Samtec Inc.
520 Park East Blvd.
New Albany, IN 47150
United States

The following sample(s) was/were submitted and identified by/on behalf of the client as:

Tin-Lead Plating on Graphite Rod
Model/Part No.: Tin-Lead Plating
Country of Destination: USA

Sample Received Date: 8/31/2020


Test Requested: Please refer to the result summary.

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

Result Summary:

<table>
<thead>
<tr>
<th>Test Requested</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. RoHS Directive 2011/65/EU Annex II - Lead, Cadmium, Mercury and Hexavalent Chromium Content</td>
<td>FAIL</td>
</tr>
</tbody>
</table>

Signed for and on behalf of SGS North America, Inc.

Prepared By:

Shaina Gibbons
Technical Report Writer, Chemistry Laboratory

Crystal Melecio
Report Writer, Chemistry Laboratory

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Test Report

No. 4666929-CH56  Date: October 9, 2020  Page 2 of 5

1. RoHS Directive 2011/65/EU Annex II - Lead, Cadmium, Mercury and Hexavalent Chromium Content

Testing was done at an SGS Affiliate Laboratory:


With reference to IEC62321-7-1:2015, analyzed by UV-Vis. (Decision Rule: please refer to appendix 1: Category 4)

<table>
<thead>
<tr>
<th>Test Item(s)</th>
<th>Limit</th>
<th>Unit</th>
<th>MDL</th>
<th>017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cadmium (Cd)</td>
<td>100</td>
<td>mg/kg</td>
<td>2</td>
<td>ND</td>
</tr>
<tr>
<td>Lead (Pb)</td>
<td>1,000</td>
<td>mg/kg</td>
<td>5</td>
<td>318788#</td>
</tr>
<tr>
<td>Mercury (Hg)</td>
<td>1,000</td>
<td>mg/kg</td>
<td>2</td>
<td>ND</td>
</tr>
<tr>
<td>Hexavalent Chromium (Cr(VI))</td>
<td>-</td>
<td>µg/cm²</td>
<td>0.10</td>
<td>ND</td>
</tr>
</tbody>
</table>

Specimen No.  SGS Sample ID  Description
1           HKT20-032727.017  Silvery plating

Remarks:

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

Notes:

(1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863. IEC 62321 series is equivalent to EN 62321 series
(2) ▼ = a. The sample is positive for Cr(VI) if the Cr(VI) concentration is greater than 0.13 µg/cm². 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/cm²). The coating is considered a non-Cr(VI) based coating
c. The result between 0.10 µg/cm² and 0.13 µg/cm² 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.

Remark:

1. # = Exceed limit

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## Appendix 1

<table>
<thead>
<tr>
<th>Category</th>
<th>Decision Rule Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The decision rule for conformity reporting is based on the non-binary statement with guard band (equal to the expanded measurement uncertainty with a 95% coverage probability, w = U95) in ILAC-GS 09/2019 Clause 4.2.3.</td>
</tr>
<tr>
<td></td>
<td>“Pass” – the measured value is within (or below / above) the acceptance limit, where the acceptance limit is below / above to the guard band.” or “Pass” – The measured values were observed in tolerance at the points tested. The specific false accept risk is up to 2.5%.”</td>
</tr>
<tr>
<td></td>
<td>“Conditional Pass” – The measured values were observed in tolerance at the points tested. However, a portion of the expanded measurement uncertainty intervals about one or more measured values exceeded / out of tolerance. When the measured result is close to the tolerance, the specific false accept risk is up to 50%.”</td>
</tr>
<tr>
<td></td>
<td>“Conditional Fail” – One or more measured values were observed out of tolerance at the points tested. However, a portion of the expanded measurement uncertainty intervals about one or more measured values were in tolerance. When the measured result is close to the tolerance, the specific false reject risk is up to 50%.”</td>
</tr>
<tr>
<td></td>
<td>“Fail” – the measured value is out of (or below / above) the tolerance limit added / subtracted to the guard band.” or “Fail” – One or more measured values were observed out of tolerance at the points tested.” The specific false reject risk is up to 2.5%.”</td>
</tr>
<tr>
<td>2</td>
<td>The decision rule for conformity reporting is based on BS EN 1811:2011+A1:2015: Reference test method for release of nickel from all post assemblies which are inserted into pierced parts of the human body and articles intended to come into direct and prolonged contact with the skin in Section 9.2 interpretation of results.</td>
</tr>
<tr>
<td>3</td>
<td>The decision rule for conformity reporting is based on the general consideration of simple acceptance as stated in ISO/IEC Guide 98-3: “Uncertainty of measurement - Part 3: Guide to the expression of uncertainty of measurement (GUM)”, and more specifically for analytical measurements to the EURACHEM/CITAC Guide 2012 “Quantifying Uncertainty in Analytical Measurement”.</td>
</tr>
<tr>
<td>4</td>
<td>The decision rule for conformity reporting is according to the EC 62321-7-1 Edition 1.0 2015-08 Section 7. Table 1-Comparison to standard and interpretation of result.</td>
</tr>
<tr>
<td>5</td>
<td>The decision rule for conformity reporting is according to the EC 62321-3-1 Edition 1.0 2013-08 Annex A.3 interpretation of result.</td>
</tr>
<tr>
<td>6</td>
<td>The decision rule for conformity reporting is according to the GMP 26125-2011 Annex A to H</td>
</tr>
<tr>
<td>7</td>
<td>The decision rule for conformity reporting is according to the requested specification or standard (ASTM F883-17 section 4.3.5).</td>
</tr>
<tr>
<td>8</td>
<td>The decision rule for conformity reporting is according to the requested specification or standard (AS/NZS ISO 8124 Part 3 section 4.2).</td>
</tr>
</tbody>
</table>

**Remark**

If the decision rule is not possible to be used and the uncertainty of the result is able to be provided, the uncertainty range of the result will be shown in the report. Otherwise, only result will be shown in the report.
Flowchart for RoHS Heavy Metals

1. The Cd, Pb, Hg contents test on polymeric samples were dissolved totally by pre-conditioning method according to above flow chart.
2. Cr\textsuperscript{6+} is performed only when total Cr is detected.
Sample Photo(s):

Photo was taken at an SGS Affiliate Laboratory:

![Test Part](image)

**HKTEC2003272714**

SGS authenticates the photo(s) on the original report only

*** End of Report ***