



**Test Report**

**No.:** CANEC24002790902

**Date:** Feb 23, 2024

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**Client Name:** ACKOTEC (ZHONGSHAN) ELECTRONIC PARTS CO., LTD

**Client Address:** 6 JU YE ROAD, ZHANGJIABIAN, TORCH DEVELOPMENT ZONE, ZHONGSHAN CITY, GUANGDONG PROVINCE

**Sample Name:** Lead frame of Alloy42 HITACHI Material with Copper and Silver plating

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

**SGS Job No.:** GZP24-003558

**Sample Receiving Date:** Feb 19, 2024

**Testing Period:** Feb 19, 2024 ~ Feb 23, 2024

**Test Requested:** Select 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).

| Test Requirement  | Conclusion  |
|---|-------------|
| EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU - Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBB), Polybrominated diphenyl ethers (PBDE), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP) | Pass        |
| Element(s)  | See Results |

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

Jessie Li

Jessie-JX Li  
Approved Signatory



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**Test Result(s):**

Test Part Description:

| SN ID | Sample No. | SGS Sample ID           | Description                               |
|-------|------------|-------------------------|---|
| SN1   | A2         | CAN24-0027909-0001.C002 | Copper-colored metal with silvery plating |

Remarks:

- (1) 1 mg/kg = 1 ppm = 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 (PBB), Polybrominated diphenyl ethers (PBDE), 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+AMD1:2017, IEC 62321-5:2013, IEC 62321-7-1:2015, IEC 62321-6:2015 and IEC62321-8:2017, analysis was performed by ICP-OES/AAS, UV-Vis and GC-MS.

| Test Item(s)                              | Limit | Unit(s)            | MDL  | A2 |
|---|-------|--------------------|------|----|
| Lead (Pb)                                 | 1000  | mg/kg              | 2    | ND |
| Mercury (Hg)                              | 1000  | mg/kg              | 2    | ND |
| Cadmium (Cd)                              | 100   | mg/kg              | 2    | ND |
| Hexavalent Chromium (Cr(VI))▼             | -     | µg/cm <sup>2</sup> | 0.10 | ND |
| Polybrominated biphenyls (PBB)            | 1000  | mg/kg              | -    | ND |
| Monobrominated biphenyl (MonoBB)          | -     | mg/kg              | 5    | ND |
| Dibrominated biphenyl (DiBB)              | -     | mg/kg              | 5    | ND |
| Tribrominated biphenyl (TriBB)            | -     | mg/kg              | 5    | ND |
| Tetrabrominated biphenyl (TetraBB)        | -     | mg/kg              | 5    | ND |
| Pentabrominated biphenyl (PentaBB)        | -     | mg/kg              | 5    | ND |
| Hexabrominated biphenyl (HexaBB)          | -     | mg/kg              | 5    | ND |
| Heptabrominated biphenyl (HeptaBB)        | -     | mg/kg              | 5    | ND |
| Octabrominated biphenyl (OctaBB)          | -     | mg/kg              | 5    | ND |
| Nonabrominated biphenyl (NonaBB)          | -     | mg/kg              | 5    | ND |
| Decabrominated biphenyl (DecaBB)          | -     | mg/kg              | 5    | ND |
| Polybrominated diphenyl ethers (PBDE)     | 1000  | mg/kg              | -    | ND |
| Monobrominated diphenyl ether (MonoBDE)   | -     | mg/kg              | 5    | ND |
| Dibrominated diphenyl ether (DiBDE)       | -     | mg/kg              | 5    | ND |
| Tribrominated diphenyl ether (TriBDE)     | -     | mg/kg              | 5    | ND |
| Tetrabrominated diphenyl ether (TetraBDE) | -     | mg/kg              | 5    | ND |
| Pentabrominated diphenyl ether (PentaBDE) | -     | mg/kg              | 5    | ND |
| Hexabrominated diphenyl ether (HexaBDE)   | -     | mg/kg              | 5    | ND |
| Heptabrominated diphenyl ether (HeptaBDE) | -     | mg/kg              | 5    | ND |



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| Test Item(s)                            | Limit | Unit(s) | MDL | A2 |
|---|-------|---------|-----|----|
| Octabrominated diphenyl ether (OctaBDE) | -     | mg/kg   | 5   | ND |
| Nonabrominated diphenyl ether (NonaBDE) | -     | mg/kg   | 5   | ND |
| Decabrominated diphenyl ether (DecaBDE) | -     | mg/kg   | 5   | ND |
| Bis(2-ethylhexyl) phthalate (DEHP)      | 1000  | mg/kg   | 50  | ND |
| Butyl benzyl phthalate (BBP)            | 1000  | mg/kg   | 50  | ND |
| Dibutyl phthalate (DBP)                 | 1000  | mg/kg   | 50  | ND |
| Diisobutyl phthalate (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 Cr(VI) if the Cr(VI) concentration is greater than 0.13 µg/cm<sup>2</sup>. The sample coating is considered to contain Cr(VI).
  - b. The sample is negative for Cr(VI) if Cr(VI) is ND (concentration less than 0.10 µg/cm<sup>2</sup>). The coating is considered a non-Cr(VI) 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.

**Element(s)**

Test Method: With reference to US EPA 3050B:1996, analysis was performed by ICP-OES/AAS.

| Test Item(s)  | Unit(s) | MDL | A2 |
|---------------|---------|-----|----|
| Beryllium(Be) | mg/kg   | 5   | ND |
| Antimony(Sb)  | mg/kg   | 10  | ND |

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



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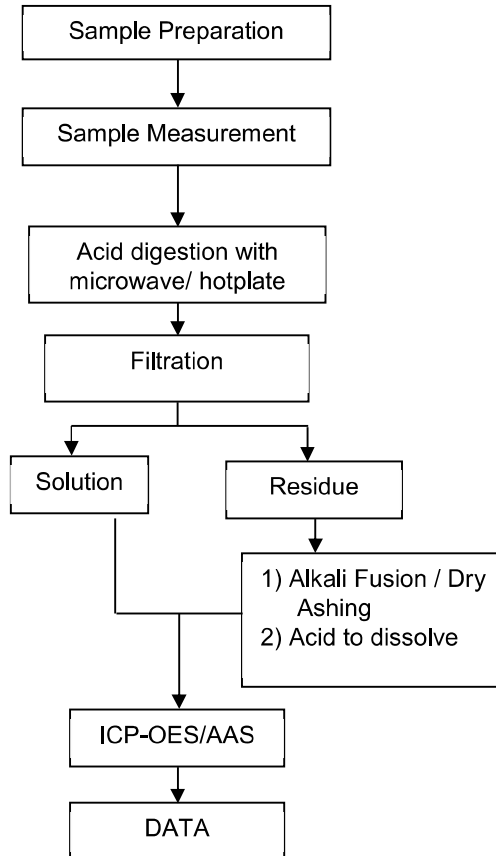
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### Elements Testing Flow Chart

These samples were dissolved totally by pre-conditioning method according to below flow chart.



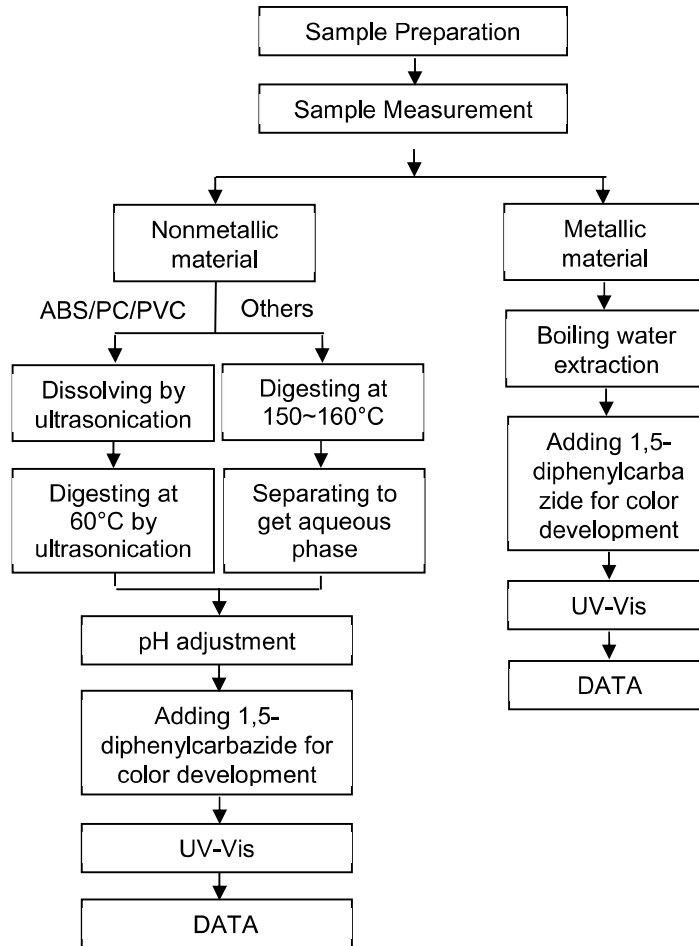
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**Hexavalent Chromium (Cr(VI)) Testing Flow Chart**



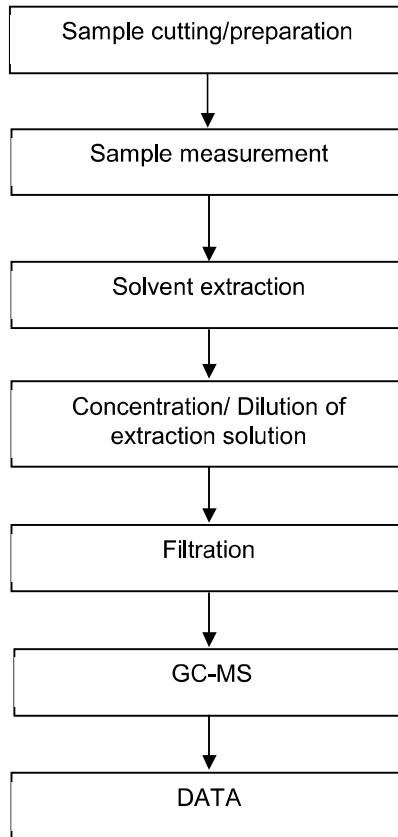
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### PBB/PBDE Testing Flow Chart



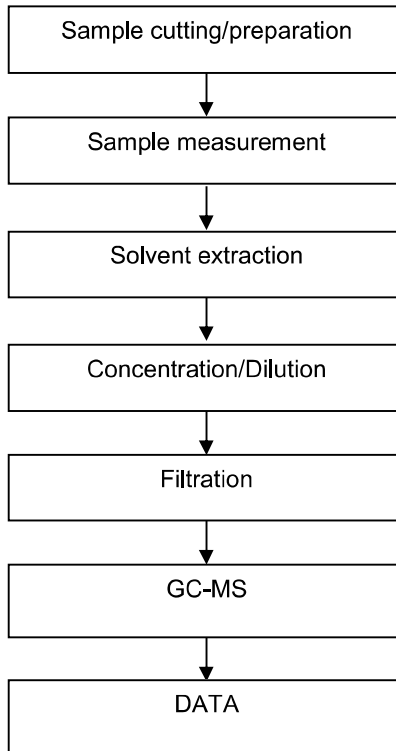
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### Phthalates Testing Flow Chart



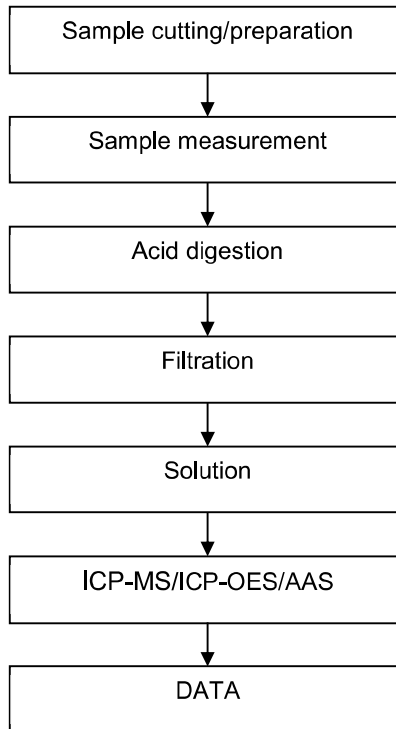
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### Elements Testing Flow Chart



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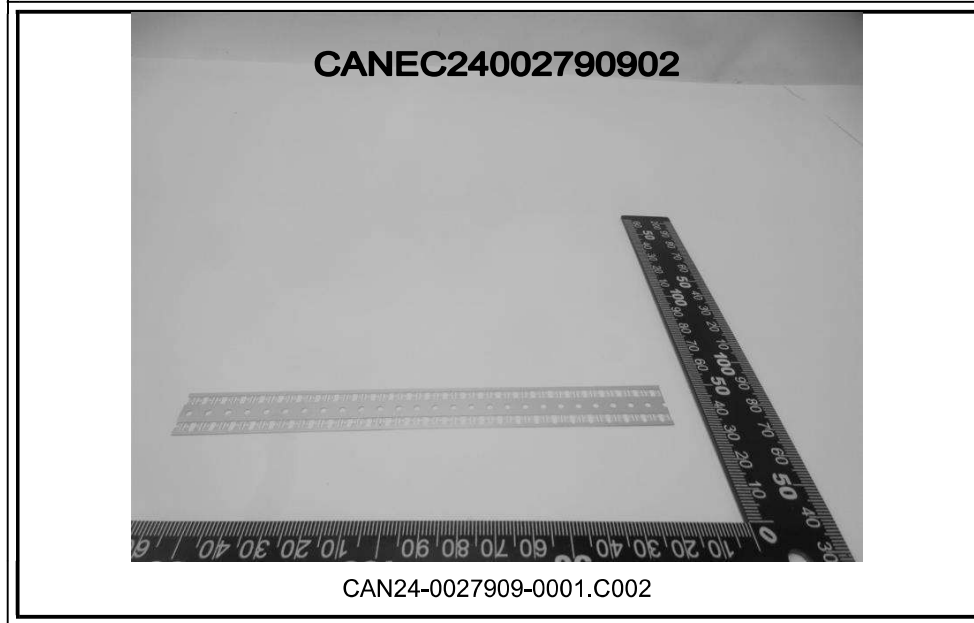
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