



# Test Report

Report No. A2240413041119

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**Company Name** DONGGUAN AILLEN ELECTRONIC TECHNOLOGY CO., LTD.  
**shown on Report**  
**Address** NO.28, JINGGANG ZHONG ROAD, SHATIAN TOWN, DONGGUAN CITY,  
GUANGDONG PROVINCE, P. R. CHINA

**The following sample(s) and sample information was/were submitted and identified by/on the behalf of the applicant**

**Sample Name** Cement resistors  
**Sample Received Date** Jul. 15, 2024  
**Testing Period** Jul. 15, 2024 to Jul. 24, 2024

**Test Requested** As specified by client, to test Lead (Pb), Cadmium (Cd), Mercury (Hg), Hexavalent Chromium (Cr(VI)), Polybrominated Biphenyls (PBBs), Polybrominated Diphenyl Ethers (PBDEs), Phthalates (DBP, BBP, DEHP, DIBP) in the submitted sample(s).

**Test Method/Test Result(s)** Please refer to the following page(s).

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## Conclusion

| Tested Sample    | According to standard/directive                        | Result |
|------------------|--|--------|
| Submitted Sample | RoHS Directive 2011/65/EU with amendment (EU) 2015/863 | PASS   |

\*\*\*\*\*

PASS means that the results shown on the report comply with the limits set by RoHS Directive 2011/65/EU with amendment (EU) 2015/863.



Approved by

Date

Jul. 24, 2024

Hill Zheng  
Technical Manager

No. R677501987

Centre Testing International Group Co., Ltd.

CTI Building, Xing Dong Community, Xin'an Sub-district, Bao'an District, Shenzhen City, Guangdong Province, P.R. China

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Test Method

| Tested Item(s)                          | Test Method   | Measured Equipment(s) |
|---|---|-----------------------|
| Lead (Pb)                               | IEC 62321-5:2013  | ICP-OES               |
| Cadmium (Cd)                            | IEC 62321-5:2013  | ICP-OES               |
| Mercury (Hg)                            | IEC 62321-4:2013+AMD1:2017 CSV  | ICP-OES               |
| Hexavalent Chromium (Cr(VI))            | IEC 62321-7-1:2015  | UV-Vis                |
|   | IEC 62321-7-2:2017 and/or determination of Total Chromium by IEC 62321-5:2013 | UV-Vis/ICP-OES        |
| Polybrominated Biphenyls (PBBs)*        | IEC 62321-6:2015  | GC-MS                 |
| Polybrominated Diphenyl Ethers (PBDEs)* | IEC 62321-6:2015  | GC-MS                 |
| Phthalates (DBP, BBP, DEHP, DIBP)*      | IEC 62321-8:2017  | GC-MS                 |

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## Test Result(s)

| Tested Item(s)               | Result |      |       | MDL                              | Limit      |
|------------------------------|--------|------|-------|----------------------------------|------------|
|                              | 1      | 2    | 3     |                                  |            |
| Lead (Pb)                    | N.D.   | N.D. | N.D.  | 10 mg/kg                         | 1000 mg/kg |
| Cadmium (Cd)                 | N.D.   | N.D. | N.D.  | 10 mg/kg                         | 100 mg/kg  |
| Mercury (Hg)                 | N.D.   | N.D. | N.D.  | 10 mg/kg                         | 1000 mg/kg |
| Hexavalent Chromium (Cr(VI)) | --     | --   | N.D.▼ | 0.10 µg/cm <sup>2</sup><br>(LOQ) | 1000 mg/kg |
|                              | N.D.   | N.D. | --    | 20 mg/kg                         | 1000 mg/kg |

| Tested Item(s)               | Result |      |       | MDL                              | Limit      |
|------------------------------|--------|------|-------|----------------------------------|------------|
|                              | 4      | 5    | 6     |                                  |            |
| Lead (Pb)                    | N.D.   | N.D. | N.D.  | 10 mg/kg                         | 1000 mg/kg |
| Cadmium (Cd)                 | N.D.   | N.D. | N.D.  | 10 mg/kg                         | 100 mg/kg  |
| Mercury (Hg)                 | N.D.   | N.D. | N.D.  | 10 mg/kg                         | 1000 mg/kg |
| Hexavalent Chromium (Cr(VI)) | N.D.▼  | --   | N.D.▼ | 0.10 µg/cm <sup>2</sup><br>(LOQ) | 1000 mg/kg |
|                              | --     | N.D. | --    | 20 mg/kg                         | 1000 mg/kg |

| Tested Item(s)                   | Result |      |      | MDL       | Limit      |
|----------------------------------|--------|------|------|-----------|------------|
|                                  | 3      | 4    | 6    |           |            |
| Polybrominated Biphenyls (PBBs)* |        |      |      |           |            |
| Monobromobiphenyl                | N.D.   | N.D. | N.D. | 100 mg/kg | 1000 mg/kg |
| Dibromobiphenyl                  | N.D.   | N.D. | N.D. | 100 mg/kg |            |
| Tribromobiphenyl                 | N.D.   | N.D. | N.D. | 100 mg/kg |            |
| Tetrabromobiphenyl               | N.D.   | N.D. | N.D. | 100 mg/kg |            |
| Pentabromobiphenyl               | N.D.   | N.D. | N.D. | 100 mg/kg |            |
| Hexabromobiphenyl                | N.D.   | N.D. | N.D. | 100 mg/kg |            |
| Heptabromobiphenyl               | N.D.   | N.D. | N.D. | 100 mg/kg |            |
| Octabromobiphenyl                | N.D.   | N.D. | N.D. | 100 mg/kg |            |
| Nonabromobiphenyl                | N.D.   | N.D. | N.D. | 100 mg/kg |            |
| Decabromobiphenyl                | N.D.   | N.D. | N.D. | 100 mg/kg |            |

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| Tested Item(s)                          | Result |      |      | MDL       | Limit      |
|---|--------|------|------|-----------|------------|
|   | 3      | 4    | 6    |           |            |
| Polybrominated Diphenyl Ethers (PBDEs)* |        |      |      |           |            |
| Monobromodiphenyl ether                 | N.D.   | N.D. | N.D. | 100 mg/kg | 1000 mg/kg |
| Dibromodiphenyl ether                   | N.D.   | N.D. | N.D. | 100 mg/kg |            |
| Tribromodiphenyl ether                  | N.D.   | N.D. | N.D. | 100 mg/kg |            |
| Tetrabromodiphenyl ether                | N.D.   | N.D. | N.D. | 100 mg/kg |            |
| Pentabromodiphenyl ether                | N.D.   | N.D. | N.D. | 100 mg/kg |            |
| Hexabromodiphenyl ether                 | N.D.   | N.D. | N.D. | 100 mg/kg |            |
| Heptabromodiphenyl ether                | N.D.   | N.D. | N.D. | 100 mg/kg |            |
| Octabromodiphenyl ether                 | N.D.   | N.D. | N.D. | 100 mg/kg |            |
| Nonabromodiphenyl ether                 | N.D.   | N.D. | N.D. | 100 mg/kg |            |
| Decabromodiphenyl ether                 | N.D.   | N.D. | N.D. | 100 mg/kg |            |

| Tested Item(s)                                      | Result |      |      | MDL      | Limit      |
|---|--------|------|------|----------|------------|
|   | 3      | 4    | 6    |          |            |
| Phthalates (DBP, BBP, DEHP, DIBP)*                  |        |      |      |          |            |
| Dibutyl phthalate (DBP)<br>CAS#:84-74-2             | N.D.   | N.D. | N.D. | 50 mg/kg | 1000 mg/kg |
| Butyl benzyl phthalate (BBP)<br>CAS#:85-68-7        | N.D.   | N.D. | N.D. | 50 mg/kg | 1000 mg/kg |
| Di-(2-ethylhexyl) phthalate<br>(DEHP) CAS#:117-81-7 | N.D.   | N.D. | N.D. | 50 mg/kg | 1000 mg/kg |
| Diisobutyl phthalate (DIBP)<br>CAS#:84-69-5         | N.D.   | N.D. | N.D. | 50 mg/kg | 1000 mg/kg |

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| Tested Item(s)                  | Result |      |      | MDL       | Limit      |
|---------------------------------|--------|------|------|-----------|------------|
|                                 | 1      | 2    | 5    |           |            |
| Polybrominated Biphenyls (PBBs) |        |      |      |           |            |
| Monobromobiphenyl               | N.D.   | N.D. | N.D. | 100 mg/kg | 1000 mg/kg |
| Dibromobiphenyl                 | N.D.   | N.D. | N.D. | 100 mg/kg |            |
| Tribromobiphenyl                | N.D.   | N.D. | N.D. | 100 mg/kg |            |
| Tetrabromobiphenyl              | N.D.   | N.D. | N.D. | 100 mg/kg |            |
| Pentabromobiphenyl              | N.D.   | N.D. | N.D. | 100 mg/kg |            |
| Hexabromobiphenyl               | N.D.   | N.D. | N.D. | 100 mg/kg |            |
| Heptabromobiphenyl              | N.D.   | N.D. | N.D. | 100 mg/kg |            |
| Octabromobiphenyl               | N.D.   | N.D. | N.D. | 100 mg/kg |            |
| Nonabromobiphenyl               | N.D.   | N.D. | N.D. | 100 mg/kg |            |
| Decabromobiphenyl               | N.D.   | N.D. | N.D. | 100 mg/kg |            |

| Tested Item(s)                         | Result |      |      | MDL       | Limit      |
|--|--------|------|------|-----------|------------|
|  | 1      | 2    | 5    |           |            |
| Polybrominated Diphenyl Ethers (PBDEs) |        |      |      |           |            |
| Monobromodiphenyl ether                | N.D.   | N.D. | N.D. | 100 mg/kg | 1000 mg/kg |
| Dibromodiphenyl ether                  | N.D.   | N.D. | N.D. | 100 mg/kg |            |
| Tribromodiphenyl ether                 | N.D.   | N.D. | N.D. | 100 mg/kg |            |
| Tetrabromodiphenyl ether               | N.D.   | N.D. | N.D. | 100 mg/kg |            |
| Pentabromodiphenyl ether               | N.D.   | N.D. | N.D. | 100 mg/kg |            |
| Hexabromodiphenyl ether                | N.D.   | N.D. | N.D. | 100 mg/kg |            |
| Heptabromodiphenyl ether               | N.D.   | N.D. | N.D. | 100 mg/kg |            |
| Octabromodiphenyl ether                | N.D.   | N.D. | N.D. | 100 mg/kg |            |
| Nonabromodiphenyl ether                | N.D.   | N.D. | N.D. | 100 mg/kg |            |
| Decabromodiphenyl ether                | N.D.   | N.D. | N.D. | 100 mg/kg |            |

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| Tested Item(s)                                      | Result |      |      | MDL      | Limit      |
|---|--------|------|------|----------|------------|
|   | 1      | 2    | 5    |          |            |
| Phthalates (DBP, BBP, DEHP, DIBP)                   |        |      |      |          |            |
| Dibutyl phthalate (DBP)<br>CAS#:84-74-2             | N.D.   | N.D. | N.D. | 50 mg/kg | 1000 mg/kg |
| Butyl benzyl phthalate (BBP)<br>CAS#:85-68-7        | N.D.   | N.D. | N.D. | 50 mg/kg | 1000 mg/kg |
| Di-(2-ethylhexyl) phthalate<br>(DEHP) CAS#:117-81-7 | N.D.   | N.D. | N.D. | 50 mg/kg | 1000 mg/kg |
| Diisobutyl phthalate (DIBP)<br>CAS#:84-69-5         | N.D.   | N.D. | N.D. | 50 mg/kg | 1000 mg/kg |

## Sample/Part Description

| No. | CTI Sample ID | Description                       |
|-----|---------------|-----------------------------------|
| 1   | 1             | White ceramic with black printing |
| 2   | 2             | White solid                       |
| 3   | 3             | Silvery metal                     |
| 4   | 4             | Silvery metal                     |
| 5   | 5             | White ceramic                     |
| 6   | 6             | Silvery metal pin                 |

**Remark:** The sample(s) had been dissolved totally tested for Lead, Cadmium, Mercury.

-MDL = Method Detection Limit

-N.D. = Not Detected (<MDL or LOQ)

-mg/kg = ppm = parts per million

-1000 mg/kg = 0.1%

-LOQ = Limit of Quantification, The LOQ of Hexavalent chromium is 0.10  $\mu\text{g}/\text{cm}^2$

-▼The sample is negative for Cr(VI) – The Cr(VI) concentration is below 0.10  $\mu\text{g}/\text{cm}^2$ . The coating is considered a non-Cr(VI) based coating. 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.

**Note:** “\*” indicates the item(s)/method(s) is (are) not in CNAS accreditation scope.

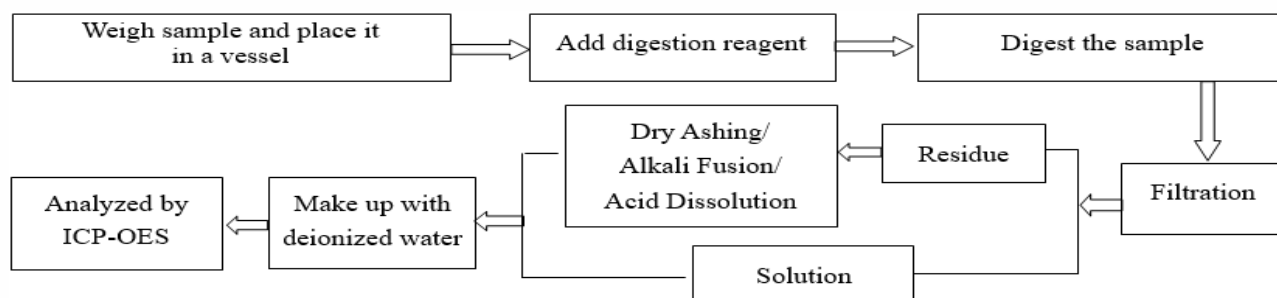
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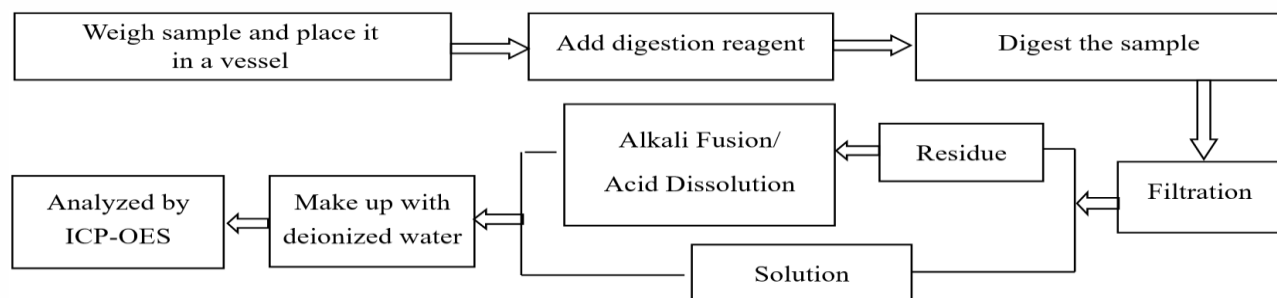
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## Test Process

### 1. Lead (Pb), Cadmium (Cd), Chromium(Cr)

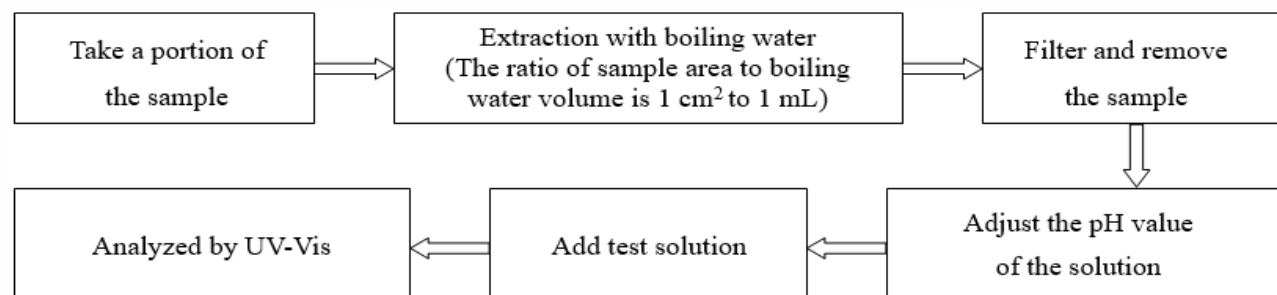


### 2. Mercury (Hg)

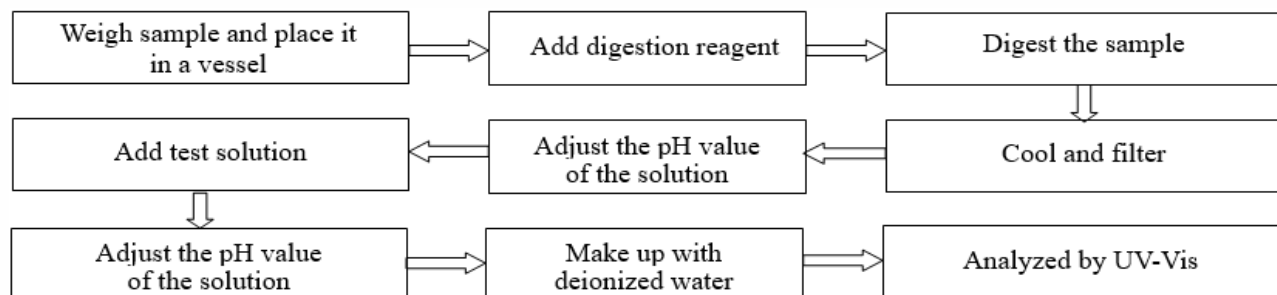


### 3. Hexavalent Chromium (Cr(VI))

#### (1) IEC 62321-7-1:2015



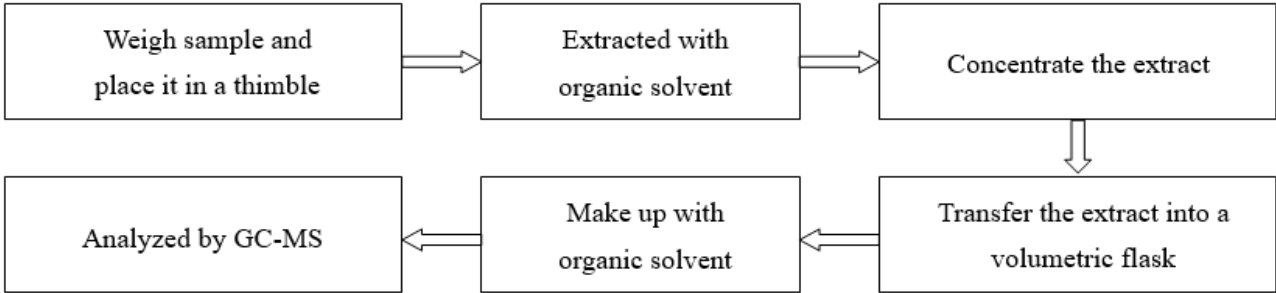
#### (2) IEC 62321-7-2:2017



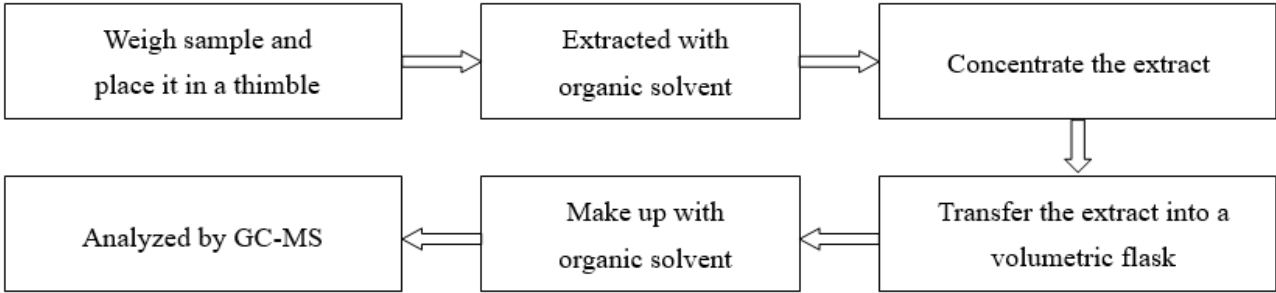
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**4. Polybrominated Biphenyls (PBBs), Polybrominated Diphenyl Ethers (PBDEs)**



**5. Phthalates (DBP, BBP, DEHP, DIBP)**





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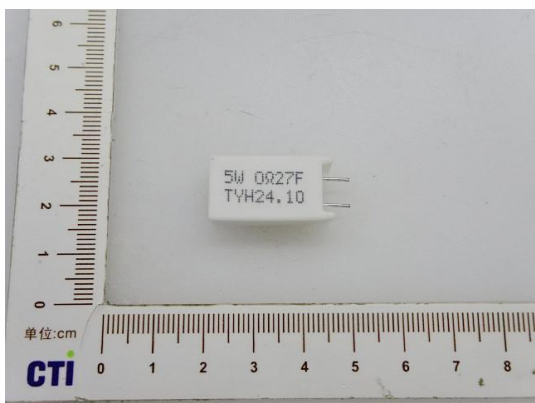
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## Photo(s) of the sample(s)

Final Product

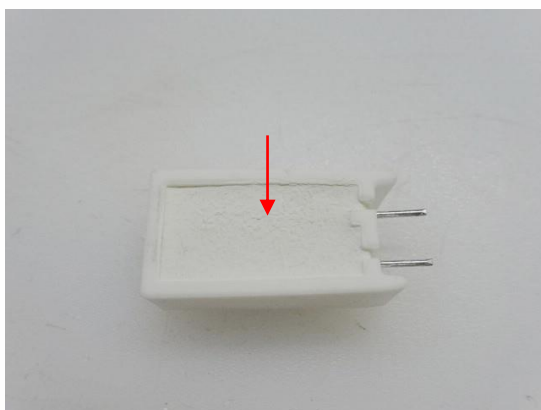
1



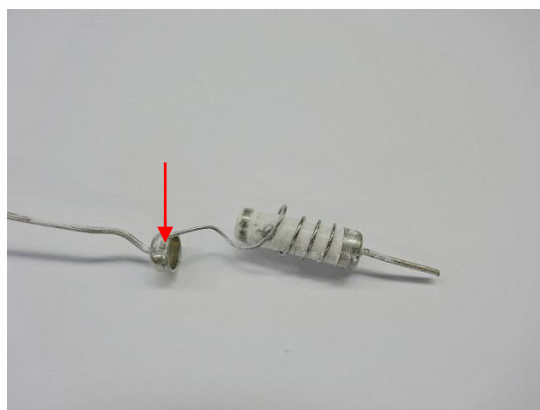
2



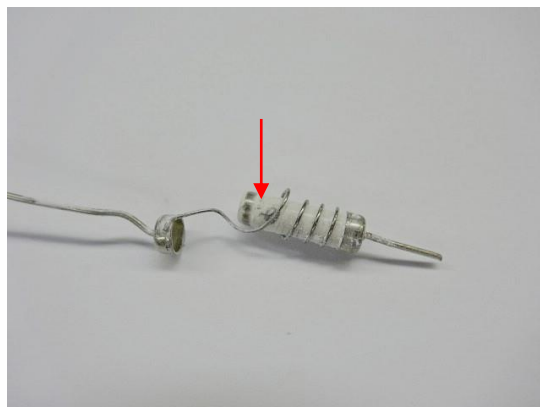
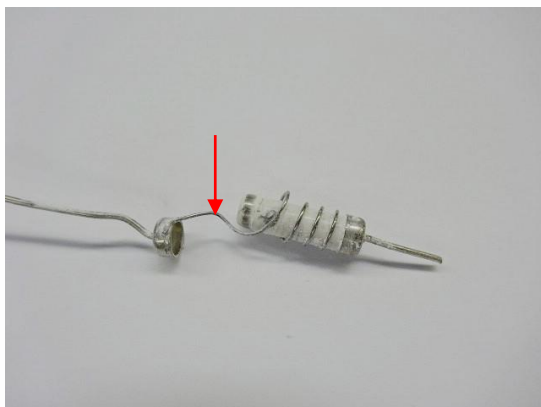
3



4



5

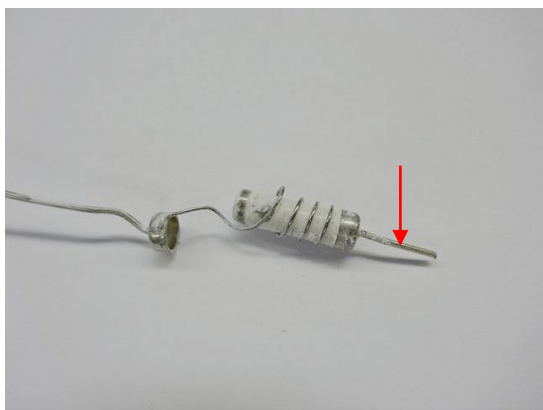


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Statement:

1. This report is considered invalid without approved signature, special seal and the seal on the perforation;
2. The Company Name shown on Report and Address, the sample(s) and sample information was/were provided by the applicant who should be responsible for the authenticity which CTI hasn't verified;
3. The result(s) shown in this report refer(s) only to the sample(s) tested;
4. 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 / CNAS-GL015:2022;
5. Without written approval of CTI, this report can't be reproduced except in full;
6. In case of any discrepancy between the English version and Chinese version of the testing reports (if generated), the Chinese version shall prevail.

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

## Appendix

### Client Reference Photo (Non-tested sample)



### Statement:

1. The Appendix Information was/were provided by the applicant who should be responsible for the authenticity which CTI hasn't verified.
2. The Appendix Information is/are the supplement(s) for the Report A2240413041119.