Test Report

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ITW SPECIALTY MATERIALS (SUZHOU) Co., Ltd -- Kester
HENG QIAO ROAD, WUJIAQI ECONOMIC DEVELOPMENT ZONE, SUZHOU, JIANGSU

The following sample(s) was/were submitted and identified on behalf of the clients as: 979 Soldering Flux

SGS Job No.: SP15-033021 - SH
Date of Sample Received: 14 Oct 2015
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.

Marry Ma
Approved Signatory

Signed for and on behalf of
SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.
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Test Part Description:

Specimen No. SGS Sample ID Description
SN1 SHA15-207025.001 Transparent liquid

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.
(6) With reference to EN 14372:2004, determination of phthalates by GC-MS.

<table>
<thead>
<tr>
<th>Test Item(s)</th>
<th>Limit</th>
<th>Unit</th>
<th>MDL</th>
<th>001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cadmium (Cd)</td>
<td>100mg/kg</td>
<td>2</td>
<td>ND</td>
<td></td>
</tr>
<tr>
<td>Lead (Pb)</td>
<td>1000mg/kg</td>
<td>2</td>
<td>ND</td>
<td></td>
</tr>
<tr>
<td>Mercury (Hg)</td>
<td>1000mg/kg</td>
<td>2</td>
<td>ND</td>
<td></td>
</tr>
<tr>
<td>Hexavalent Chromium (Cr(VI))</td>
<td>1000mg/kg</td>
<td>2</td>
<td>ND</td>
<td></td>
</tr>
<tr>
<td>Sum of PBBs</td>
<td>1000mg/kg</td>
<td>-</td>
<td>ND</td>
<td></td>
</tr>
<tr>
<td>Monobromobiphenyl</td>
<td>-mg/kg</td>
<td>5</td>
<td>ND</td>
<td></td>
</tr>
<tr>
<td>Dibromobiphenyl</td>
<td>-mg/kg</td>
<td>5</td>
<td>ND</td>
<td></td>
</tr>
<tr>
<td>Tribromobiphenyl</td>
<td>-mg/kg</td>
<td>5</td>
<td>ND</td>
<td></td>
</tr>
<tr>
<td>Tetabromobiphenyl</td>
<td>-mg/kg</td>
<td>5</td>
<td>ND</td>
<td></td>
</tr>
<tr>
<td>Pentabromobiphenyl</td>
<td>-mg/kg</td>
<td>5</td>
<td>ND</td>
<td></td>
</tr>
<tr>
<td>Hexabromobiphenyl</td>
<td>-mg/kg</td>
<td>5</td>
<td>ND</td>
<td></td>
</tr>
<tr>
<td>Heptabromobiphenyl</td>
<td>-mg/kg</td>
<td>5</td>
<td>ND</td>
<td></td>
</tr>
<tr>
<td>Octabromobiphenyl</td>
<td>-mg/kg</td>
<td>5</td>
<td>ND</td>
<td></td>
</tr>
<tr>
<td>Nonabromobiphenyl</td>
<td>-mg/kg</td>
<td>5</td>
<td>ND</td>
<td></td>
</tr>
<tr>
<td>Decabromobiphenyl</td>
<td>-mg/kg</td>
<td>5</td>
<td>ND</td>
<td></td>
</tr>
<tr>
<td>Sum of PBDEs</td>
<td>1000mg/kg</td>
<td>-</td>
<td>ND</td>
<td></td>
</tr>
<tr>
<td>Monobromodiphenyl ether</td>
<td>-mg/kg</td>
<td>5</td>
<td>ND</td>
<td></td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th>Test Item(s)</th>
<th>Limit</th>
<th>Unit</th>
<th>MDL</th>
<th>001</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>
<tr>
<td>Pentabromodiphenyl ether</td>
<td>-</td>
<td>mg/kg</td>
<td>5</td>
<td>ND</td>
</tr>
<tr>
<td>Hexabromodiphenyl ether</td>
<td>-</td>
<td>mg/kg</td>
<td>5</td>
<td>ND</td>
</tr>
<tr>
<td>Heptabromodiphenyl ether</td>
<td>-</td>
<td>mg/kg</td>
<td>5</td>
<td>ND</td>
</tr>
<tr>
<td>Octabromodiphenyl ether</td>
<td>-</td>
<td>mg/kg</td>
<td>5</td>
<td>ND</td>
</tr>
<tr>
<td>Nonabromodiphenyl ether</td>
<td>-</td>
<td>mg/kg</td>
<td>5</td>
<td>ND</td>
</tr>
<tr>
<td>Decabromodiphenyl ether</td>
<td>-</td>
<td>mg/kg</td>
<td>5</td>
<td>ND</td>
</tr>
<tr>
<td>Di-butyl Phthalate (DBP)</td>
<td>1000</td>
<td>mg/kg</td>
<td>30</td>
<td>ND</td>
</tr>
<tr>
<td>Benzyl Butyl Phthalate (BBP)</td>
<td>1000</td>
<td>mg/kg</td>
<td>30</td>
<td>ND</td>
</tr>
<tr>
<td>Di-2-Ethyl Hexyl Phthalate (DEHP)</td>
<td>1000</td>
<td>mg/kg</td>
<td>30</td>
<td>ND</td>
</tr>
<tr>
<td>Diisobutyl Phthalates (DIBP)</td>
<td>1000</td>
<td>mg/kg</td>
<td>30</td>
<td>ND</td>
</tr>
</tbody>
</table>

Notes :

(1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.

Remark: Result shown is of the total weight of wet sample.
ATTACHMENTS

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RoHS Testing Flow Chart

1) Name of the person who made testing: Bob Zhang/Gary Xu/Zengzhen Zhu/Sunny Qin
2) Name of the person in charge of testing: Jan Shi/Summer Jin/Jessy Huang/Stone Chen
3) These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr$^{6+}$ and PBBs/PBDEs test method excluded)

Data

**Sample Preparation**

**Sample Measurement**

Pb/Cd/Hg

- Acid digestion with microwave/ hotplate
- Filtration
- Solution
  - 1) Alkali Fusion / Dry Ashing
  - 2) Acid to dissolve
- Residue
- Nonmetallic material
- Concentration/ Dilution of extraction solution
- Filtration
- GC/MS
- DATA
- ICP-OES/AAS
- DATA

PBBs/PBDEs

- Sample solvent extraction
- Adding digestion reagent
- Heating to 90~95℃ for extraction
- Filtration and pH adjustment
- Adding 1,5-diphenylcarbazide for color development
- UV-Vis
- DATA

Cr$^{6+}$

- Metallic material
- Spot test
- Positive
- Boiling water extraction
- Adding 1,5-diphenylcarbazide for color development
- A red color indicates the presence of Cr$^{6+}$.
  - If necessary, confirm with UV-Vis.
- DATA
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ATTACHMENTS

Phthalates Testing Flow Chart

1) Name of the person who made testing: Sherlock Gao
2) Name of the person in charge of testing: Myra Ma

Sample cutting/preparation

Sample measurement

Solvent extraction

Concentration/Dilution

Filtration

GC-MS

DATA
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Sample photo:

![Sample photo SHAEC1520702501](image)

**SHAEC1520702501**

SGS authenticate the photo on original report only

*** End of Report ***