   | ND  |
| Tribromodiphenyl ether     | -     | mg/kg | 5   | ND  |
| Tetrabromodiphenyl ether   | -     | mg/kg | 5   | ND  |
| Pentabromodiphenyl ether   | -     | mg/kg | 5   | ND  |



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## Test Report

No. CANEC2119174208

Date: 22 Oct 2021

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| <u>Test Item(s)</u>                 | <u>Limit</u> | <u>Unit</u> | <u>MDL</u> | <u>008</u> |
|-------------------------------------|--------------|-------------|------------|------------|
| Hexabromodiphenyl ether             | -            | mg/kg       | 5          | ND         |
| Heptabromodiphenyl ether            | -            | mg/kg       | 5          | ND         |
| Octabromodiphenyl ether             | -            | mg/kg       | 5          | ND         |
| Nonabromodiphenyl ether             | -            | mg/kg       | 5          | ND         |
| Decabromodiphenyl ether             | -            | mg/kg       | 5          | ND         |
| Dibutyl phthalate (DBP)             | 1,000        | mg/kg       | 50         | ND         |
| Butyl benzyl phthalate (BBP)        | 1,000        | mg/kg       | 50         | ND         |
| Bis (2-ethylhexyl) phthalate (DEHP) | 1,000        | mg/kg       | 50         | ND         |
| Diisobutyl Phthalates (DIBP)        | 1,000        | 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  
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- (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.



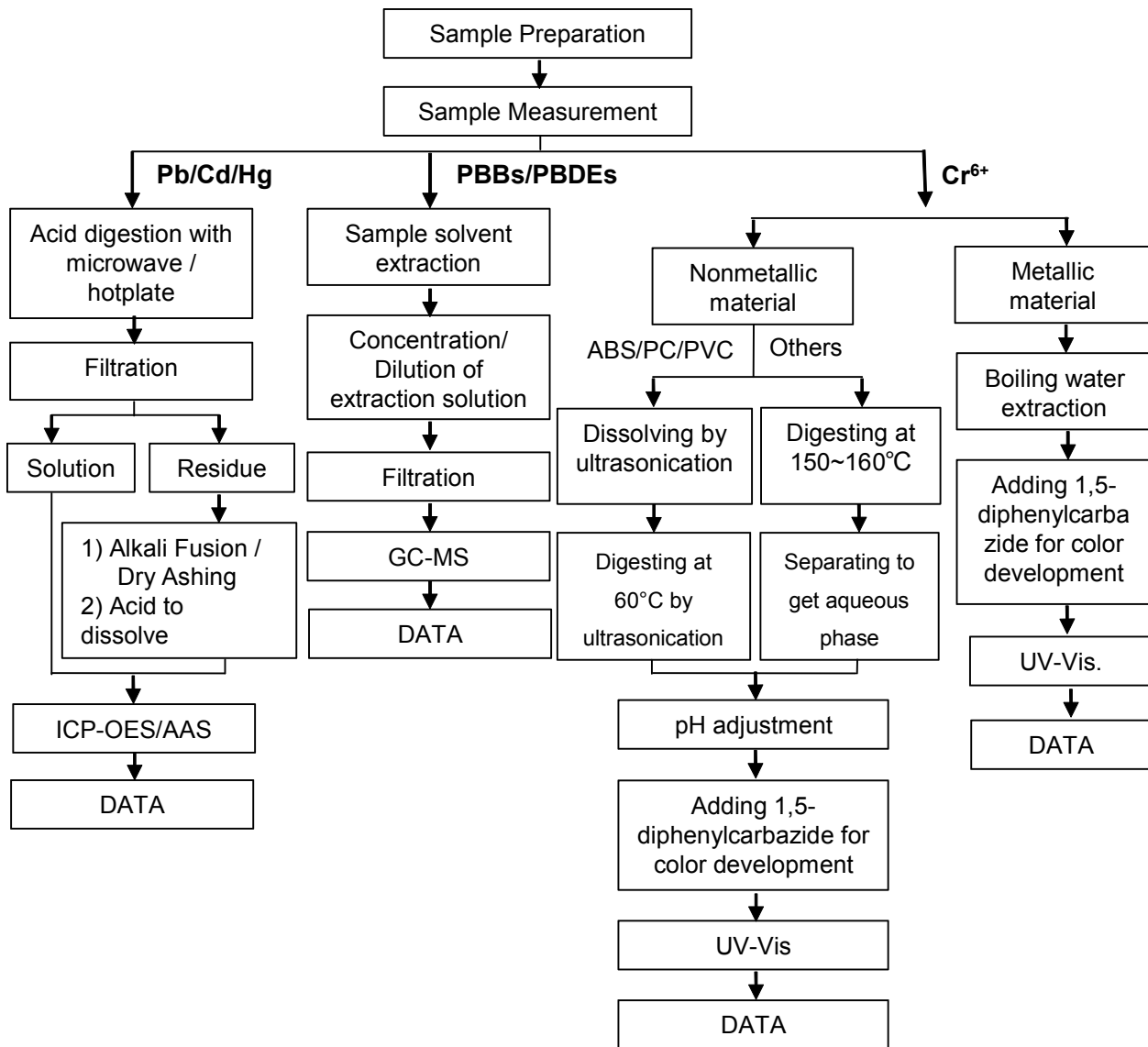
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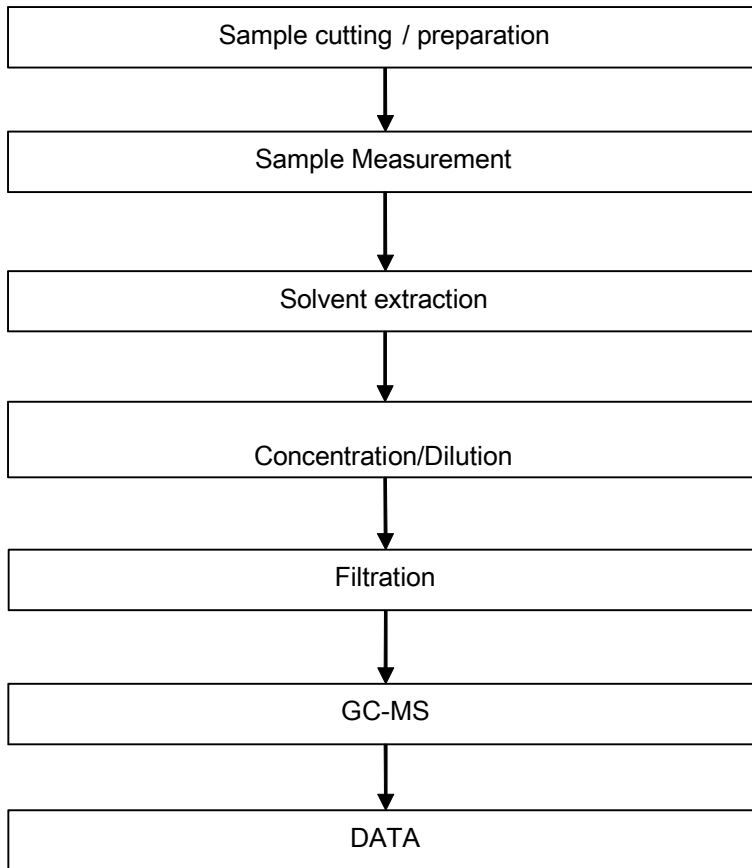
Pb/Cd/Hg/Cr<sup>6+</sup>/PBBs/PBDEs Testing Flow Chart

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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Sample photo:



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## Test Report

No. CANEC2117633801

Date: 27 Sep 2021

Page 1 of 8

SHENZHEN CITY TONGHUA INDUSTRY CO.,LTD  
TONGHUA MANSIN TONGLE XINBU VILLANG TOWN SHENZHEN CITY CHINA

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

SGS Job No. : CP21-051017 - SZ  
Date of Sample Received : 18 Sep 2021  
Testing Period : 18 Sep 2021 - 27 Sep 2021  
Test Requested : Selected test(s) as requested by client.  
Test Method : Please refer to next page(s).  
Test Results : Please refer to next page(s).  
Conclusion : Based on the performed tests on submitted sample(s), the results of Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs) and Phthalates such as Bis(2-ethylhexyl) phthalate (DEHP) , Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) , and Diisobutyl phthalate (DIBP) comply with the limits as set by RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.

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

Allie Chen

Allie Chen  
Approved Signatory

scan to see the report



CANEC2117633801



## Test Report

No. CANEC2117633801

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Test Results :

### Test Part Description :

| Specimen No. | SGS Sample ID    | Description       |
|--------------|------------------|-------------------|
| SN1          | CAN21-176338.001 | Gold plated metal |

Remarks :

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

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

Test Method : With reference to IEC 62321-4:2013+A1:2017, 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)                     | 1,000 | mg/kg              | 2    | 73  |
| Mercury (Hg)                  | 1,000 | mg/kg              | 2    | ND  |
| Hexavalent Chromium (Cr(VI))▼ | -     | µg/cm <sup>2</sup> | 0.10 | ND  |
| Sum of PBBs                   | 1,000 | mg/kg              | -    | ND  |
| Monobromobiphenyl             | -     | mg/kg              | 5    | ND  |
| Dibromobiphenyl               | -     | mg/kg              | 5    | ND  |
| Tribromobiphenyl              | -     | mg/kg              | 5    | ND  |
| Tetrabromobiphenyl            | -     | mg/kg              | 5    | ND  |
| Pentabromobiphenyl            | -     | mg/kg              | 5    | ND  |
| Hexabromobiphenyl             | -     | mg/kg              | 5    | ND  |
| Heptabromobiphenyl            | -     | mg/kg              | 5    | ND  |
| Octabromobiphenyl             | -     | mg/kg              | 5    | ND  |
| Nonabromobiphenyl             | -     | mg/kg              | 5    | ND  |
| Decabromobiphenyl             | -     | mg/kg              | 5    | ND  |
| Sum of PBDEs                  | 1,000 | mg/kg              | -    | ND  |
| Monobromodiphenyl ether       | -     | mg/kg              | 5    | ND  |
| Dibromodiphenyl ether         | -     | mg/kg              | 5    | ND  |
| Tribromodiphenyl ether        | -     | mg/kg              | 5    | ND  |
| Tetrabromodiphenyl ether      | -     | mg/kg              | 5    | ND  |
| Pentabromodiphenyl ether      | -     | mg/kg              | 5    | ND  |



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## Test Report

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| <u>Test Item(s)</u>                 | <u>Limit</u> | <u>Unit</u> | <u>MDL</u> | <u>001</u> |
|-------------------------------------|--------------|-------------|------------|------------|
| Hexabromodiphenyl ether             | -            | mg/kg       | 5          | ND         |
| Heptabromodiphenyl ether            | -            | mg/kg       | 5          | ND         |
| Octabromodiphenyl ether             | -            | mg/kg       | 5          | ND         |
| Nonabromodiphenyl ether             | -            | mg/kg       | 5          | ND         |
| Decabromodiphenyl ether             | -            | mg/kg       | 5          | ND         |
| Dibutyl phthalate (DBP)             | 1000         | mg/kg       | 50         | ND         |
| Butyl benzyl phthalate (BBP)        | 1000         | mg/kg       | 50         | ND         |
| Bis (2-ethylhexyl) phthalate (DEHP) | 1000         | mg/kg       | 50         | ND         |
| Diisobutyl Phthalates (DIBP)        | 1000         | mg/kg       | 50         | ND         |

### Notes :

- (1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.
- (2) IEC 62321 series is equivalent to EN 62321 series  
[https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP\\_ORG\\_ID,FSP\\_LANG\\_ID:1258637,25](https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP_ORG_ID,FSP_LANG_ID:1258637,25)
- (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         |



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Notes :

- (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)



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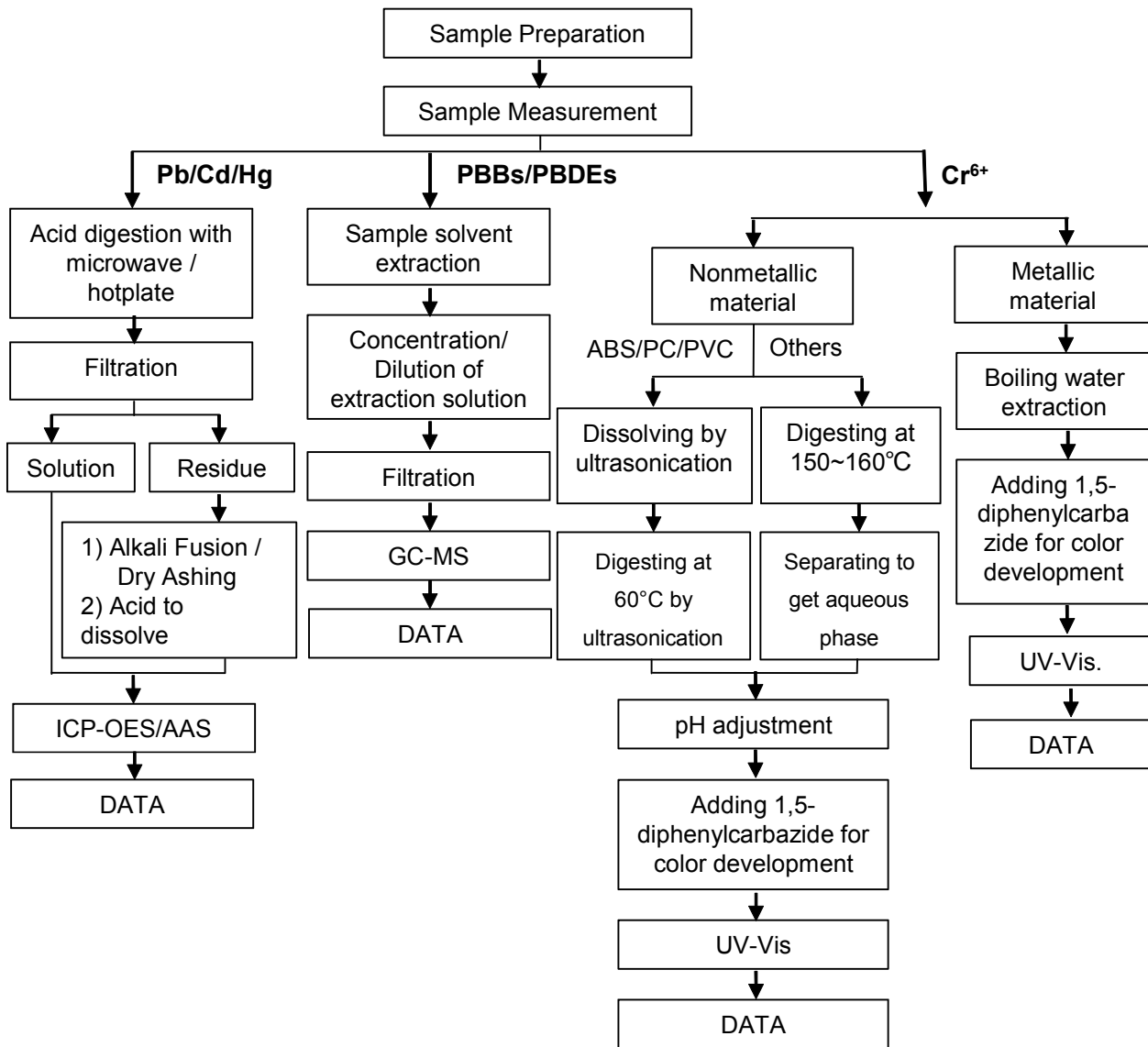
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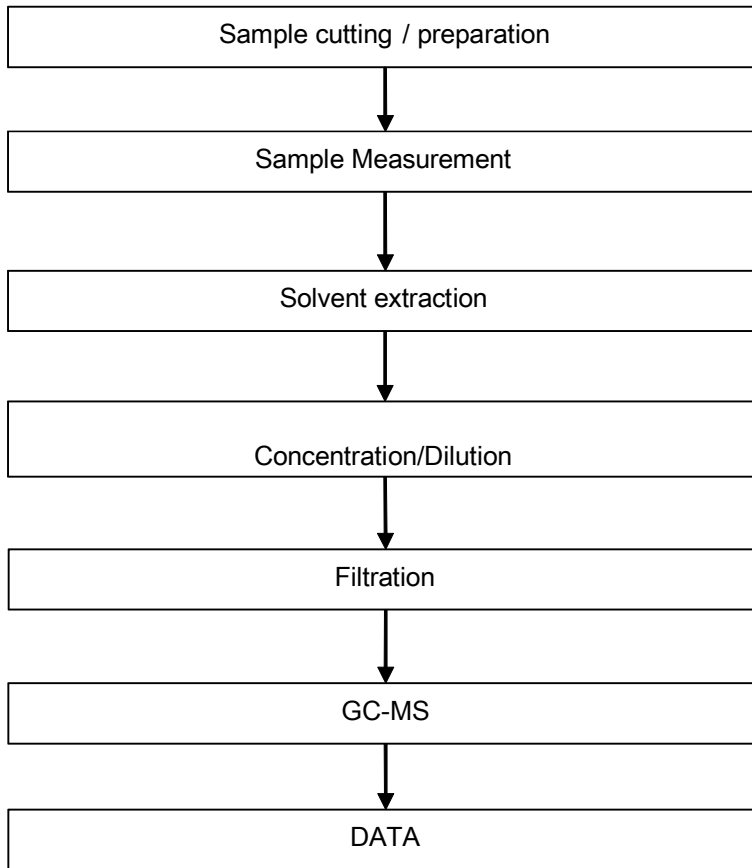
**Pb/Cd/Hg/Cr<sup>6+</sup>/PBBs/PBDEs Testing Flow Chart**

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

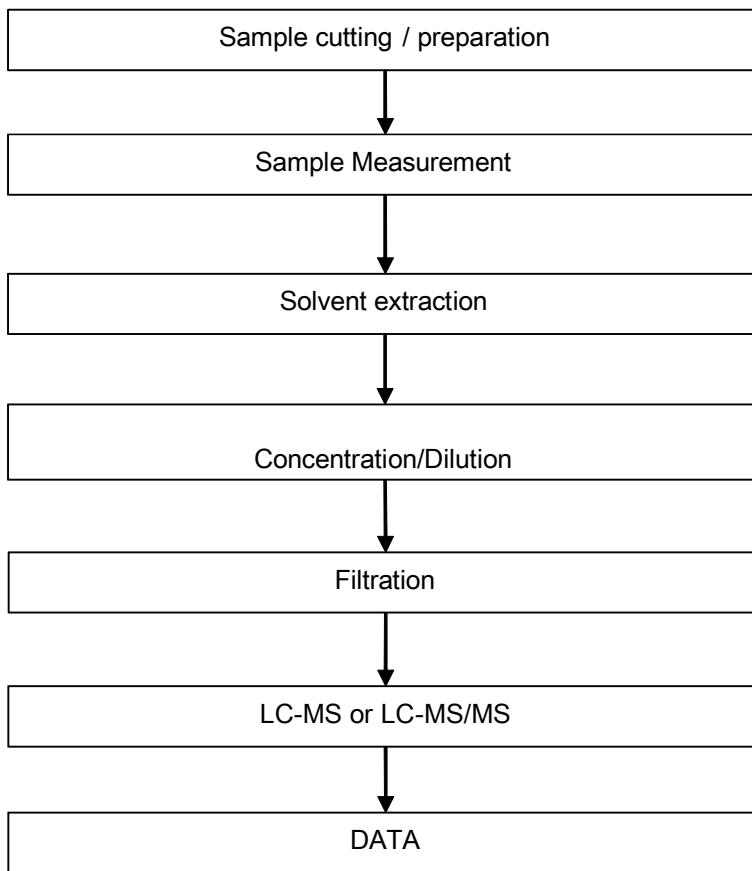


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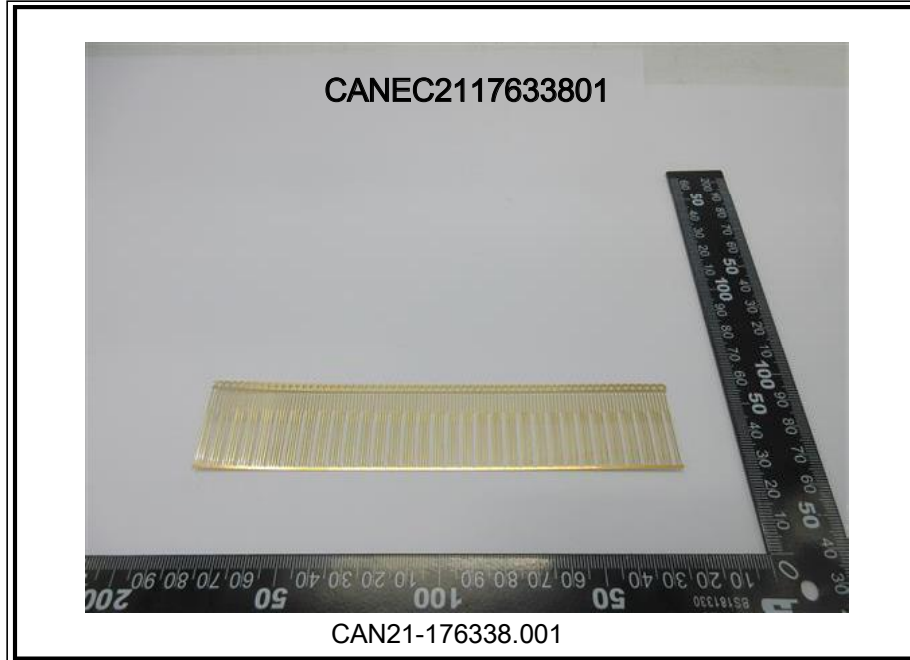
PFOA / PFOS Testing Flow Chart



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## Test Report

No. CANEC2117633803

Date: 27 Sep 2021

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SHENZHEN CITY TONGHUA INDUSTRY CO.,LTD

TONGHUA MANSIN TONGLE XINBU VILLANG TOWN SHENZHEN CITY CHINA

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

SGS Job No. : CP21-051017 - SZ

Date of Sample Received : 18 Sep 2021

Testing Period : 18 Sep 2021 - 27 Sep 2021

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

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

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

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

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

Allie Chen

Allie Chen  
Approved Signatory

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CANEC2117633803



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

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## Test Report

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Test Results :

### Test Part Description :

| Specimen No. | SGS Sample ID    | Description              |
|--------------|------------------|--------------------------|
| SN1          | CAN21-176338.003 | Silver-gray plated metal |

Remarks :

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

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

Test Method : With reference to IEC 62321-4:2013+A1:2017, 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)                     | 1,000 | mg/kg              | 2    | 37  |
| Mercury (Hg)                  | 1,000 | mg/kg              | 2    | ND  |
| Hexavalent Chromium (Cr(VI))▼ | -     | µg/cm <sup>2</sup> | 0.10 | ND  |
| Sum of PBBs                   | 1,000 | mg/kg              | -    | ND  |
| Monobromobiphenyl             | -     | mg/kg              | 5    | ND  |
| Dibromobiphenyl               | -     | mg/kg              | 5    | ND  |
| Tribromobiphenyl              | -     | mg/kg              | 5    | ND  |
| Tetrabromobiphenyl            | -     | mg/kg              | 5    | ND  |
| Pentabromobiphenyl            | -     | mg/kg              | 5    | ND  |
| Hexabromobiphenyl             | -     | mg/kg              | 5    | ND  |
| Heptabromobiphenyl            | -     | mg/kg              | 5    | ND  |
| Octabromobiphenyl             | -     | mg/kg              | 5    | ND  |
| Nonabromobiphenyl             | -     | mg/kg              | 5    | ND  |
| Decabromobiphenyl             | -     | mg/kg              | 5    | ND  |
| Sum of PBDEs                  | 1,000 | mg/kg              | -    | ND  |
| Monobromodiphenyl ether       | -     | mg/kg              | 5    | ND  |
| Dibromodiphenyl ether         | -     | mg/kg              | 5    | ND  |
| Tribromodiphenyl ether        | -     | mg/kg              | 5    | ND  |
| Tetrabromodiphenyl ether      | -     | mg/kg              | 5    | ND  |
| Pentabromodiphenyl ether      | -     | mg/kg              | 5    | ND  |



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# Test Report

No. CANEC2117633803

Date: 27 Sep 2021

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| <u>Test Item(s)</u>                 | <u>Limit</u> | <u>Unit</u> | <u>MDL</u> | <u>003</u> |
|-------------------------------------|--------------|-------------|------------|------------|
| Hexabromodiphenyl ether             | -            | mg/kg       | 5          | ND         |
| Heptabromodiphenyl ether            | -            | mg/kg       | 5          | ND         |
| Octabromodiphenyl ether             | -            | mg/kg       | 5          | ND         |
| Nonabromodiphenyl ether             | -            | mg/kg       | 5          | ND         |
| Decabromodiphenyl ether             | -            | mg/kg       | 5          | ND         |
| Dibutyl phthalate (DBP)             | 1000         | mg/kg       | 50         | ND         |
| Butyl benzyl phthalate (BBP)        | 1000         | mg/kg       | 50         | ND         |
| Bis (2-ethylhexyl) phthalate (DEHP) | 1000         | mg/kg       | 50         | ND         |
| Diisobutyl Phthalates (DIBP)        | 1000         | mg/kg       | 50         | ND         |

**Notes :**

- (1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.
- (2) IEC 62321 series is equivalent to EN 62321 series  
[https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP\\_ORG\\_ID,FSP\\_LANG\\_ID:1258637,25](https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP_ORG_ID,FSP_LANG_ID:1258637,25)
- (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         |



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## Notes :

- (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)



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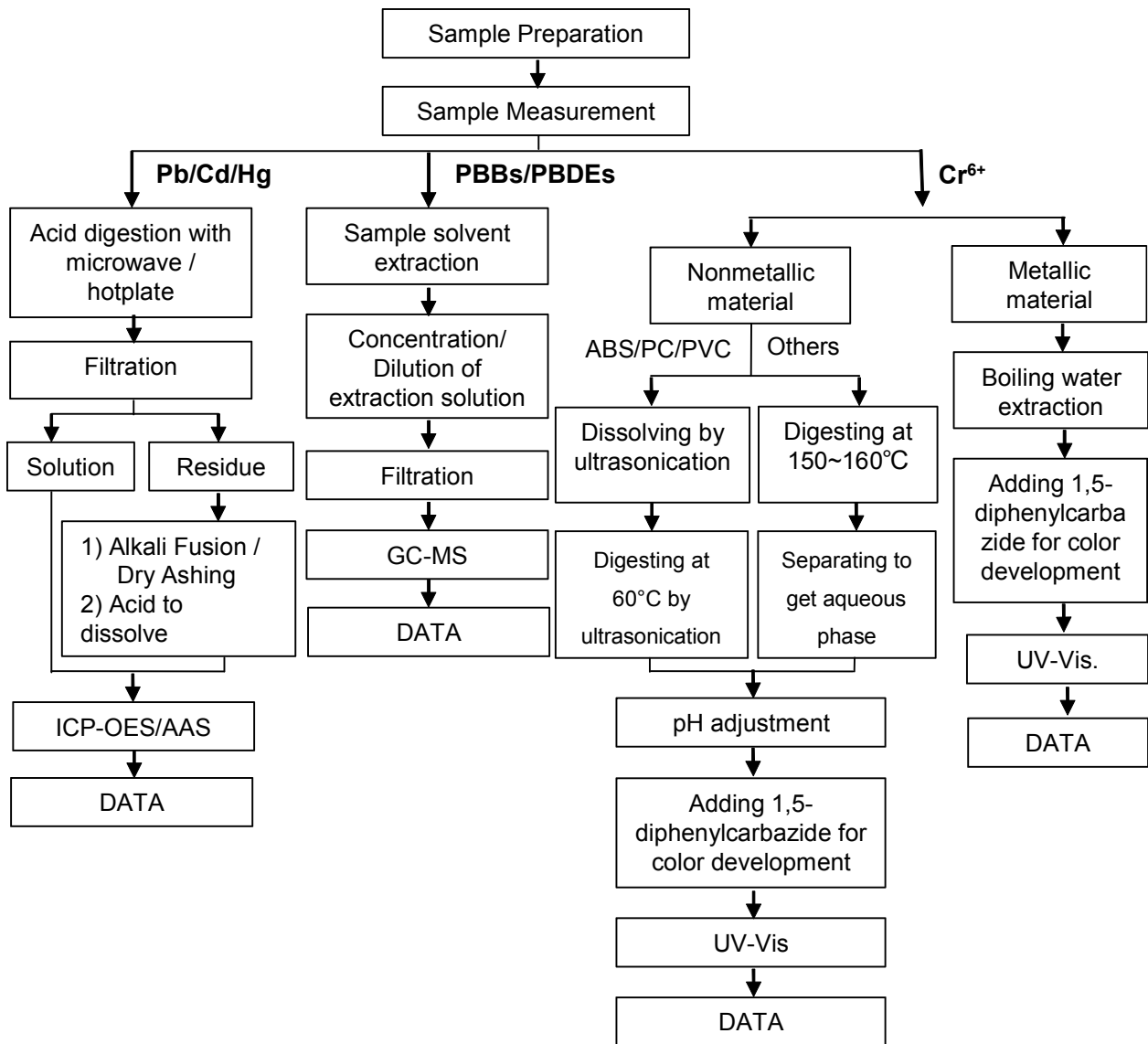
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Pb/Cd/Hg/Cr<sup>6+</sup>/PBBs/PBDEs Testing Flow Chart

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).



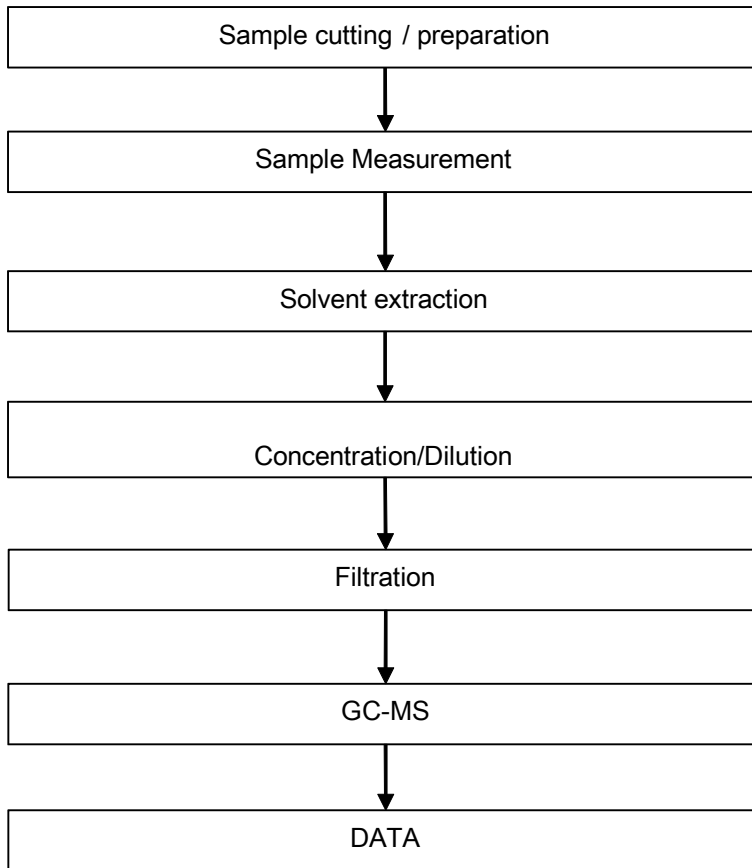
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### Phthalates Testing Flow Chart

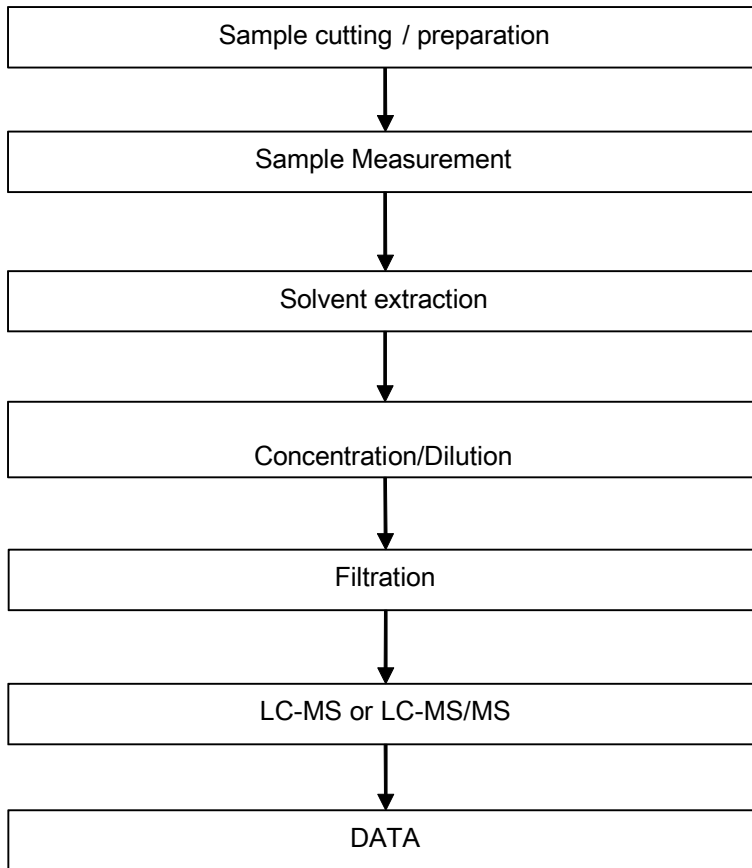


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PFOA / PFOS Testing Flow Chart



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Sample photo:



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## Test Report

No. CANEC2117633802

Date: 27 Sep 2021

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SHENZHEN CITY TONGHUA INDUSTRY CO.,LTD

TONGHUA MANSIN TONGLE XINBU VILLANG TOWN SHENZHEN CITY CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as : Bright Tin(SN)

SGS Job No. : CP21-051017 - SZ

Date of Sample Received : 18 Sep 2021

Testing Period : 18 Sep 2021 - 27 Sep 2021

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

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

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

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

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

Allie Chen

Allie Chen  
Approved Signatory

scan to see the report



CANEC2117633802



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

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## Test Report

No. CANEC2117633802

Date: 27 Sep 2021

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Test Results :

### Test Part Description :

| Specimen No. | SGS Sample ID    | Description              |
|--------------|------------------|--------------------------|
| SN1          | CAN21-176338.002 | Silver-gray plated metal |

Remarks :

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

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

Test Method : With reference to IEC 62321-4:2013+A1:2017, 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)                     | 1,000 | mg/kg              | 2    | 29  |
| Mercury (Hg)                  | 1,000 | mg/kg              | 2    | ND  |
| Hexavalent Chromium (Cr(VI))▼ | -     | µg/cm <sup>2</sup> | 0.10 | ND  |
| Sum of PBBs                   | 1,000 | mg/kg              | -    | ND  |
| Monobromobiphenyl             | -     | mg/kg              | 5    | ND  |
| Dibromobiphenyl               | -     | mg/kg              | 5    | ND  |
| Tribromobiphenyl              | -     | mg/kg              | 5    | ND  |
| Tetrabromobiphenyl            | -     | mg/kg              | 5    | ND  |
| Pentabromobiphenyl            | -     | mg/kg              | 5    | ND  |
| Hexabromobiphenyl             | -     | mg/kg              | 5    | ND  |
| Heptabromobiphenyl            | -     | mg/kg              | 5    | ND  |
| Octabromobiphenyl             | -     | mg/kg              | 5    | ND  |
| Nonabromobiphenyl             | -     | mg/kg              | 5    | ND  |
| Decabromobiphenyl             | -     | mg/kg              | 5    | ND  |
| Sum of PBDEs                  | 1,000 | mg/kg              | -    | ND  |
| Monobromodiphenyl ether       | -     | mg/kg              | 5    | ND  |
| Dibromodiphenyl ether         | -     | mg/kg              | 5    | ND  |
| Tribromodiphenyl ether        | -     | mg/kg              | 5    | ND  |
| Tetrabromodiphenyl ether      | -     | mg/kg              | 5    | ND  |
| Pentabromodiphenyl ether      | -     | mg/kg              | 5    | ND  |



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## Test Report

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Date: 27 Sep 2021

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| <u>Test Item(s)</u>                 | <u>Limit</u> | <u>Unit</u> | <u>MDL</u> | <u>002</u> |
|-------------------------------------|--------------|-------------|------------|------------|
| Hexabromodiphenyl ether             | -            | mg/kg       | 5          | ND         |
| Heptabromodiphenyl ether            | -            | mg/kg       | 5          | ND         |
| Octabromodiphenyl ether             | -            | mg/kg       | 5          | ND         |
| Nonabromodiphenyl ether             | -            | mg/kg       | 5          | ND         |
| Decabromodiphenyl ether             | -            | mg/kg       | 5          | ND         |
| Dibutyl phthalate (DBP)             | 1000         | mg/kg       | 50         | ND         |
| Butyl benzyl phthalate (BBP)        | 1000         | mg/kg       | 50         | ND         |
| Bis (2-ethylhexyl) phthalate (DEHP) | 1000         | mg/kg       | 50         | ND         |
| Diisobutyl Phthalates (DIBP)        | 1000         | mg/kg       | 50         | ND         |

### Notes :

- (1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.
- (2) IEC 62321 series is equivalent to EN 62321 series  
[https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP\\_ORG\\_ID,FSP\\_LANG\\_ID:1258637,25](https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP_ORG_ID,FSP_LANG_ID:1258637,25)
- (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         |



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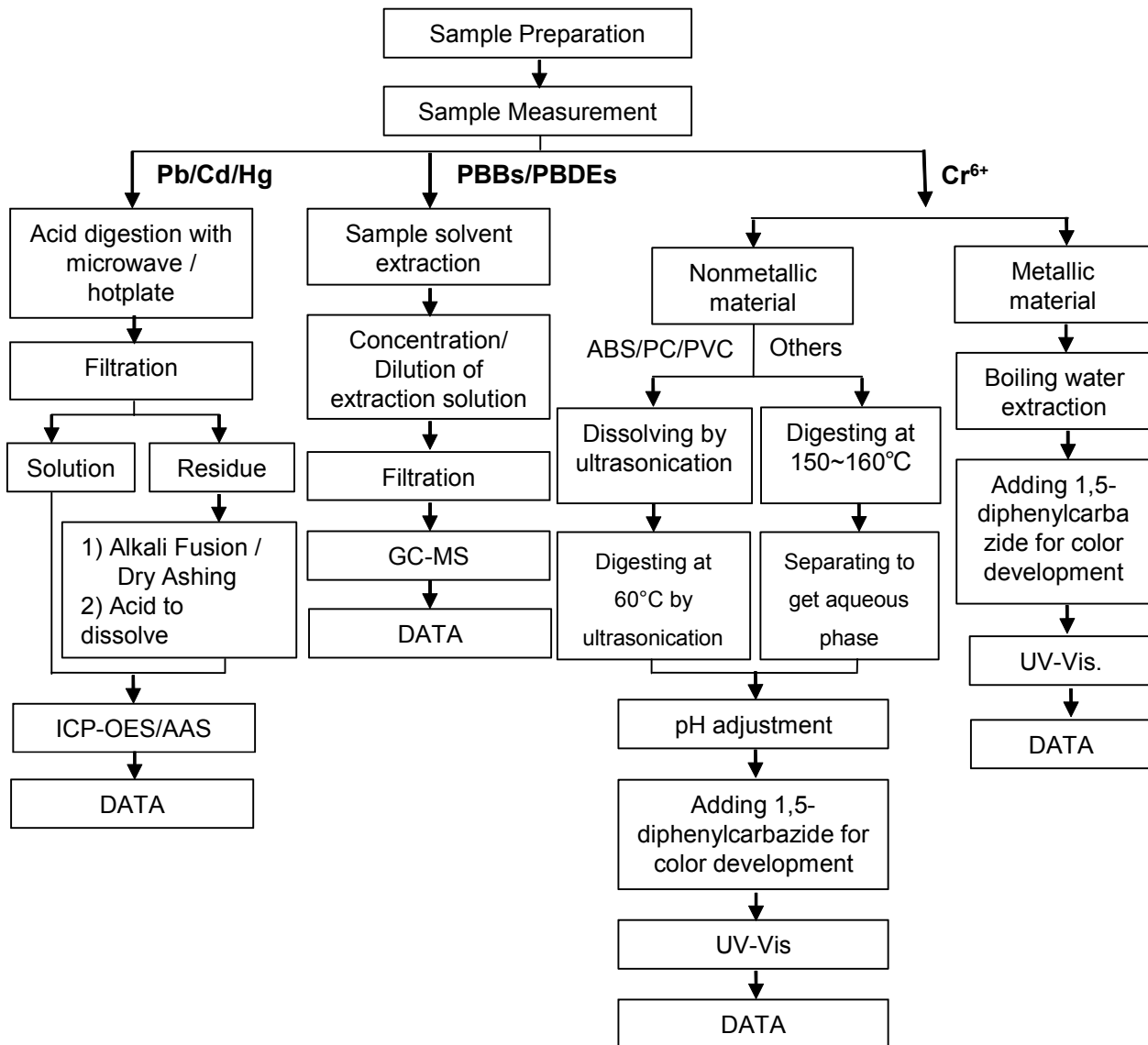
- (1) + PFOA and its salts including PFOA-Na (CAS No.: 335-95-5), PFOA-K (CAS No.: 2395-00-8), PFOA-Ag (CAS No.: 335-93-3), PFOA-F (CAS No.: 335-66-0) and APFO (CAS No.: 3825-26-1);
- (2) ^ PFOS including PFOS-K (CAS No.: 2795-39-3), PFOS-Li (CAS No.: 29457-72-5), PFOS-NH<sub>4</sub> (CAS No.: 29081-56-9), 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)



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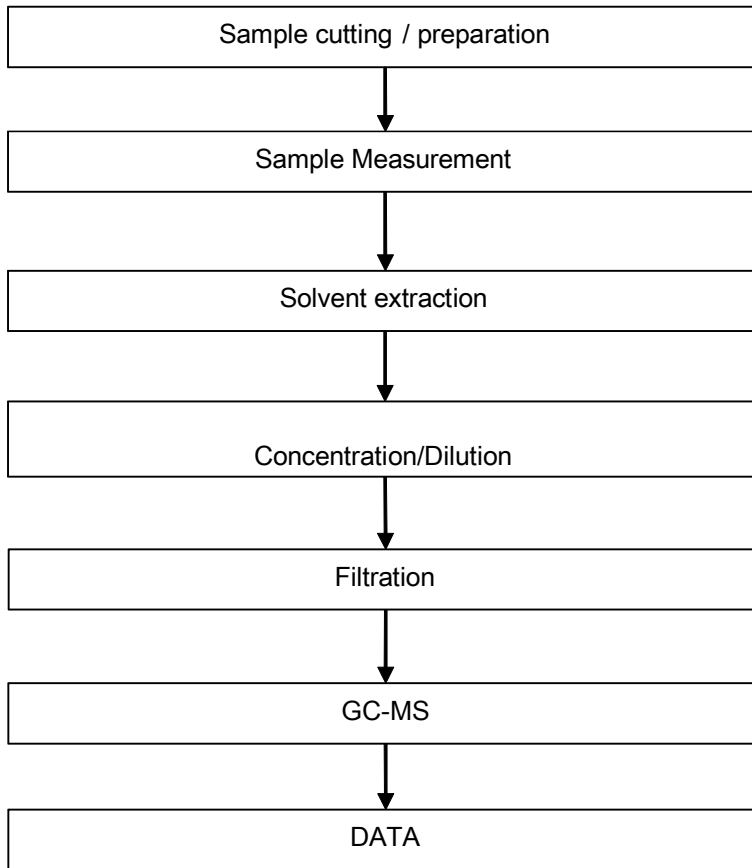
**Pb/Cd/Hg/Cr<sup>6+</sup>/PBBs/PBDEs Testing Flow Chart**

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

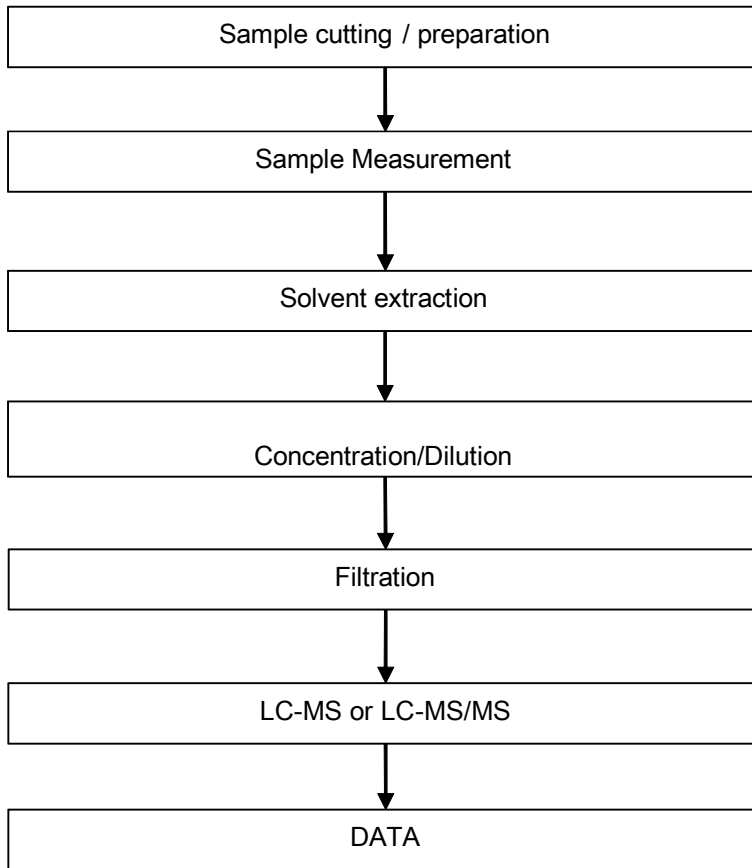


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PFOA / PFOS Testing Flow Chart



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