Test Report

XIAMEN TOONNEY ALLOY CO., LTD
NO.65, LIANSHANG ROAD, GUANKOU TOWN, JIMEI DISTRICT, XIAMEN CITY, FUJIAN, CHINA.

The following sample(s) was/were submitted and identified on behalf of the clients as: TUNGSTEN CARBIDE ROD.

SGS Job No.: XMIN1610006277PC - XM
Material: TU40
Manufacturer: XIAMEN TOONNEY ALLOY CO., LTD
Date of Sample Received: 10 Oct 2016
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) 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. Xiamen Branch

Charlene Lin
Approved Signatory
Test Report

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Test Results:

Test Part Description:

<table>
<thead>
<tr>
<th>Specimen No.</th>
<th>SGS Sample ID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SN1</td>
<td>XMN16-012172.002</td>
<td>Silver-grey metal bar</td>
</tr>
</tbody>
</table>

Remarks:

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


Test Method:
1. With reference to IEC 62321-5:2013, determination of Cadmium by ICP-OES.
2. With reference to IEC 62321-5:2013, determination of Lead by ICP-OES.
3. With reference to IEC 62321-4:2013, determination of Mercury by ICP-OES.
5. With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.

<table>
<thead>
<tr>
<th>Test Item(s)</th>
<th>Limit</th>
<th>Unit</th>
<th>MDL</th>
<th>002</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>2</td>
<td>ND</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>
<tr>
<td>Sum of PBBs</td>
<td>1,000</td>
<td>mg/kg</td>
<td>-</td>
<td>ND</td>
</tr>
<tr>
<td>Monobromobiphenyl</td>
<td></td>
<td>mg/kg</td>
<td>5</td>
<td>ND</td>
</tr>
<tr>
<td>Dibromobiphenyl</td>
<td></td>
<td>mg/kg</td>
<td>5</td>
<td>ND</td>
</tr>
<tr>
<td>Tribromobiphenyl</td>
<td></td>
<td>mg/kg</td>
<td>5</td>
<td>ND</td>
</tr>
<tr>
<td>Tetrabromobiphenyl</td>
<td></td>
<td>mg/kg</td>
<td>5</td>
<td>ND</td>
</tr>
<tr>
<td>Pentabromobiphenyl</td>
<td></td>
<td>mg/kg</td>
<td>5</td>
<td>ND</td>
</tr>
<tr>
<td>Hexabromobiphenyl</td>
<td></td>
<td>mg/kg</td>
<td>5</td>
<td>ND</td>
</tr>
<tr>
<td>Heptabromobiphenyl</td>
<td></td>
<td>mg/kg</td>
<td>5</td>
<td>ND</td>
</tr>
<tr>
<td>Octabromobiphenyl</td>
<td></td>
<td>mg/kg</td>
<td>5</td>
<td>ND</td>
</tr>
<tr>
<td>Nonabromobiphenyl</td>
<td></td>
<td>mg/kg</td>
<td>5</td>
<td>ND</td>
</tr>
<tr>
<td>Decabromobiphenyl</td>
<td></td>
<td>mg/kg</td>
<td>5</td>
<td>ND</td>
</tr>
<tr>
<td>Sum of PBDEs</td>
<td>1,000</td>
<td>mg/kg</td>
<td>-</td>
<td>ND</td>
</tr>
<tr>
<td>Monobromodiphenyl ether</td>
<td></td>
<td>mg/kg</td>
<td>5</td>
<td>ND</td>
</tr>
</tbody>
</table>
## Test Report

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<table>
<thead>
<tr>
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<th>Limit</th>
<th>Unit</th>
<th>MDL</th>
<th>002</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dibromodiphenyl ether</td>
<td>-</td>
<td>mg/kg</td>
<td>5</td>
<td>ND</td>
</tr>
<tr>
<td>Tribromodiphenyl ether</td>
<td>-</td>
<td>mg/kg</td>
<td>5</td>
<td>ND</td>
</tr>
<tr>
<td>Tetrabromodiphenyl ether</td>
<td>-</td>
<td>mg/kg</td>
<td>5</td>
<td>ND</td>
</tr>
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<td>-</td>
<td>mg/kg</td>
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<td>ND</td>
</tr>
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<td>-</td>
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<td>5</td>
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<tr>
<td>Decabromodiphenyl ether</td>
<td>-</td>
<td>mg/kg</td>
<td>5</td>
<td>ND</td>
</tr>
</tbody>
</table>

**Notes:**

1. The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.
2. ▼= a. The sample is positive for CrVI if the CrVI concentration is greater than 0.13 μg/cm². 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/cm²). The coating is considered a non-CrVI 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.

IEC 62321 series is equivalent to EN 62321 series

ATTACHMENTS

Pb/Cd/Hg/Cr⁶⁺/PBBs/PBDEs Testing Flow Chart

1) Name of the person who made testing: Sunny Lu / Holly Chen
2) Name of the person in charge of testing: Sharon Liu
3) These samples were dissolved totally by pre-conditioning method according to below flow chart (Cr⁶⁺ and PBBs/PBDEs test method excluded).

```
Sample Preparation

Pb/Cd/Hg

Acid digestion with microwave/ hotplate
Filtration
Solution
Residue
1) Alkali Fusion / Dry Ashing
2) Acid to dissolve
ICP-OES/AAS

Pb/Cd/Hg

Sample Measurement

PBBs/PBDEs

Sample solvent extraction
Concentration/ Dilution of extraction solution
Filtration
GC-MS
DATA
Nonmetallic material
Adding digestion reagent
Heating to 90~95°C for extraction
Filtration and pH adjustment
Adding 1,5-diphenylcarbazide for color development
UV-Vis
DATA
Metallic material
Boiling water extraction
Adding 1,5-diphenylcarbazide for color development
UV-Vis
DATA
Cr⁶⁺
Concentration/ Dilution of extraction solution
Filtration
ICP-OES/AAS
DATA

DATA
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Sample photo:

![Sample photo](XMNML1601217203)

SGS authenticate the photo on original report only

*** End of Report ***