ICP Test Report Certification Packet

Company name: Littelfuse, Inc.

Product Series: Nano2 Fuse - FA

Product #: 453xxx Series

Issue Date: December 5, 2013

It is hereby certified by Littelfuse, Inc. that there is neither RoHS (EU Directive 2002/95/EC, 2011/65/EU)-restricted substance nor such use, for materials to be used for unit parts, for packing/packaging materials, and for additives and the like in the manufacturing processes. In addition, it is hereby reported to you that the parts and sub-materials, the materials to be used for unit parts, the packing/packaging materials, and the additives and the like in the manufacturing processes, are all composed of the following components.

Issued by:

[Global EHS Specialist]

(1) Parts, sub-materials and unit parts

This document covers the Nano2 Fuse FA RoHS-Compliant series products manufactured by Littelfuse, Inc.

< Raw Materials Used

Please see Table 1

(2) The ICP data on all measurable substances

Please see appropriate pages as identified in Table 1

Remarks:

Pb (lead) contained in the high temperature melting solder > 85% and is categorized as exempt under section 7a of the RoHS Annex.
Table 1: List of Raw Materials covered by this report

<table>
<thead>
<tr>
<th>Total Parts</th>
<th>Raw Material Part Number</th>
<th>Raw Material Description</th>
<th>Page(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>910-238</td>
<td>Cap Base</td>
<td>3-7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cap plating</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Frequenta C221 (909-434)</td>
<td>Body (ceramic tube)</td>
<td>8-36</td>
</tr>
<tr>
<td>3</td>
<td>082xxx</td>
<td>Wire - 2% by weight Ag Clad Cu</td>
<td>37-40</td>
</tr>
<tr>
<td>4</td>
<td>082xxx</td>
<td>Wire - 5% By weight Ag Clad Cu</td>
<td>41-44</td>
</tr>
<tr>
<td>5</td>
<td>11-0894 (497xxx)</td>
<td>Wire - Ag Plated 36 Alloy</td>
<td>45-49</td>
</tr>
<tr>
<td>6</td>
<td>11-0803 (497xxx)</td>
<td>Wire - Cu Clad Fe58 42Ni 5Ag By Weight</td>
<td>50-54</td>
</tr>
<tr>
<td>7</td>
<td>692323</td>
<td>Solder</td>
<td>55-60</td>
</tr>
<tr>
<td>8</td>
<td>425809</td>
<td>Ink</td>
<td>61-75</td>
</tr>
</tbody>
</table>
Test Report

Applicant: Littelfuse, Inc.
LIMA Technology Center, Lipa City,
Malvar, Batangas

Number: TWNC00300506
Date: Mar 07, 2013

Sample Description:
One (1) group of submitted samples said to be:
Part Description: Cap
Part Number: 910-238
Date Sample Received: Feb 26, 2013
Date Test Started: Feb 26, 2013

Test Conducted:
As requested by the applicant, for details please refer to attached pages.

Authorized by:
On Behalf of Intertek Testing Services
Taiwan Limited

K. Y. Liang
Director
### Test Result Summary:

<table>
<thead>
<tr>
<th>Test Item</th>
<th>Unit</th>
<th>Test Method</th>
<th>Result</th>
<th>RL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Heavy Metal</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cadmium (Cd) content</td>
<td>ppm</td>
<td>With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.</td>
<td>ND, ND</td>
<td>2</td>
</tr>
<tr>
<td>Lead (Pb) content</td>
<td>ppm</td>
<td>With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.</td>
<td>22, ND</td>
<td>2</td>
</tr>
<tr>
<td>Mercury (Hg) content</td>
<td>ppm</td>
<td>With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.</td>
<td>ND, ND</td>
<td>2</td>
</tr>
<tr>
<td>Chromium VI (Cr⁶⁺) content</td>
<td>mg/kg with 50 cm²</td>
<td>With reference to IEC 62321: 2008, by boiling water extraction and determined by UV-Vis Spectrophotometer.</td>
<td>Negative, Negative</td>
<td>0.02</td>
</tr>
</tbody>
</table>

**Remarks:**
- ppm = parts per million based on weight of tested sample = mg/kg
- ND = Not detected
- RL = Reporting Limit, Quantitation limit of analyte in sample
- mg/kg with 50 cm² = milligram per kilogram with 50 square centimeter
- Negative = A negative test result indicated positive observation was not found at the time of Test.

- Tested Components
  - (1) Silvery metal cap
  - (2) Silvery plating layer

- Responsibility of Chemist: Kevin Liu / Irene Chiou

- Date Sample Received: Feb 26, 2013
- Test Period: Feb 26, 2013 to Mar 04, 2013

### Limit:

**RoHS Limit**

<table>
<thead>
<tr>
<th>Restricted Substances</th>
<th>Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cadmium (Cd) content</td>
<td>0.01% (100 ppm)</td>
</tr>
<tr>
<td>Lead (Pb) content</td>
<td>0.1% (1000 ppm)</td>
</tr>
<tr>
<td>Mercury (Hg) content</td>
<td>0.1% (1000 ppm)</td>
</tr>
<tr>
<td>Chromium VI (Cr⁶⁺) content</td>
<td>0.1% (1000 ppm)</td>
</tr>
</tbody>
</table>

The above limits were quoted from Annex II of 2011/65/EU for homogeneous material.
Test Conducted

(Ⅲ) Measurement Flowchart:
Test For Cd/Pb/Hg/Chromium (VI)

Sample preparation

Take sample and immerse into Aqua Regia, start to strip plating layer

Stop the stripping procedure upon color change completely

Take the Aqua solution as plating component and stripped body as substrate component

Cd/Pb/Hg

For different material, digest the sample with appropriate acid *1

Confirm the tested samples are totally dissolved

Make up with deionized water

Analyzed by ICP-OES

Substrate

Cr⁺⁺

By spot test

Negative *2

Get 50cm² sample

By boiling water extraction

Make up with deionized water and add diphenyl-carbazide solution

Analyzed by UV-Vis
Test Conducted

Remarks:

*1: List Of Appropriate Acid:

<table>
<thead>
<tr>
<th>Material</th>
<th>Acid Added For Digestion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polymers</td>
<td>HNO₃, HCl, HF, H₂O₂, H₃BO₃</td>
</tr>
<tr>
<td>Metals</td>
<td>HNO₃, HCl, HF</td>
</tr>
<tr>
<td>Electronics</td>
<td>HNO₃, HCl, H₂O₂, HBF₄</td>
</tr>
</tbody>
</table>

*2: If the result of spot test is positive, Chromium VI would be determined as detected.

End of Report

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Test Report

CERAMTEC GMBH
GESCHAFTSBEREICH MULTIFUNKTIONSKERAMI, LUITPOLDSTRASSE 15, 91207 LAUF

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

<table>
<thead>
<tr>
<th>Sample Description</th>
<th>: CERAMIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Style/Item No.</td>
<td>FREQUENTA C221</td>
</tr>
<tr>
<td>Sample Receiving Date</td>
<td>2013/1/14</td>
</tr>
<tr>
<td>Testing Period</td>
<td>2013/1/14 TO 2013/01/22</td>
</tr>
</tbody>
</table>

Test Result(s)

Please refer to next page(s).

Conclusion

Based on the performed tests on submitted samples, the test results of Cadmium, Lead, Mercury, Hexavalent Chromium Cr(VI), PBBS and PBDES comply with the limits as set by RoHS Directive 2011/65/EU Annex II; recasting 2002/95/EC.
Test Report

CERAMTEC GMBH
GESCHÄFTSBEREICH MULTIFUNKTIONSKERAMIK, LUITPOLDSTRASSE 15, 91207 LAUF

Test Result(s)

| PART NAME | CREAM CERAMIC
|
|-----------|----------------|
| Test Item(s) | Unit | Method | MDL | Result | Limit |
| Cadmium (Cd) | mg/kg | With reference to IEC 62321: 2008 and performed by ICP-AES. | 2 | n.d. | 100 |
| Lead (Pb) | mg/kg | With reference to IEC 62321: 2008 and performed by ICP-AES. | 2 | n.d. | 1000 |
| Mercury (Hg) | mg/kg | With reference to IEC 62321: 2008 and performed by ICP-AES. | 2 | n.d. | 1000 |
| Hexavalent Chromium Cr(VI) | mg/kg | With reference to IEC 62321: 2008 and performed by UV-VIS. | 2 | n.d. | 1000 |
| BBP (Benzyl butyl phthalate) (CAS No.: 85-68-7) | % | With reference to EN 14372. Analysis was performed by GC/MS. | 0.003 | n.d. | - |
| DEHP (Di-(2-ethylhexyl) phthalate) (CAS No.: 117-81-7) | % | With reference to EN 14372. Analysis was performed by GC/MS. | 0.003 | n.d. | - |
| DIDP (Di-isodecyl phthalate) (CAS No.: 26761-48-9) | % | With reference to EN 14372. Analysis was performed by GC/MS. | 0.01 | n.d. | - |
| DINP (Di-isononyl phthalate) (CAS No.: 28553-12-0) | % | With reference to EN 14372. Analysis was performed by GC/MS. | 0.01 | n.d. | - |
| DNOP (Di-n-octyl phthalate) (CAS No.: 117-84-0) | % | With reference to EN 14372. Analysis was performed by GC/MS. | 0.003 | n.d. | - |
| DBP (Dibutyl phthalate) (CAS No.: 84-74-2) | % | With reference to EN 14372. Analysis was performed by GC/MS. | 0.003 | n.d. | - |
| Perfluorooctane sulfonates (PFOS-Acid, Metal Salt, Amide) | mg/kg | With reference to US EPA 3550C: 2007. Analysis was performed by LC/MS. | 10 | n.d. | - |
| PFOA (CAS No.: 335-67-1) | mg/kg | With reference to US EPA 3550C: 2007. Analysis was performed by LC/MS. | 10 | n.d. | - |
| Polychlorinated Biphenyls (PCBs) (CAS No.: 1336-36-3) | mg/kg | With reference to US EPA 3540C method. Analysis was performed by GC/MS. | 0.5 | n.d. | - |

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<table>
<thead>
<tr>
<th>Test Item(s)</th>
<th>Unit</th>
<th>Method</th>
<th>MDL</th>
<th>Result</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polychlorinated Terphenyls (PCTs)</td>
<td>mg/kg</td>
<td>With reference to US EPA 3540C method. Analysis was performed by GC/MS.</td>
<td>0.5</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Polychlorinated Naphthalenes (PCNs)</td>
<td>mg/kg</td>
<td>With reference to US EPA 3540C method. Analysis was performed by GC/MS.</td>
<td>5</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins) (CAS No.: 85535-84-8)</td>
<td>mg/kg</td>
<td>With reference to US EPA 3540C method. Analysis was performed by GC/MS.</td>
<td>100</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>PVC</td>
<td>**</td>
<td>Analysis was performed by FTIR and FLAME Test.</td>
<td>-</td>
<td>Negative</td>
<td>-</td>
</tr>
<tr>
<td>Formaldehyde (CAS No.: 50-00-0)</td>
<td>mg/kg</td>
<td>With reference to ISO 17226-1(2008). Analysis was performed by HPLC/DAD.</td>
<td>3</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Monomethyl dibromodiphenyl methane (DBBT)</td>
<td>mg/kg</td>
<td>With reference to US EPA 8270D method. Analysis was performed by GC/MS.</td>
<td>0.5</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Monomethyl dichlorodiphenyl methane (Uiglecl21)</td>
<td>mg/kg</td>
<td>With reference to US EPA 8270D method. Analysis was performed by GC/MS.</td>
<td>0.5</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Monomethyl tetrachlorodiphenyl methane (Uiglecl41)</td>
<td>mg/kg</td>
<td>With reference to US EPA 8270D method. Analysis was performed by GC/MS.</td>
<td>0.5</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>PVC</td>
<td>**</td>
<td>Analysis was performed by FTIR and FLAME Test.</td>
<td>-</td>
<td>Negative</td>
<td>-</td>
</tr>
<tr>
<td>Halogen-Fluorine (F) (CAS No.: 14762-84-8)</td>
<td>mg/kg</td>
<td>With reference to BS EN 14582:2007, Analysis was performed by IC.</td>
<td>50</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Halogen-Chlorine (Cl) (CAS No.: 7790-49-7)</td>
<td>mg/kg</td>
<td>With reference to BS EN 14582:2007, Analysis was performed by IC.</td>
<td>50</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Halogen-Bromine (Br) (CAS No.: 7723-91-3)</td>
<td>mg/kg</td>
<td>With reference to BS EN 14582:2007, Analysis was performed by IC.</td>
<td>50</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Halogen-Iodine (I) (CAS No.: 7681-61-2)</td>
<td>mg/kg</td>
<td>With reference to BS EN 14582:2007, Analysis was performed by IC.</td>
<td>50</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Organic-tin compounds</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tributyl Tin (TBT)</td>
<td>mg/kg</td>
<td>With reference to DIN 38407-13. Analysis was performed by GC/FPD.</td>
<td>0.03</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Triphenyl Tin (TphT)</td>
<td>mg/kg</td>
<td>Analysis was performed by GC/FPD.</td>
<td>0.03</td>
<td>n.d.</td>
<td>-</td>
</tr>
</tbody>
</table>
## Test Item(s) Unit Method MDL Result Limit

<table>
<thead>
<tr>
<th>Asbestos</th>
<th>%</th>
<th>With reference to EPA 600/R-93/116 method. Analysis was performed by Stereo Microscope (SM), Dispersion Staining Polarized Light Microscope (DS-PLM) and X-ray Diffraction Spectrometer (XRD).</th>
<th>-</th>
<th>Negative</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actinolite (CAS No.: 77536-66-4)</td>
<td>%</td>
<td></td>
<td>-</td>
<td>Negative</td>
<td>-</td>
</tr>
<tr>
<td>Amosite (CAS No.: 12172-73-5)</td>
<td>%</td>
<td></td>
<td>-</td>
<td>Negative</td>
<td>-</td>
</tr>
<tr>
<td>Anthophyllite (CAS No.: 77536-67-5)</td>
<td>%</td>
<td></td>
<td>-</td>
<td>Negative</td>
<td>-</td>
</tr>
<tr>
<td>Chrysotile (CAS No.: 12001-29-5)</td>
<td>%</td>
<td></td>
<td>-</td>
<td>Negative</td>
<td>-</td>
</tr>
<tr>
<td>Crocidolite (CAS No.: 12001-28-4)</td>
<td>%</td>
<td></td>
<td>-</td>
<td>Negative</td>
<td>-</td>
</tr>
<tr>
<td>Tremolite (CAS No.: 77536-68-6)</td>
<td>%</td>
<td></td>
<td>-</td>
<td>Negative</td>
<td>-</td>
</tr>
</tbody>
</table>

### AZO

1: 4-AMINODIPHENYL (CAS No.: 92-87-1) mg/kg With reference to LFGB 82.02-2. Analysis was performed by GC/MS. 3 n.d. -

2: BENZIDINE (CAS No.: 92-87-5) mg/kg With reference to LFGB 82.02-2. Analysis was performed by GC/MS. 3 n.d. -

3: 4-CHLORO-O-TOLUIDINE (CAS No.: 95-69-2) mg/kg With reference to LFGB 82.02-2. Analysis was performed by GC/MS. 3 n.d. -

4: 2-NAPHTHYLAMINE (CAS No.: 91-59-8) mg/kg With reference to LFGB 82.02-2. Analysis was performed by GC/MS. 3 n.d. -

5: O-AMINOAZOTOLUENE (CAS No.: 97-56-3) mg/kg With reference to LFGB 82.02-2. Analysis was performed by GC/MS. 3 n.d. -

6: 2-AMINO-4-NITROTOLUENE (CAS No.: 99-55-8) mg/kg With reference to LFGB 82.02-2. Analysis was performed by GC/MS. 3 n.d. -

7: P-CHLOROANILINE (CAS No.: 106-47-8) mg/kg With reference to LFGB 82.02-2. Analysis was performed by GC/MS. 3 n.d. -

8: 2,4-DIAMINOANISOLE (CAS No.: 615-05-4) mg/kg With reference to LFGB 82.02-2. Analysis was performed by GC/MS. 3 n.d. -

9: 4,4'-DIAMINODIPHENYL METHANE (CAS No.: 101-77-9) mg/kg With reference to LFGB 82.02-2. Analysis was performed by GC/MS. 3 n.d. -

10: 3,3'-DICHLOROBENZIDINE (CAS No.: 91-94-1) mg/kg With reference to LFGB 82.02-2. Analysis was performed by GC/MS. 3 n.d. -

11: 3,3'-DIMETHOXYBENZIDINE (CAS No.: 119-90-4) mg/kg With reference to LFGB 82.02-2. Analysis was performed by GC/MS. 3 n.d. -

12: 3,3'-DIMETHYL BENZIDINE (CAS No.: 119-93-7) mg/kg With reference to LFGB 82.02-2. Analysis was performed by GC/MS. 3 n.d. -
<table>
<thead>
<tr>
<th>Test Item(s)</th>
<th>Unit</th>
<th>Method</th>
<th>MDL</th>
<th>Result No.1</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>13): 3,3’-DIMETHYL-4,4’-DIAMINODIPHENYLMETHANE (CAS No.: 838-88-0)</td>
<td>mg/kg</td>
<td>With reference to LFGB 82.02-2. Analysis was performed by GC/MS.</td>
<td>3</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>14): P-CRESIDINE (2-METHOXY-5-METHYLANILINE) (CAS No.: 120-71-8)</td>
<td>mg/kg</td>
<td>With reference to LFGB 82.02-2. Analysis was performed by GC/MS.</td>
<td>3</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>15): 4,4’-METHYLENE-BIS-(2-CHLOROANILINE) (CAS No.: 101-14-4)</td>
<td>mg/kg</td>
<td>With reference to LFGB 82.02-2. Analysis was performed by GC/MS.</td>
<td>3</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>16): 4,4’-OXYDANILINE (CAS No.: 101-80-4)</td>
<td>mg/kg</td>
<td>With reference to LFGB 82.02-2. Analysis was performed by GC/MS.</td>
<td>3</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>17): 4,4’-THIODANILINE (CAS No.: 139-85-1)</td>
<td>mg/kg</td>
<td>With reference to LFGB 82.02-2. Analysis was performed by GC/MS.</td>
<td>3</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>18): O-TOLUIDINE (CAS No.: 95-53-4)</td>
<td>mg/kg</td>
<td>With reference to LFGB 82.02-2. Analysis was performed by GC/MS.</td>
<td>3</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>19): 2,4-TOLUYLENDIAMINE (CAS No.: 95-80-7)</td>
<td>mg/kg</td>
<td>With reference to LFGB 82.02-2. Analysis was performed by GC/MS.</td>
<td>3</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>20): 2,4,5-TRIMETHYLANILINE (CAS No.: 137-17-7)</td>
<td>mg/kg</td>
<td>With reference to LFGB 82.02-2. Analysis was performed by GC/MS.</td>
<td>3</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>21): O-ANISIDINE (CAS No.: 90-04-0)</td>
<td>mg/kg</td>
<td>With reference to LFGB 82.02-2. Analysis was performed by GC/MS.</td>
<td>3</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>22): P-AMINOAZOBENZENE (CAS No.: 60-09-3)</td>
<td>mg/kg</td>
<td>With reference to LFGB 82.02-2. Analysis was performed by GC/MS.</td>
<td>3</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>23): 2,4-XYLIDINE (CAS No.: 95-68-1)</td>
<td>mg/kg</td>
<td>With reference to LFGB 82.02-2. Analysis was performed by GC/MS.</td>
<td>3</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>24): 2,6-XYLIDINE (CAS No.: 87-62-7)</td>
<td>mg/kg</td>
<td>With reference to LFGB 82.02-2. Analysis was performed by GC/MS.</td>
<td>3</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>CFC’s (Chlorofluorocarbons)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group I</td>
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<tr>
<td>Chlorofluorocarbon-11 (CAS No.: 75-69-4)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
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<tr>
<td>Chlorofluorocarbon-12 (CAS No.: 75-71-8)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
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<td>-</td>
</tr>
<tr>
<td>Test Item(s)</td>
<td>Unit</td>
<td>Method</td>
<td>MDL</td>
<td>Result No.1</td>
<td>Limit</td>
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<tr>
<td>Chlorofluorocarbon-113 (CAS No.: 76-13-1)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
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<td>n.d.</td>
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<tr>
<td>Chlorofluorocarbon-114 (CAS No.: 76-14-2)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
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<td>Chlorofluorocarbon-115 (CAS No.: 76-15-3)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
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<tr>
<td><strong>Group III</strong></td>
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<tr>
<td>Chlorofluorocarbon-13 (CAS No.: 75-72-9)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
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</tr>
<tr>
<td>Chlorofluorocarbon-111 (CAS No.: 354-56-3)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
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<td>n.d.</td>
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</tr>
<tr>
<td>Chlorofluorocarbon-112 (CAS No.: 76-12-0)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
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</tr>
<tr>
<td>Chlorofluorocarbon-211 (CAS No.: 422-78-6)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
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<td>Chlorofluorocarbon-212 (CAS No.: 3182-26-1)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
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<tr>
<td>Chlorofluorocarbon-213 (CAS No.: 2354-06-5)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
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<tr>
<td>Chlorofluorocarbon-214 (CAS No.: 29255-31-0)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
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<tr>
<td>Chlorofluorocarbon-215 (CAS No.: 4259-43-2)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
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<td>Test Item(s)</td>
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<tr>
<td>Chlorofluorocarbon-216 (CAS No.: 661-97-2)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
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<td>n.d.</td>
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</tr>
<tr>
<td>Chlorofluorocarbon-217 (CAS No.: 422-86-6)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
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<td>HCFCs (Hydrochlorofluorocarbons)</td>
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<td>HCFC-21 (CAS No.: 75-43-4)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
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<td>n.d.</td>
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<td>HCFC-22 (CAS No.: 75-45-6)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
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<tr>
<td>HCFC-31 (CAS No.: 593-70-4)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
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<td>HCFC-121 (CAS No.: 354-14-3)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
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<td>HCFC-122 (CAS No.: 354-21-2)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
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<tr>
<td>HCFC-123 (CAS No.: 306-83-2)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
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</tr>
<tr>
<td>HCFC-124 (CAS No.: 2837-89-0)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
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</tr>
<tr>
<td>HCFC-131 (CAS No.: 359-28-4)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
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</tr>
<tr>
<td>HCFC-132b (CAS No.: 1649-08-7)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
<td>-</td>
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<tr>
<td>Test Item(s)</td>
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<td>Method</td>
<td>MDL</td>
<td>Result No.1</td>
<td>Limit</td>
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</tr>
<tr>
<td>HCFC-133a (CAS No.: 75-88-7)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
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</tr>
<tr>
<td>HCFC-141b (CAS No.: 1717-00-6)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
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</tr>
<tr>
<td>HCFC-142b (CAS No.: 75-88-3)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>HCFC-221 (CAS No.: 422-26-4)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>HCFC-222 (CAS No.: 422-49-1)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
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</tr>
<tr>
<td>HCFC-223 (CAS No.: 422-52-6)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>HCFC-224 (CAS No.: 422-54-8)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
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</tr>
<tr>
<td>HCFC-225ca (CAS No.: 422-56-0)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
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<td>n.d.</td>
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<tr>
<td>HCFC-225cb (CAS No.: 507-55-1)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
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<td>n.d.</td>
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</tr>
<tr>
<td>HCFC-226 (CAS No.: 431-87-8)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
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<td>n.d.</td>
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<tr>
<td>HCFC-231 (CAS No.: 421-94-3)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>HCFC-232 (CAS No.: 460-89-9)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Test Item(s)</td>
<td>Unit</td>
<td>Method</td>
<td>MDL</td>
<td>Result No.1</td>
<td>Limit</td>
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</tr>
<tr>
<td>HCFC-233 (CAS No.: 7125-84-0)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>HCFC-234 (CAS No.: 425-94-5)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
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</tr>
<tr>
<td>HCFC-235 (CAS No.: 460-92-4)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
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<td>n.d.</td>
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<tr>
<td>HCFC-241 (CAS No.: 666-27-3)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
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<tr>
<td>HCFC-242 (CAS No.: 460-63-9)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
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<tr>
<td>HCFC-243 (CAS No.: 460-69-5)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
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<td>n.d.</td>
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</tr>
<tr>
<td>HCFC-244</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
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<td>n.d.</td>
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<tr>
<td>HCFC-251 (CAS No.: 421-41-0)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
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<td>n.d.</td>
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<tr>
<td>HCFC-252 (CAS No.: 819-00-1)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
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<td>n.d.</td>
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<tr>
<td>HCFC-253 (CAS No.: 460-35-5)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
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<tr>
<td>HCFC-261 (CAS No.: 420-97-3)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
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<td>n.d.</td>
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<tr>
<td>HCFC-262 (CAS No.: 421-02-03)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
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<tr>
<td>Test Item(s)</td>
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<td>MDL</td>
<td>Result No.1</td>
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<td>HCFC-271 (CAS No.: 430-55-7)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
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<td>n.d.</td>
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<td>Halons</td>
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<td>Halon-1211 (CAS No.: 353-69-3)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
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<td>n.d.</td>
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<tr>
<td>Halon-1301 (CAS No.: 75-63-8)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
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</tr>
<tr>
<td>Halon-2402 (CAS No.: 124-73-2)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
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<td>CHCs (Chlorinate hydrocarbon)</td>
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<tr>
<td>1,1,1,2-Tetrachloroethane (CAS No.: 630-20-6)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
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<td>n.d.</td>
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<tr>
<td>1,1,1-Trichloroethane (CAS No.: 71-55-6)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
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<tr>
<td>1,1,2,2-Tetrachloroethane (CAS No.: 79-34-5)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
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<td>n.d.</td>
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<tr>
<td>1,1,2-Trichloroethane (CAS No.: 79-00-5)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
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</tr>
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<td>1,1-Dichloroethane (CAS No.: 75-34-3)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
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<td>n.d.</td>
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</tr>
<tr>
<td>1,1-Dichloroethylene (CAS No.: 75-35-4)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
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</tr>
<tr>
<td>1,1-Dichloropropane (CAS No.: 563-58-6)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
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</tr>
<tr>
<td>1,2,3-Trichloropropane (CAS No.: 96-18-4)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
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</tr>
<tr>
<td>1,2-Dichloroethane (CAS No.: 107-06-2)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Test Item(s)</td>
<td>Unit</td>
<td>Method</td>
<td>MDL</td>
<td>Result No.1</td>
<td>Limit</td>
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<tr>
<td>1,2-Dichloropropane (CAS No.: 78-87-5)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>1,3-Dichloropropane (CAS No.: 142-28-9)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>2,2-Dichloropropane (CAS No.: 594-20-7)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Carbon tetrachloride (CAS No.: 56-23-5)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Chloroethane (CAS No.: 75-00-3)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Chloroform (CAS No.: 67-66-3)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Chloromethane (CAS No.: 75-08-3)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>cis-1,2-Dichloroethene (CAS No.: 156-59-2)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>cis-1,3-Dichloropropene (CAS No.: 10081-01-5)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Hexachlorobutadiene (CAS No.: 87-68-3)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Methylene Chloride (CAS No.: 75-09-2)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Tetrachloroethylene (CAS No.: 127-18-4)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Test Item(s)</td>
<td>Unit</td>
<td>Method</td>
<td>MDL</td>
<td>Result No.1</td>
<td>Limit</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td>--------</td>
<td>------------------------------------------------------------------------</td>
<td>-----</td>
<td>-------------</td>
<td>-------</td>
</tr>
<tr>
<td>trans-1,2-Dichloroethene (CAS No.: 156-60-5)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>trans-1,3-Dichloropropene (CAS No.: 10061-02-6)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Trichloroethylene (CAS No.: 79-01-6)</td>
<td>mg/kg</td>
<td>With reference to US EPA 5021 method. Analysis was performed by GC/MS.</td>
<td>1</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Sum of PBBs</td>
<td>mg/kg</td>
<td>With reference to IEC 62321: 2008 and performed by GC/MS.</td>
<td></td>
<td>n.d.</td>
<td>1000</td>
</tr>
<tr>
<td>Monobromobiphenyl</td>
<td>mg/kg</td>
<td></td>
<td>5</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Dibromobiphenyl</td>
<td>mg/kg</td>
<td></td>
<td>5</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Tribromobiphenyl</td>
<td>mg/kg</td>
<td></td>
<td>5</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Tetrabromobiphenyl</td>
<td>mg/kg</td>
<td></td>
<td>5</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Pentabromobiphenyl</td>
<td>mg/kg</td>
<td></td>
<td>5</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Hexabromobiphenyl</td>
<td>mg/kg</td>
<td></td>
<td>5</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Heptabromobiphenyl</td>
<td>mg/kg</td>
<td></td>
<td>5</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Octabromobiphenyl</td>
<td>mg/kg</td>
<td></td>
<td>5</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Nonabromobiphenyl</td>
<td>mg/kg</td>
<td></td>
<td>5</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Decabromobiphenyl</td>
<td>mg/kg</td>
<td></td>
<td>5</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Sum of PBDEs</td>
<td>mg/kg</td>
<td></td>
<td></td>
<td>n.d.</td>
<td>1000</td>
</tr>
<tr>
<td>Monobromodiphenyl ether</td>
<td>mg/kg</td>
<td></td>
<td>5</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Dibromodiphenyl ether</td>
<td>mg/kg</td>
<td></td>
<td>5</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Tribromodiphenyl ether</td>
<td>mg/kg</td>
<td></td>
<td>5</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Tetrabromodiphenyl ether</td>
<td>mg/kg</td>
<td></td>
<td>5</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Pentabromodiphenyl ether</td>
<td>mg/kg</td>
<td></td>
<td>5</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Hexabromodiphenyl ether</td>
<td>mg/kg</td>
<td></td>
<td>5</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Heptabromodiphenyl ether</td>
<td>mg/kg</td>
<td></td>
<td>5</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Octabromodiphenyl ether</td>
<td>mg/kg</td>
<td></td>
<td>5</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Nonabromodiphenyl ether</td>
<td>mg/kg</td>
<td></td>
<td>5</td>
<td>n.d.</td>
<td>-</td>
</tr>
<tr>
<td>Decabromodiphenyl ether</td>
<td>mg/kg</td>
<td></td>
<td>5</td>
<td>n.d.</td>
<td>-</td>
</tr>
</tbody>
</table>
Note:
1. mg/kg = ppm; 0.1wt% = 1000ppm
2. n.d. = Not Detected
3. MDL = Method Detection Limit
4. "-" = Not Regulated
5. ** = Qualitative analysis (No Unit)
6. Negative = Undetectable / Positive = Detectable
7. Testing range of asbestos qualitative analysis is from less than 0.1% to 100%. The judgment criterion: asbestos fibers being found is shown as "Positive"; asbestos fibers not being found is shown as "Negative".

PFOS Reference Information: POPs - (EU) 757/2010
Outlawing PFOS as substances or preparations in concentrations above 0.001% (10ppm), in semi-finished products or articles or parts at a level above 0.1%(1000ppm), in textiles or other coated materials above 1µg/m².
1) These samples were dissolved totally by pre-conditioning method according to below flow chart.
(CrF test method excluded)
2) Name of the person who made measurement: Climbing Yang
3) Name of the person in charge of measurement: Troy Chang

<table>
<thead>
<tr>
<th>Sample Material</th>
<th>Digestion Acid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel, copper, aluminum, solder</td>
<td>Aqua regia, HNO₃, HCl, HF, H₂O₂</td>
</tr>
<tr>
<td>Glass</td>
<td>HNO₃/HF</td>
</tr>
<tr>
<td>Gold, platinum, palladium, ceramic</td>
<td>Aqua regia</td>
</tr>
<tr>
<td>Silver</td>
<td>HNO₃</td>
</tr>
<tr>
<td>Plastic</td>
<td>H₂SO₄, H₂O₂, HNO₃, HCl</td>
</tr>
<tr>
<td>Others</td>
<td>Added appropriate reagent to total digestion</td>
</tr>
</tbody>
</table>

**Note**: (1) For non-metallic material, add alkaline digestion reagent and heat to 90~95°C.
(2) For metallic material, add pure water and heat to boiling.
PFOA/PFOS analytical flow chart of Ultrasonic extraction (LC/MS) procedure

- Name of the person who made measurement: Roman Wong
- Name of the person in charge of measurement: Troy Chang

1. Sample pretreatment
2. Sample extraction by Ultrasonic extraction (Reference method: US EPA 3550C)
3. Concentrate/Dilute Extracted solution
4. Analysis was performed by LC/MS
5. Data
PCTs analytical flow chart

- Name of the person who made measurement: Barry Tseng
- Name of the person in charge of measurement: Troy Chang

1. Sample pretreatment
2. Sample extraction by organic solvent
3. Concentrate/Dilute the extracted solution
4. Analysis was performed by GC/MS
5. Data
PBB/PBDE analytical FLOW CHART

- Name of the person who made measurement: Roman Wong
- Name of the person in charge of measurement: Troy Chang

First testing process → Sample

Optional screen process → Sample pretreatment

Confirmation process → Screen analysis

Sample extraction/Soxhlet method

Concentrate/Dilute

Extracted solution

Filter

Analysis by GC/MS

Issue Report
**PCBs analytical flow chart**

- Name of the person who made measurement: Barry Tseng
- Name of the person in charge of measurement: Troy Chang

1. Sample pretreatment
2. Sample extraction by organic solvent
3. Concentrate/Dilute the extracted solution
4. Analysis was performed by GC/MS
5. Data
Chlorinated Paraffins analytical flow chart

- Name of the person who made measurement: Barry Tseng
- Name of the person in charge of measurement: Troy Chang

Sample pretreatment

Sample extraction by organic solvent

Concentrate/Dilute the extracted solution

Analysis was performed by GC/MS

Data

Analysis was performed by GC/MS
Analysis flow chart for determination of Asbestos

- Name of the person who made measurement: Victor Kao
- Name of the person in charge of measurement: Wendy Wei

[Reference method: EPA 600/R-93/116]

1. Sampling
2. Transportation and Storage
3. Preparation of primary analytical sample
4. Examination by stereomicroscope (SM)
5. Asbestos identification by dispersion staining polarized light microscope (DS-PLM)
6. Asbestos identification by X-ray diffraction spectrometer (XRD)
7. Continue when problems are encountered with DS-PLM and/or for quality assurance purposes
8. Interference matrix removal
9. Asbestos fiber is present
     - Containing Asbestos/Positive
10. Asbestos fiber is absent
    - Not containing Asbestos/Negative
Analytical flow chart of Organic-Tin content

- Name of the person who made measurement: Ginny Chen
- Name of the person in charge of measurement: Troy Chang

1. Sample pretreatment
2. Sample extraction by organic solvent
3. Derived by Sodium tetraethylborate
4. Concentrate/Dilute Extracted solution
5. Analysis was performed by GC/FPD
6. Data
PCNs analytical flow chart

- Name of the person who made measurement: Barry Tseng
- Name of the person in charge of measurement: Troy Chang

1. Sample pretreatment
2. Sample extraction by organic solvent
3. Concentrate/Dilute the extracted solution
4. Analysis was performed by GC/MS
5. Data
Analytical flow chart of phthalate content

- Name of the person who made measurement: Roman Wong
- Name of the person in charge of measurement: Troy Chang

1. Sample pretreatment/separation
2. Sample extraction by soxhlet method
3. Concentrate/Dilute Extracted solution
4. Analysis was performed by GC/MS
5. Data
Formaldehyde analytical flow chart

- Name of the person who made measurement: Scott Ku
- Name of the person in charge of measurement: Troy Chang

**Test Method:** US EPA 8315A - ISO 17226-1

```
Sample pretreatment

Sample extraction

Derived by DNPH Concentrate/Dilute Extracted solution

Analysis was performed by HPLC/DAD

Data
```
Analysis flow chart for determination of PVC in material

- Name of the person who made measurement: Ginny Chen
- Name of the person in charge of measurement: Troy Chang
Test Report

No.: CE/2013/13196  Date: 2013/01/22  Page: 26 of 29

CERAMTEC GMBH
GESCHÄFTSBEREICH MULTIFUNKTIONSKERAMIK, LUITPOLDSTRABE 15, 91207 LAUF

DBBT analytical flow chart

- Name of the person who made measurement: Roman Wong
- Name of the person in charge of measurement: Troy Chang

1. Sample pretreatment/separation
2. Sample extraction by soxhlet method
3. Concentrate/Dilute Extracted solution
4. Analysis was performed by GC/MS
5. Data
Test Report

CERAMTEC GMBH
GESCHAFTSBEREICH MULTIFUNKTIONSKERAMIK, LUITPOLDSTRABE 15, 91207 LAUF

Analytical flow chart of halogen content

1) Name of the person who made measurement: Rita Chen
2) Name of the person in charge of measurement: Troy Chang

Sample pretreatment / Separation

Weighting and putting sample in cell

Oxygen Bomb Combustion / Absorption

Dilution to fixed volume

Analysis was performed by IC
Analytical flow chart of volatile organic compounds (VOCs)

- Name of the person who made measurement: Chun Wu
- Name of the person in charge of measurement: Shinjyh Chen
  (Reference method: US EPA 5021)

Sample pretreatment

Take sample and put it into headspace glassware.

Bake the sample in the oven

Analysis was performed by GC/MS

Data
* The tested sample / part is marked by an arrow if it's shown on the photo.*

CE/2013/13196

** End of Report **
Test Report

Applicant: Littelfuse Philippines Inc.
LIMA Technology Center, Lipa City,
Malvar, Batangas

Sample Description:
One (1) group of submitted samples said to be:
Part Description: Element - (Silver Clad Cu Wire with 2% Ag) 082685
Part Number: 082xxx
Date Sample Received: Feb 26, 2013
Date Test Started: Feb 26, 2013

Test Conducted:
As requested by the applicant, for details please refer to attached pages.

Authorized by:
On Behalf of Intertek Testing Services
Taiwan Limited

K. Y. Liang
Director

Intertek Testing Services Taiwan Ltd.
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.
全國公證檢驗股份有限公司
11492台北市內湖區瑞光路423號8樓
Tel: (+886-2) 6602-2888 • 2797-8885 Fax: (+886-2) 6602-2410
Test Conducted

(I) Test Result Summary:

<table>
<thead>
<tr>
<th>Test Item</th>
<th>Unit</th>
<th>Test Method</th>
<th>Result</th>
<th>RL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Heavy Metal</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cadmium (Cd) content</td>
<td>ppm</td>
<td>With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.</td>
<td>ND</td>
<td>2</td>
</tr>
<tr>
<td>Lead (Pb) content</td>
<td>ppm</td>
<td>With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.</td>
<td>ND</td>
<td>2</td>
</tr>
<tr>
<td>Mercury (Hg) content</td>
<td>ppm</td>
<td>With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.</td>
<td>ND</td>
<td>2</td>
</tr>
<tr>
<td>Chromium VI (Cr⁶⁺) content</td>
<td>mg/kg with 50 cm²</td>
<td>With reference to IEC 62321: 2008, by boiling water extraction and determined by UV-Vis Spectrophotometer.</td>
<td>Negative 0.02</td>
<td></td>
</tr>
</tbody>
</table>

Remarks: ppm = parts per million based on weight of tested sample = mg/kg  
ND = Not detected  
RL = Reporting Limit, Quantitation limit of analyte in sample  
mg/kg with 50cm² = milligram per kilogram with 50 square centimeter  
Negative = A negative test result indicated positive observation was not found at the time of Test.

Responsibility of Chemist: Kevin Liu/ Irene Chiou

Date Sample Received : Feb 26, 2013
Test Period : Feb 26, 2013 To Mar 01, 2013

(II) Limit:
RoHS Limit

<table>
<thead>
<tr>
<th>Restricted Substances</th>
<th>Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cadmium (Cd) content</td>
<td>0.01% (100ppm)</td>
</tr>
<tr>
<td>Lead (Pb) content</td>
<td>0.1% (1000ppm)</td>
</tr>
<tr>
<td>Mercury (Hg) content</td>
<td>0.1% (1000ppm)</td>
</tr>
<tr>
<td>Chromium VI (Cr⁶⁺) content</td>
<td>0.1% (1000ppm)</td>
</tr>
</tbody>
</table>

The above limits were quoted from Annex II of 2011/65/EU for homogeneous material.
Test Conducted

(III) Measurement Flowchart:
Test For Cd/Pb/Hg/Chromium (VI)

Sampling/grinding or cutting

Cd/Pb/Hg

For different material, digest the sample with appropriate acid

Confirms the tested samples are totally dissolved

Make up with deionized water

Analyzed by ICP-OES

Cr³⁺

Metal

Polymers/Electronics

By spot test

Weigh sample and add alkaline solution

Get 50cm² sample

Definite temp. extraction

Cool and filter the extract

Make up with deionized water and add diphenyl-carbazide solution

Analyzed by UV-VIS

Sampling/grinding or cutting

Cd/Pb/Hg

For different material, digest the sample with appropriate acid

Confirms the tested samples are totally dissolved

Make up with deionized water

Analyzed by ICP-OES

Cr³⁺

Metal

Polymers/Electronics

By spot test

Weigh sample and add alkaline solution

Get 50cm² sample

Definite temp. extraction

Cool and filter the extract

Make up with deionized water and add diphenyl-carbazide solution

Analyzed by UV-VIS

Remarks:

*1: List of Appropriate Acid:

<table>
<thead>
<tr>
<th>Material</th>
<th>Acid Added for Digestion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polymers</td>
<td>HNO₃, HCl, HF, H₂O₂, HBF₄</td>
</tr>
<tr>
<td>Metals</td>
<td>HNO₃, HCl, HF</td>
</tr>
<tr>
<td>Electronics</td>
<td>HNO₃, HCl, H₂O₂, HBF₄</td>
</tr>
</tbody>
</table>

*2: If the result of spot test is positive, Chromium VI would be determined as detected.

End of Report
Test Report

Applicant: Littelfuse Philippines Inc.
LIMA Technology Center, Lipa City,
Malvar, Batangas

Number: TWNC00300508
Date: Mar 06, 2013

Sample Description:
One (1) group of submitted samples said to be:
Part Description: Element - (Silver clad Cu wire with 5% Ag) 082686
Part Number: 082xxx
Date Sample Received: Feb 26, 2013
Date Test Started: Feb 26, 2013

Test Conducted:
As requested by the applicant, for details please refer to attached pages.

Authorized by:
On Behalf of Intertek Testing Services
Taiwan Limited

K. Y. Liang
Director
(I) Test Result Summary:

<table>
<thead>
<tr>
<th>Test Item</th>
<th>Unit</th>
<th>Test Method</th>
<th>Result</th>
<th>RL</th>
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<tbody>
<tr>
<td>Heavy Metal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cadmium (Cd) content</td>
<td>ppm</td>
<td>With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.</td>
<td>ND 2</td>
<td></td>
</tr>
<tr>
<td>Lead (Pb) content</td>
<td>ppm</td>
<td>With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.</td>
<td>ND 2</td>
<td></td>
</tr>
<tr>
<td>Mercury (Hg) content</td>
<td>ppm</td>
<td>With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.</td>
<td>ND 2</td>
<td></td>
</tr>
<tr>
<td>Chromium VI (Cr⁶⁺) content</td>
<td>mg/kg</td>
<td>With reference to IEC 62321: 2008, by boiling water extraction and determined by UV-Vis Spectrophotometer.</td>
<td>Negative 0.02</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Remarks: ppm = parts per million based on weight of tested sample = mg/kg  
ND = Not detected  
RL = Reporting Limit, Quantitation limit of analyte in sample  
mg/kg with 50 cm² = milligram per kilogram with 50 square centimeter  
Negative = A negative test result indicated positive observation was not found at the time of Test.

Responsibility of Chemist: Kevin Liu/ Irene Chiou

Date Sample Received : Feb 26, 2013  
Test Period : Feb 26, 2013 To Mar 01, 2013

(II) Limit: RoHS Limit

<table>
<thead>
<tr>
<th>Restricted Substances</th>
<th>Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cadmium (Cd) content</td>
<td>0.01% (100ppm)</td>
</tr>
<tr>
<td>Lead (Pb) content</td>
<td>0.1% (1000ppm)</td>
</tr>
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</tr>
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<td>Chromium VI (Cr⁶⁺) content</td>
<td>0.1% (1000ppm)</td>
</tr>
</tbody>
</table>

The above limits were quoted from Annex II of 2011/65/EU for homogeneous material.
Test Conducted

(III) Measurement Flowchart:
Test For Cd/Pb/Hg/Chromium (VI)

Sampling/grinding or cutting

Cd/Pb/Hg

For different material, digest the sample with appropriate acid*1

Confirm the tested samples are totally dissolved

Make up with deionized water

Analyzed by ICP-OES

Cr**

Metal

Polymers / Electronics

By spot test

Weigh sample and add alkaline solution

Get 50cm² sample

Definite temp. extraction

Cool and filter the extract

Make up with deionized water and add diphenyl-carbazide solution

Analyzed by UV-VIS

Remarks:
*1: List of Appropriate Acid:

<table>
<thead>
<tr>
<th>Material</th>
<th>Acid Added for Digestion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polymers</td>
<td>HNO₃, HCl, HF, H₂O₂, H₂BO₃</td>
</tr>
<tr>
<td>Metals</td>
<td>HNO₃, HCl, HF</td>
</tr>
<tr>
<td>Electronics</td>
<td>HNO₃, HCl, H₂O₂, HBF₄</td>
</tr>
</tbody>
</table>

*2: If the result of spot test is positive, Chromium VI would be determined as detected.

End of Report

This report is made solely on the basis of your instructions and/or information and materials supplied by you. It is not intended to be a representation, warranty or guarantee, either express or implied, or representation or guarantee of accuracy, reliability, or completeness of the information, data, and calculations presented herein. Intertek Testing Services Taiwan Ltd. is not responsible for any errors, omissions, or inaccuracies contained in this report, nor for any errors, omissions, or inaccuracies in any data contained in this report, nor for any errors, omissions, or inaccuracies in any data supplied by you. This report is not intended to be used as evidence in any legal proceeding, and you agree that you will not use this report in any legal proceeding in connection with this report, in contract, tort, by statute or otherwise, except in the event of our gross negligence or willful misconduct.
Test Conducted

Photo

![Photo of the tested item]
Test report No. FUHL1236935E

Testing of a material sample according to the RoHS directive 2011/65/EC

Sample description: Ni36Fe64MAg wire; part no. 962464; batch 497255Rev.B

Arrival in lab: 2012-01-26; Period of XRF analysis incl. sample preparation and photo documentation: 2012-12-07 – 2012-12-09
Period of analysis for the reorder: 2013-06-08 – 2013-06-29
Head of Inorganic Lab: Claudia Latt

Copying this test report is permitted only in agreement with the contracted lab. The test results refer only to the tested item.
This report consists of 6 page(s).
The test methods signed with * are not listed in the attachment of the accreditation certificate.

Conclusion based on tested item

<table>
<thead>
<tr>
<th>Test order</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>testing according to the RoHS directive 2011/65/EC</td>
<td>pass*</td>
</tr>
</tbody>
</table>

* Please see overview of test results

- Test results see next pages -
Sample description: Ni$_{36}$Fe$_{64}$MAg wire; part no. 962464; batch 497255Rev.B

nM = non Metal  
M = Metal  
cM = composite Material

List of component parts:

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Part No.</th>
<th>Material</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>236935</td>
<td>1</td>
<td>M</td>
<td>Ni$<em>{36}$Fe$</em>{64}$MAg wire; part no. 962464; batch 497255Rev.B</td>
</tr>
</tbody>
</table>

Photo:

![Photo](image-url)

Comment:

LOD = Limit of Detection  
BL = Below Limit  
OL = Over Limit  
X = Inconclusive, further test necessary  
\( \sigma \) = Standard deviation  
CS = Composite sample

Remark:

Results were obtained by EDXRF for primary screening. Additional chemical testing using ICP (for Cd, Pb), AAS (for Hg), IC-UC/MS (for Cr(VI)) and GC/MS (for PBBS/PBDEs) are recommended, if the concentration exceeds the below warning value according to IEC 62321.

<table>
<thead>
<tr>
<th>Element</th>
<th>Unit</th>
<th>non-metal</th>
<th>metal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cd</td>
<td>mg/kg</td>
<td>( BL \leq (70-3\sigma) &lt; X &lt; (130+3\sigma) \leq OL )</td>
<td>( BL \leq (70-3\sigma) &lt; X &lt; (130+3\sigma) \leq OL )</td>
</tr>
<tr>
<td>Pb</td>
<td>mg/kg</td>
<td>( BL \leq (700-3\sigma) &lt; X &lt; (1300+3\sigma) \leq OL )</td>
<td>( BL \leq (700-3\sigma) &lt; X &lt; (1300+3\sigma) \leq OL )</td>
</tr>
<tr>
<td>Hg</td>
<td>mg/kg</td>
<td>( BL \leq (700-3\sigma) &lt; X &lt; (1300+3\sigma) \leq OL )</td>
<td>( BL \leq (700-3\sigma) &lt; X &lt; (1300+3\sigma) \leq OL )</td>
</tr>
<tr>
<td>Br</td>
<td>mg/kg</td>
<td>( BL \leq (300-3\sigma) &lt; X )</td>
<td>( BL \leq (300-3\sigma) &lt; X )</td>
</tr>
<tr>
<td>Cr</td>
<td>mg/kg</td>
<td>( BL \leq (700-3\sigma) &lt; X )</td>
<td>( BL \leq (700-3\sigma) &lt; X )</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Element</th>
<th>Unit</th>
<th>composite material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cd</td>
<td>mg/kg</td>
<td>LOD &lt; X &lt; (150+3\sigma) \leq OL</td>
</tr>
<tr>
<td>Pb</td>
<td>mg/kg</td>
<td>( BL \leq (500-3\sigma) &lt; X &lt; (1500+3\sigma) \leq OL )</td>
</tr>
<tr>
<td>Hg</td>
<td>mg/kg</td>
<td>( BL \leq (500-3\sigma) &lt; X &lt; (1500+3\sigma) \leq OL )</td>
</tr>
<tr>
<td>Br</td>
<td>mg/kg</td>
<td>( BL \leq (250-3\sigma) &lt; X )</td>
</tr>
<tr>
<td>Cr</td>
<td>mg/kg</td>
<td>( BL \leq (500-3\sigma) &lt; X )</td>
</tr>
</tbody>
</table>
Sample description: Ni36Fe64MAg wire; part no. 962464; batch 497255Rev.B

1. XRF screening

Method: XRF according to IEC 62321:2008*

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Part No.</th>
<th>Pb</th>
<th>Hg</th>
<th>Cd</th>
<th>Cr_{total}</th>
<th>Br</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>236935</td>
<td>1</td>
<td>BL</td>
<td>BL</td>
<td>BL</td>
<td>BL</td>
<td></td>
<td>pass</td>
</tr>
</tbody>
</table>

Analysis of reorder

2. Analysis of metals by ICP-MS, results in mg/kg

Method: Pb, Cd, Cr: DIN EN ISO 17294-2**
Digestion: with conc. HNO₃ + HCl**
Detection limit: Pb 0.5 mg/kg, Cd 0.2 mg/kg, Cr 1 mg/kg, Hg: 0.1 mg/kg

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Part No.</th>
<th>Pb</th>
<th>Hg</th>
<th>Cd</th>
<th>Cr_{total}</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>236935</td>
<td>1</td>
<td>&lt;1</td>
<td>&lt;0.2</td>
<td>&lt;0.5</td>
<td>330</td>
<td>pass</td>
</tr>
</tbody>
</table>

Comment:

<table>
<thead>
<tr>
<th>Elements</th>
<th>RoHS-limit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead (Pb)</td>
<td>1000 mg/kg</td>
</tr>
<tr>
<td>Mercury (Hg)</td>
<td>1000 mg/kg</td>
</tr>
<tr>
<td>Cadmium (Cd)</td>
<td>100 mg/kg</td>
</tr>
<tr>
<td>Chromium VI (Cr VI)</td>
<td>1000 mg/kg</td>
</tr>
<tr>
<td>Polybrominated Biphenyle (PBBs)</td>
<td>1000 mg/kg</td>
</tr>
<tr>
<td>Polybrominated Diphenyl ether (PBDES)</td>
<td>1000 mg/kg</td>
</tr>
</tbody>
</table>

- Flow charts see next page(s) -
Test procedure

samples
metallic materials,
polymer materials,
electronics (PCB / component)

screening by XRF?

sample uniform?

non-destructive sample preparation

mechanical sample preparation

does it meet limits?

screening procedure by XRF

further testing?

mechanical sample preparation

chemical test procedure (verification) various methods (please see verification test procedure below)

meets limits?

pass entity based conforming sample

fail entity based non-conforming sample

pass entity based conforming sample

fail entity based non-conforming sample

fail entity based non-conforming sample

Intertek Consumer Goods GmbH
Würzburger Straße 152
90766 Fürth, Germany
Tel: +49 911 74075 0
Fax: +49 911 74075 30
icp.germany@intertek.com

Sitz Fürth
Amtsgericht Fürth, HRB 5756
USt-IDN: DE188317871

Geschäftsführer
Kay Grünhardt
Jan-Kreg Müller-Seidel
Verification test procedure

Sample Preparation
- Pb/Cd/H
  - Acid digestion with microwave / hot plate
    - Filtration
    - Solution
    - Total digestion
      - ICP-OES/AAS
        - DATA
  - Filtration
  - Residue
  - Total digestion

Sample Measurement
- PBBs/PBD
  - Sample solvent extraction
    - Concentration/ Dilution of extraction solution
      - Filtration
      - GC/MS
      - DATA
  - Alkaline extraction
    - Heating to 90~95°C for extraction
      - Filtration and pH adjustment
      - Adding 1,5-diphenylcarbazide for color development
        - UV-VIS or 3C-UV/VIS
          - DATA
      - A red color indicates the presence of Cr⁶⁺
        - If necessary, confirm with UV-VIS or 3C-UV/VIS
  - Metallic material
    - Spot
      - Positive
      - Boiling water extraction
        - Adding 1,5-diphenylcarbazide for color development
          - UV-VIS or 3C-UV/VIS
            - DATA
Polyfil AG
Gina Gregorio
Oberallmendstrasse 20A
6300 Zug / Switzerland

Füth, 2013-06-29

Test report No. FUHL1236937E

Testing of a material sample according to the RoHS directive 2011/65/EC

Sample description: Ni42Fe58MCuMAg wire; part no. HL26351

Arrival in lab: 2012-01-24
Period of XRF analysis incl. sample preparation and photo documentation: 2012-12-07 – 2012-12-10
Period of analysis for the re-order: 2013-06-08 – 2013-06-29

Head of Inorganic Lab: Claudia List

Copying this test report is permitted only in agreement with the contracted lab. The test results refer only to the tested item. This report consists of 6 page(s).

The test methods signed with * are not listed in the attachment of the accreditation certificate.

Conclusion based on tested item

<table>
<thead>
<tr>
<th>Test order</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>testing according to the RoHS directive 2011/65/EC</td>
<td>pass</td>
</tr>
</tbody>
</table>

* Please see overview of test results

- Test results see next pages -
Sample description: Ni42Fe58MCuMAg wire; part no. HL26351

nM = non Metal
M = Metal
cM = composite Material

List of component parts:

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Part No.</th>
<th>Material</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>236937</td>
<td>1</td>
<td>M</td>
<td>Ni42Fe58MCuMAg wire; part no. HL26351</td>
</tr>
</tbody>
</table>

Photo:

![Image of the sample](image)

Comment

LOD = Limit of Detection
BL = Below Limit
OL = Over Limit
X = Inconclusive, further test necessary
σ = Standard deviation
CS = Composite sample

Remark:

Results were obtained by EDXRF for primary screening. Additional chemical testing using ICP (for Cd, Pb), AAS (for Hg), IC-UC/VIS (for CrVI) and GC/MS (for PBBs/PBDES) are recommended, if the concentration exceeds the below warning value according to IEC 62321.

<table>
<thead>
<tr>
<th>Element</th>
<th>Unit</th>
<th>non-metal</th>
<th>metal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cd</td>
<td>mg/kg</td>
<td>BL ≤ (70-3σ) &lt; X &lt; (130+3σ) ≤ OL</td>
<td>BL ≤ (70-3σ) &lt; X &lt; (130+3σ) ≤ OL</td>
</tr>
<tr>
<td>Pb</td>
<td>mg/kg</td>
<td>BL ≤ (700-3σ) &lt; X &lt; (1300+3σ) ≤ OL</td>
<td>BL ≤ (700-3σ) &lt; X &lt; (1300+3σ) ≤ OL</td>
</tr>
<tr>
<td>Hg</td>
<td>mg/kg</td>
<td>BL ≤ (700-3σ) &lt; X &lt; (1300+3σ) ≤ OL</td>
<td>BL ≤ (700-3σ) &lt; X &lt; (1300+3σ) ≤ OL</td>
</tr>
<tr>
<td>Br</td>
<td>mg/kg</td>
<td>BL ≤ (300-3σ) &lt; X</td>
<td>--</td>
</tr>
<tr>
<td>Cr</td>
<td>mg/kg</td>
<td>BL ≤ (700-3σ) &lt; X</td>
<td>BL ≤ (700-3σ) &lt; X</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Element</th>
<th>Unit</th>
<th>composite material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cd</td>
<td>mg/kg</td>
<td>LOD &lt; X &lt; (1500+3σ) ≤ OL</td>
</tr>
<tr>
<td>Pb</td>
<td>mg/kg</td>
<td>BL ≤ (500-3σ) &lt; X &lt; (1500+3σ) ≤ OL</td>
</tr>
<tr>
<td>Hg</td>
<td>mg/kg</td>
<td>BL ≤ (500-3σ) &lt; X &lt; (1500+3σ) ≤ OL</td>
</tr>
<tr>
<td>Br</td>
<td>mg/kg</td>
<td>BL ≤ (250-3σ) &lt; X</td>
</tr>
<tr>
<td>Cr</td>
<td>mg/kg</td>
<td>BL ≤ (500-3σ) &lt; X</td>
</tr>
</tbody>
</table>
Sample description: Ni42Fe58MCuMAg wire; part no. HL26351

1. XRF screening
   Method: XRF according to IEC 62321:2008*

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Part No.</th>
<th>Pb</th>
<th>Hg</th>
<th>Cd</th>
<th>Cr_total</th>
<th>Br</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>236937</td>
<td>1</td>
<td>BL</td>
<td>BL</td>
<td>BL</td>
<td>BL</td>
<td>BL</td>
<td>pass</td>
</tr>
</tbody>
</table>

Analysis of reorder

2. Analysis of metals by ICP-MS, results in mg/kg
   Method: Pb, Cd, Cr: DIN EN ISO 17294-2**
          Digestion: with conc. HNO₃ + HCl**
          Detection limit: Pb 0.5 mg/kg, Cd 0.2 mg/kg, Cr 1 mg/kg, Hg: 0.1 mg/kg

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Part No.</th>
<th>Pb</th>
<th>Hg</th>
<th>Cd</th>
<th>Cr_total</th>
</tr>
</thead>
<tbody>
<tr>
<td>236937</td>
<td>1</td>
<td>&lt;1</td>
<td>&lt;0.2</td>
<td>&lt;0.5</td>
<td>360</td>
</tr>
</tbody>
</table>

Comment:

<table>
<thead>
<tr>
<th>Elements</th>
<th>RoHS-limit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead (Pb)</td>
<td>1000 mg/kg</td>
</tr>
<tr>
<td>Mercury (Hg)</td>
<td>1000 mg/kg</td>
</tr>
<tr>
<td>Cadmium (Cd)</td>
<td>100 mg/kg</td>
</tr>
<tr>
<td>Chromium VI (Cr VI)</td>
<td>1000 mg/kg</td>
</tr>
<tr>
<td>Polybrominated Biphenyle (PBBs)</td>
<td>1000 mg/kg</td>
</tr>
<tr>
<td>Polybrominated Diphenyl ether (PBDEs)</td>
<td>1000 mg/kg</td>
</tr>
</tbody>
</table>

- Flow charts see next page(s) -
Test procedure

- samples
  - metallic materials
  - polymer materials
  - electronics (PCB / component)

Flowchart:
- Sample uniform?
  - Yes: non-destructive sample preparation
  - No: mechanical sample preparation
- Screening by XRF?
  - Yes: chemical test procedure (verification) various methods (please see verification test procedure below)
  - No: further testing?
    - Yes: pass, entity based conforming sample
    - No: fail, entity based non-conforming sample
- Screening procedure by XRF
  - Meets limits?
    - Yes: pass, entity based conforming sample
    - No: fail, entity based non-conforming sample
Verification test procedure

Sample Preparation

Pb/Cd/H

Acid digestion with microwave / hotplate

Filtration

Solution

ICP-OES/AAS

DATA

Sample Measurement

PBBs/PBD

Sample solvent extraction

Concentration/Dilution of extraction solution

Filtration

Total digestion

Residue

Non-metallic material

Alkaline extraction

Adding extraction solution

Filtration and pH adjustment

Adding 1,5-diphenylcarbazide for color development

UV-VIS or IC-UV/VIS

DATA

Metallic material

Cr⁶⁺

Spot

Positive

Boiling water extraction

Adding 1,5-diphenylcarbazide for color development

A red color indicates the presence of Cr⁶⁺
If necessary, confirm with UV-VIS or ICP-OES

DATA

Negative
Test Report

Applicant: Littelfuse Philippines Inc.
LIMA Technology Center, Lipa City, Malvar, Batangas

Sample Description:
One (1) group of submitted samples said to be:
Part Description: Solder- 92.5Pb5Sn2.5Ag
Part Number: 692323
Date Sample Received: Oct 30, 2013
Date Test Started: Oct 31, 2013

Test Conducted:
As requested by the applicant, for details please refer to attached pages.

Authorized by:
On Behalf of Intertek Testing Services Taiwan Limited

K. Y. Liang
Director
**Test Result Summary:**

<table>
<thead>
<tr>
<th>Test Item</th>
<th>Unit</th>
<th>Test Method</th>
<th>Result</th>
<th>RL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Heavy Metal</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cadmium (Cd) content</td>
<td>ppm</td>
<td>With reference to IEC 62321-5: 2013, by microwave or acid digestion and determined by ICP-OES.</td>
<td>ND</td>
<td>2</td>
</tr>
<tr>
<td>Lead (Pb) content</td>
<td>ppm</td>
<td>With reference to IEC 62321-5: 2013, by microwave or acid digestion and determined by ICP-OES.</td>
<td>913043</td>
<td>2</td>
</tr>
<tr>
<td>Mercury (Hg) content</td>
<td>ppm</td>
<td>With reference to IEC 62321-4: 2013, by microwave or acid digestion and determined by ICP-OES.</td>
<td>ND</td>
<td>2</td>
</tr>
<tr>
<td>Chromium VI (Cr(^{6+})) content</td>
<td>mg/kg with 50 cm(^2)</td>
<td>With reference to IEC 62321: 2008, by boiling water extraction and determined by UV-Vis Spectrophotometer.</td>
<td>Negative</td>
<td>0.02</td>
</tr>
</tbody>
</table>

Remarks: ppm = Parts per million based on weight of tested sample = mg/kg  
ND = Not detected  
RL = Reporting Limit, quantitation limit of analyte in sample  
mg/kg with 50 cm\(^2\) = Milligram per kilogram with 50 square centimeter  
Negative = A negative test result indicated positive observation was not found at the time of test.

Responsibility of Chemist: Kevin Liu/ Irene Chiou

Date Sample Received : Oct 30, 2013  

**RoHS Limit**

<table>
<thead>
<tr>
<th>Restricted Substances</th>
<th>Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cadmium (Cd) content</td>
<td>0.01% (100ppm)</td>
</tr>
<tr>
<td>Lead (Pb) content</td>
<td>0.1% (1000ppm)</td>
</tr>
<tr>
<td>Mercury (Hg) content</td>
<td>0.1% (1000ppm)</td>
</tr>
<tr>
<td>Chromium VI (Cr(^{6+})) content</td>
<td>0.1% (1000ppm)</td>
</tr>
</tbody>
</table>

The above limits were quoted from Annex II of 2011/65/EU for homogeneous material.
Test Report

Number: TWNC00340081

Test Conducted
Test For Cd/Pb/Hg/Chromium (VI)

Sampling

Cd/Pb/Hg

For different material, digest the sample with appropriate acid\(^1\)

Confirm the tested samples are totally dissolved

Make up with deionized water

Analyzed by ICP-OES

Cd\(^{2+}\)

Metal

Analyzed by UV-VIS

Polymers / Electronics

By spot test

Weigh sample and add alkaline solution

Definite temp. extraction

Cool and filter the extract

Make up with deionized water and add diphenyl-carbazide solution

Get 50cm\(^2\) sample

Boiling water extraction

Negative\(^2\)

Confirm the tested samples are totally dissolved

*1 For different material, digest the sample with appropriate acid

*2 Confirm the tested samples are totally dissolved
End of Report

This report is made solely on the basis of your instructions and/or information and materials supplied by you. It is not intended to be a recommendation for any particular course of action. Intertek does not accept a duty of care or any other responsibility to any person other than the Client in respect of this report and only accepts liability to the Client as is expressly contained in the terms and conditions governing Intertek’s provision of services to you. Intertek makes no warranties or representations either express or implied with respect to this report save as provided for in those terms and conditions. We have aimed to conduct the Review on a diligent and careful basis and we do not accept any liability to you for any loss arising out of or in connection with this report, in contract, tort, by statute or otherwise, except in the event of our gross negligence or wilful misconduct.
TERMS AND CONDITIONS OF BUSINESS

1. Intertek Testing Services Taiwan Ltd. (hereinafter “the Company”) agrees to provide its services in accordance with and subject to the terms and conditions herein contained (hereinafter “the Conditions”). The Conditions may only be modified by a variation expressed in writing and signed on behalf of the Company by a director and no other action on the part of the Company or its employees or agents shall be construed as an acceptance of any other terms and conditions.

2. The Company acts for the person or body from whom the request to provide its services has originated (hereinafter “the Principal”). No other party is entitled to give instructions to the Company unless agreed by the Company.

3. All rights (including but not limited to copyright) in any test reports, surveys, certificates of inspection or other material produced by the Company in the course of providing its services shall remain vested in the Company. The Principal shall not reproduce or make copies, publish or disseminate the contents of any such material or extracts thereof to any third party without the Company’s prior written consent, which may be refused at its discretion. The Principal further undertakes that its servants and agents shall keep confidential and shall not publish or otherwise use any information that may be acquired relating to the Company’s activities.

4. The Company undertakes to exercise due care and skill in the performance of its services and accepts responsibility only where such skill and care is not exercised.

4.1 The liability of the Company in respect of any claims for loss, damage or expense of whatsoever nature and howsoever arising in respect of any breach of contract and/or any failure to exercise due care and skill by the Company shall in no circumstances exceed a total aggregate sum equal to ten (10) times the amount of the fee or commission payable in respect of the specific service required under the particular contract with the Company which gives rise to such claims provided however that the Company shall have no liability in respect of any claims for indirect or consequential loss including loss of profit and/or loss of future business and/or loss of production and/or cancellation of contracts entered into by the Principal.

4.2 The Company shall not in any event be liable for any loss or damage caused by delay in performance or non-performance of any of its services where the same is occasioned by any cause whatsoever that is beyond the Company’s control including but not limited to war, civil disturbance, requisitioning, governmental or parliamentary restriction, prohibition or enactment of any kind, import or export regulations, strike or trade dispute (whether involving its own employees or those of any other person), difficulties in obtaining workers or materials, breakdown of machinery, fire or accident. Should any such event occur the Company may cancel or suspend any contract for the provision of services without incurring any liability whatsoever.

4.3 The Company will not be liable to the Principal for any loss or damage whatsoever sustained by the Principal as a result of any failure by the Company to comply with any time estimate given by the Company relating to the provision of its services. [See clause 9.1] [See clause 9.2]

4.4 The Principal acknowledges that samples may be damaged or destroyed in the course of testing carried out by the Company or any of the Company’s agents or subcontractor as part of the necessary testing process and the Company shall not in any event be liable for any loss or damage arising from the damage or destruction of the samples subject to testing.

4.5 In the event that the Principal requests for the return of the samples, the Company shall not be responsible for any re-packaging of the samples prior to such return and the Company shall in no circumstances be liable for any loss or damage caused to any of the samples during or as a result of their shipment to the Principal for the purpose of this Clause 4.5.

5. 5.1 Subject to the Principal’s instructions as accepted by the Company, the test reports, surveys, certificates of inspection or other material produced by the Company shall contain statements of opinion made with due care within the limitation of the instructions received by the Company. The Company is under no obligation to refer to or report upon any facts or circumstances which are outside the specific instructions received.

5.2 For pre-shipping inspection or survey of goods, the Company’s inspector shall perform the inspection or survey when goods are 100% completed, packed and marked (unless otherwise agreed between the Company and the Principal). Goods for inspection or survey shall be unpacked in the presence of the Company’s inspector and inspection or survey shall take place at the place specified by the Principal.

5.3 If the Company’s inspector finds that the location is not suitable for carrying out a proper inspection or survey of goods or where necessary equipment for inspection or survey is not available the inspector may, if practical in the circumstances, draw samples of goods from the location and carry out the inspection or survey at the premises of the Company. The Principal shall be responsible for all costs and expenses incurred in relation thereto.

5.4 Reports, surveys or certificates issued following testing or analysis of samples contain the Company’s specific opinion on those samples only but do not express any opinion upon the bulk from which the samples were drawn. If an opinion on the bulk is required special arrangements in writing must be made in advance by the Company for the inspection and sampling of the bulk. In no circumstances shall the Company’s responsibility extend beyond inspection, testing and reporting upon the samples actually drawn from the bulk and inspected, tested and surveyed by the Company and any reference to be drawn from the results of such inspection or survey or testing shall be entirely in the discretion and at the sole and exclusive responsibility of the Principal.

6. The Company shall be entitled at its discretion to delegate the performance of the whole or any part of the services contracted for with the Principal to any agent or subcontractor.

6.1 Every officer, employee, agent or subcontractor of the Company shall have the benefit of the limitations of liability and the indemnities contained in the General Conditions. So far as relates to such limitations and indemnities, any contract entered into by the Company is entered into not only on its own behalf but also as agent and trustee for such person as is severally engaged.

6.2 If the requirements of the Principal necessitate the analysis of samples by the Principal only by any third party the Company will pass on the results of the analysis but without responsibility for its accuracy. Where the Company is only able to witness an analysis by the Principal or by any third party the Company will provide confirmation, if such be the case, that a correct sample has been analysed but will not otherwise be responsible for the accuracy of such analysis.

6.3 Intertek Testing Services Taiwan Ltd.
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.

Number: TWCNC00340081

全国公證檢驗股份有限公司
11492 台北市內湖區瑞光路 423 號 8 樓
Tel: (+886-2) 6602-2888 / 2797-8885 Fax: (+886-2) 6602-2410
9.6 take all necessary steps to eliminate or remedy any obstruction to or interruptions in the performance of the required services and repack all inspected goods immediately after any inspection or survey of them.

9.7 inform the Company in advance of any known hazards or dangers, actual or potential, associated with any request for the provision of services by the Company including but not limited to the presence of risk of radiation, toxic or noxious or explosive elements or materials, environmental pollution or poisons.

10. The Principal shall guarantee, hold harmless and indemnify the Company and its officers, employees, agents or subcontractors against:

10.1 all claims made by any third party for any loss, damage or expense of whatsoever nature and howsoever arising relating to the performance, purported performance or non-performance of any of the services to the extent that the aggregate of any such claims relating to any one service exceeds the limit mentioned in Condition 4.2.

10.2 any loss or damage suffered by the Company as a result of the provision of services by the Company to the Principal otherwise than resulting from the Company's own error, negligence or wilful default.

11.1 The Principal will punctually pay the Company immediately upon presentation of the relevant invoice or within such other period as may have been agreed in writing by the Company, all charges rendered by the Company failing which interest will become due at the rate of 1.5% per cent per month from the date of invoice until payment. The Principal further agrees and undertakes to reimburse the Company all disbursements reasonably incurred in connection with the provision of services.

11.2 The Principal shall not be entitled to retain or defer payment of any sums due to the Company on account of any dispute, cross claim or set off which it may allege against the Company.

11.3 In the event of any suspension of payment arrangement with creditors, bankruptcy, insolvency, receivership or cessation of business or failure of the Principal to pay part or all of any sums owing to the Company, the Company shall be entitled to suspend all further performance of its services and withhold the issue of any test report, survey, certificate of inspection or other material requested forthwith and without liability until payment of all sums owing to the Company together with interest thereon is made.

12. Without prejudice to any rights the Company may have at law or under the Conditions, the Company has the following rights in the event of non-payment of sums owing to the Company as set out below:

12.1 The Company has a general and particular lien over all samples delivered to be tested for all claims and sums owing by the Principal to the Company under any contract whatsoever and in any other way whatsoever.

12.2 During the currency of any such lien the Company is entitled to be paid reasonable storage charges for samples retained in the Company's custody.

12.3 Without prejudice to the Company's lien and other rights under Conditions 12.1 to 12.2 above, if test, inspection or survey of the goods takes place on the premises of the Company, the Company may give notice to the Principal that the goods (or any part thereof) are ready for collection and the Principal shall collect the same within three (3) calendar days (Saturdays, Sundays and Public Holidays excepted). Upon the expiry of this period, if the goods are not collected by the Principal, at the sole discretion of the Company the goods may be deemed abandoned and/or destroyed.

12.4 Without prejudice to Conditions 12.3 above, the Company shall have the discretion to store the goods (or any of them) at their own premises or elsewhere at the Principal's expense if the Principal has deposited the goods at the Company's premises for the performance of these services and has subsequently failed to collect the said goods.

12.5 The expenses by way of disbursements that the Company may reclaim from the Principal include all reasonable costs incurred by the Company (whether by way of storage, insurance or otherwise) in respect of the goods and it is expressly declared that it shall be reasonable but not mandatory for the Company to effect comprehensive insurance in respect of the goods.

12.6 Without prejudice to the Company's lien and other rights under Conditions 12.1 to 12.5 above, the risk and property in the goods shall remain at all times in the Principal.

13. In the event of the Company being prevented by reason of any cause whatsoever outside the Company's control from performing or completing any service for which an order has been given or an agreement made, the Principal will pay the Company:

13.1 the amount of all unobligated expenditure actually made or incurred, and

13.2 a proportion of the agreed fee or commission equal to the proportion (if any) of the service actually earned.

14. The Company shall be discharged from all liability to the Principal for all claims for loss, damage or expense unless suit is brought within twelve (12) months after the date of the performance by the Company of the service which gives rise to the claim or in the event of any alleged non-performance within twelve (12) months of the date of the services having been completed.

15. In the event that any unforeseen additional time or cost is incurred in the course of carrying out any of its services the Company shall be entitled to render additional charges as shall reasonably reflect such additional time and costs incurred.

16. All contracts for provision of services by the Company and the Conditions shall be construed in accordance with, and governed by, the laws of ROC and for the purpose of any arbitration or litigation proceedings such contracts shall be deemed to have been made and performed in Taiwan. If any provision contained in the Conditions is and/or becomes invalid, illegal or unenforceable in any respect under the laws of the ROC, the validity, legality and enforceability of the remaining provisions hereof shall not in any way be affected or impaired thereby.

17. Any dispute or claim arising out of or relating to the provision of, or any agreement to provide, services by the Company shall be referred to and determined by arbitration subject to the Company's sole and overriding discretion to commence arbitration proceedings in the courts of Taiwan or the courts of any other country as the Company may choose. The parties may agree to the appointment of an arbitrator failing which either party may, after having made a written request to concur in the appointment of an arbitrator, request the ROC Arbitration Association to appoint an arbitrator. The place of arbitration shall be in Taiwan. There shall only be one arbitrator.
Test Report

Applicant: Littelfuse Philippines Inc.
LIMA Technology Center, Lipa City,
Malvar, Batangas

Number: TWNC00306991
Date: Apr 16, 2013

Authorized by:
On Behalf of Intertek Testing Services
Taiwan Limited

K. Y. Liang
Director

Sample Description:

One (1) group of submitted samples said to be:

Part Description: Black Ink
Part Number: 425809
Date Sample Received: Apr 10, 2013
Date Test Started: Apr 11, 2013

Test Conducted:
As requested by the applicant, for details please refer to attached pages.
# Test Conducted

## Test Result Summary:

<table>
<thead>
<tr>
<th>Test Item</th>
<th>Unit</th>
<th>Test Method</th>
<th>Result</th>
<th>RL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Heavy Metal</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cadmium (Cd) Content</td>
<td>ppm</td>
<td>With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.</td>
<td>ND</td>
<td>2</td>
</tr>
<tr>
<td>Lead (Pb) Content</td>
<td>ppm</td>
<td>With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.</td>
<td>ND</td>
<td>2</td>
</tr>
<tr>
<td>Mercury (Hg) Content</td>
<td>ppm</td>
<td>With reference to IEC 62321: 2008, by microwave digestion and determined by ICP-OES.</td>
<td>ND</td>
<td>2</td>
</tr>
<tr>
<td>Chromium VI (Cr⁶⁺) Content</td>
<td>ppm</td>
<td>With reference to IEC 62321: 2008, by alkaline digestion and determined by UV-Vis Spectrophotometer.</td>
<td>ND</td>
<td>1</td>
</tr>
</tbody>
</table>

## Polybrominated Biphenyls (PBBs)

<table>
<thead>
<tr>
<th>Polybrominated Biphenyls (PBBs)</th>
<th>ppm</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Monobrominated Biphenyls (MonoBB)</td>
<td>ppm</td>
<td>With reference to IEC 62321: 2008, by solvent extraction and determined by GC-MS and further HPLC-DAD confirmation when necessary.</td>
<td>ND</td>
<td>5</td>
</tr>
<tr>
<td>Di brominated Biphenyls (DiBB)</td>
<td>ppm</td>
<td></td>
<td>ND</td>
<td>5</td>
</tr>
<tr>
<td>Tri brominated Biphenyls (TriBB)</td>
<td>ppm</td>
<td></td>
<td>ND</td>
<td>5</td>
</tr>
<tr>
<td>Tetrabrominated Biphenyls (TetraBB)</td>
<td>ppm</td>
<td></td>
<td>ND</td>
<td>5</td>
</tr>
<tr>
<td>Pentabrominated Biphenyls (PentaBB)</td>
<td>ppm</td>
<td></td>
<td>ND</td>
<td>5</td>
</tr>
<tr>
<td>Hexabrominated Biphenyls (HexaBB)</td>
<td>ppm</td>
<td></td>
<td>ND</td>
<td>5</td>
</tr>
<tr>
<td>Heptabrominated Biphenyls (HeptaBB)</td>
<td>ppm</td>
<td></td>
<td>ND</td>
<td>5</td>
</tr>
<tr>
<td>Octabrominated Biphenyls (OctaBB)</td>
<td>ppm</td>
<td></td>
<td>ND</td>
<td>5</td>
</tr>
<tr>
<td>Nonabrominated Biphenyls (NonaBB)</td>
<td>ppm</td>
<td></td>
<td>ND</td>
<td>5</td>
</tr>
<tr>
<td>Decabrominated Biphenyl (DecaBB)</td>
<td>ppm</td>
<td></td>
<td>ND</td>
<td>5</td>
</tr>
</tbody>
</table>
### Test Conducted

<table>
<thead>
<tr>
<th>Test Item</th>
<th>Unit</th>
<th>Test Method</th>
<th>Result</th>
<th>RL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Polybrominated Diphenyl Ethers (PBDEs)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monobrominated Diphenyl Ethers (MonoBDE)</td>
<td>ppm</td>
<td>With reference to IEC 62321: 2008, by solvent extraction and determined by GC-MS and further HPLC-DAD confirmation when necessary.</td>
<td>ND</td>
<td>5</td>
</tr>
<tr>
<td>Dibrominated Diphenyl Ethers (DiBDE)</td>
<td>ppm</td>
<td></td>
<td>ND</td>
<td>5</td>
</tr>
<tr>
<td>Tribrominated Diphenyl Ethers (TriBDE)</td>
<td>ppm</td>
<td></td>
<td>ND</td>
<td>5</td>
</tr>
<tr>
<td>Tetrabrominated Diphenyl Ethers (TetraBDE)</td>
<td>ppm</td>
<td></td>
<td>ND</td>
<td>5</td>
</tr>
<tr>
<td>Pentabrominated Diphenyl Ethers (PentaBDE)</td>
<td>ppm</td>
<td></td>
<td>ND</td>
<td>5</td>
</tr>
<tr>
<td>Hexabrominated Diphenyl Ethers (HexaBDE)</td>
<td>ppm</td>
<td></td>
<td>ND</td>
<td>5</td>
</tr>
<tr>
<td>Heptabrominated Diphenyl Ethers (HeptaBDE)</td>
<td>ppm</td>
<td></td>
<td>ND</td>
<td>5</td>
</tr>
<tr>
<td>Octabrominated Diphenyl Ethers (OctaBDE)</td>
<td>ppm</td>
<td></td>
<td>ND</td>
<td>5</td>
</tr>
<tr>
<td>Nonabrominated Diphenyl Ethers (NonaBDE)</td>
<td>ppm</td>
<td></td>
<td>ND</td>
<td>5</td>
</tr>
<tr>
<td>Decabrominated Diphenyl Ethers (DecaBDE)</td>
<td>ppm</td>
<td></td>
<td>ND</td>
<td>5</td>
</tr>
<tr>
<td><strong>Phthalates</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Di(2-ethylhexyl) Phthalate (DEHP)</td>
<td>ppm</td>
<td>With reference to EN 14372: 2004, by solvent extraction and determined by GC-MS.</td>
<td>ND</td>
<td>50</td>
</tr>
<tr>
<td>Dibutyl Phthalate (DBP)</td>
<td>ppm</td>
<td></td>
<td>ND</td>
<td>50</td>
</tr>
<tr>
<td>Benzyl Butyl Phthalate (BBP)</td>
<td>ppm</td>
<td></td>
<td>ND</td>
<td>50</td>
</tr>
<tr>
<td><strong>Halogen Content</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fluorine (F)</td>
<td>ppm</td>
<td>With reference to EN 14582:2007 by calorimetric bomb with oxygen and determined by Ion Chromatograph.</td>
<td>ND</td>
<td>50</td>
</tr>
<tr>
<td>Chlorine (Cl)</td>
<td>ppm</td>
<td></td>
<td>ND</td>
<td>50</td>
</tr>
<tr>
<td>Bromine (Br)</td>
<td>ppm</td>
<td></td>
<td>ND</td>
<td>50</td>
</tr>
<tr>
<td>Iodine (I)</td>
<td>ppm</td>
<td></td>
<td>ND</td>
<td>50</td>
</tr>
<tr>
<td><strong>Others</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hexabromo cyclooctadecane (HBCDD)</td>
<td>ppm</td>
<td>With reference to USEPA 3540C, by solvent extraction and determined by GC-MS.</td>
<td>ND</td>
<td>10</td>
</tr>
</tbody>
</table>

Intertek Testing Services Taiwan Ltd.
8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.

全國公證檢驗股份有限公司
11492台北市內湖區瑞光路423號8樓
Tel: (+886-2) 6602-2888 - 2797-8885  Fax: (+886-2) 6602-2410
Test Conducted

Remarks: ppm = parts per million based on wet weight of tested sample = mg/kg
ND = Not detected
RL = Reporting Limit, Quantitation limit of analyte in sample

Responsibility of Chemist: Kevin Liu / Irene Chiou / Vico Lin

Date Sample Received : Apr 10, 2013
Test Period : Apr 11, 2013 to Apr 15, 2013

(II) Limit:
RoHS Limit

<table>
<thead>
<tr>
<th>Restricted Substances</th>
<th>Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cadmium (Cd) content</td>
<td>0.01% (100ppm)</td>
</tr>
<tr>
<td>Lead (Pb) content</td>
<td>0.1% (1000ppm)</td>
</tr>
<tr>
<td>Mercury (Hg) content</td>
<td>0.1% (1000ppm)</td>
</tr>
<tr>
<td>Chromium VI (Cr^6+) content</td>
<td>0.1% (1000ppm)</td>
</tr>
<tr>
<td>Polybrominated Biphenyls (PBBs)</td>
<td>0.1% (1000ppm)</td>
</tr>
<tr>
<td>Polybrominated Diphenyl Ethers (PBDEs)</td>
<td>0.1% (1000ppm)</td>
</tr>
</tbody>
</table>

The above limits were quoted from Annex II of 2011/65/EU for homogeneous material.
Test Conducted

(III) Measurement Flowchart:
Test for Cd/Pb/Hg Chromium (VI)/PBBS/PBDES Contents

Sample preparation

For non-metal part

Take sample and immerse into Aqua Regia, start to strip plating layer

Stop the stripping procedure upon color change completely

Take the Aqua solution as plating component and stripped body as substrate component

For metal part

PBBs/PBDEs

Weigh sample and add organic solvent

By Soxhlet extraction or Solvent extraction

Concentrate the extract and make up with organic solvent

Analyzed by GC-MSD

Cd/Pb/Hg

Weigh sample and add alkaline solution

Definite temp. extraction

Cool and filter the extract

Analyzed by ICP-OES

Substrate

For different material, digest the sample with appropriate acid*1

Confirm the tested samples are totally dissolved

Make up with deionized water

Cr6+

By spot test

Negative *2

Get 50cm² sample

Plating

By boiling water extraction

Make up with deionized water and add diphenyl-carbazide solution

Analyzed by UV-VIS

*1 For different material, digest the sample with appropriate acid

*2 Confirm the tested samples are totally dissolved
Test Conducted

Remarks:

*1: List of Appropriate Acid:

<table>
<thead>
<tr>
<th>Material</th>
<th>Acid Added for Digestion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polymers</td>
<td>HNO₃, HCl, HF, H₂O₂, H₂BO₃</td>
</tr>
<tr>
<td>Metals</td>
<td>HNO₃, HCl, HF</td>
</tr>
<tr>
<td>Electronics</td>
<td>HNO₃, HCl, H₂O₂, HBF₄</td>
</tr>
</tbody>
</table>

*2: If the result of spot test is positive, Chromium VI would be determined as detected.
Test for Halogen Content
Reference Standard: EN 14582

Sampling/grinding or cutting

Add absorbent in a combustion flask & place weighed sample in equipment

Fill oxygen into calorimetric bomb

Ignite then leave the bomb at room temperature

Transfer the absorbent into a volumetric flask

Make up with deionized water

Analyzed by ion chromatography
Test Conducted

Test For Phthalates Contents
Reference Method: EN 14372: 2004

1. Sampling/grinding or cutting
2. Weigh sample and add organic solvent
3. By solvent extraction
4. Concentrate the extract and make up with organic solvent
5. Analyzed by GC-MSD
Test Conducted

Test For Hexabromocyclododecane (HBCDD)
Reference Standard: USEPA 3540C

Sampling/grinding or cutting

Weigh sample and add organic solvent

By soxhlet extraction

Concentrate the extract and make up with organic solvent

Analyzed by GC-MSD

End of Report
Test Report

Applicant: Littelfuse Philippines Inc.
LIMA Technology Center, Lipa City,
Malvar, Batangas

Sample Description:
One (1) group of submitted sample(s) said to be:
Part Description: Black Ink
Part Number: 425809
Date Sample Received: Jun 11, 2013
Date Test Started: Jun 13, 2013

Test Conducted:
As requested by the applicant, for details please refer to attached pages.

Authorized by:
On Behalf of Intertek Testing Services
Taiwan Limited

K. Y. Liang
Director
## Test Result Summary:

<table>
<thead>
<tr>
<th>Test Item</th>
<th>Unit</th>
<th>Test Method</th>
<th>Result</th>
<th>RL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Heavy Metal</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antimony (Sb) Content</td>
<td>ppm</td>
<td>With reference to USEPA 3052, by microwave digestion and determined by ICP-OES.</td>
<td>ND</td>
<td>2</td>
</tr>
<tr>
<td><strong>Phthalates</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diisobutyl Phthalate (DIBP)</td>
<td>ppm</td>
<td>With reference to EN 14372: 2004, by solvent extraction and determined by GC-MS.</td>
<td>ND</td>
<td>10</td>
</tr>
</tbody>
</table>

Remarks: ppm = parts per million based on wet weight of tested sample = mg/kg  
ND = Not detected  
RL = Reporting Limit, Quantitation limit of analyte in sample

Responsibility of Chemist: Kevin Liu/ Irene Chiou/ Vico Lin

Date Sample Received : Jun 11, 2013  
Test Period : Jun 13, 2013 To Jun 17, 2013
Test Report

Number : TWNC00317746
Test Conducted

Measurement Flowchart:

Test for Heavy Metal (Sb) Contents
Reference Method : USEPA 3052

### Sampling

Weigh sample and digest in microwave digestion oven with suitable acid

Confirm the tested samples are totally dissolved

Transfer the digested solution and make up with deionized water

Analyzed by ICP-OES
Measurement Flowchart:

Test for Phthalates Contents
Reference Method: EN 14372: 2004

Sampling

Weigh sample and add organic solvent

By solvent extraction

Concentrate the extract and make up with organic solvent

Analyzed by GC-MS
This report is made solely on the basis of your instructions and/or information and materials supplied by you. It is not intended to be a recommendation for any particular course of action. Intertek does not accept a duty of care or any other responsibility to any person other than the Client in respect of this report and only accepts liability to the Client insofar as is expressly contained in the terms and conditions governing Intertek's provision of services to you. Intertek makes no warranties or representations either express or implied with respect to this report save as provided for in those terms and conditions. We have aimed to conduct the Review on a diligent and careful basis and we do not accept any liability to you for any loss arising out of or in connection with this report, in contract, tort, by statute or otherwise, except in the event of our gross negligence or wilful misconduct.
<table>
<thead>
<tr>
<th>Total Parts</th>
<th>Raw Material Description</th>
<th>Raw Material Part Number</th>
<th>Product Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Element- 5% by weight Ag clad Cu</td>
<td>082xxx</td>
<td>0453002.MR 045302.5MR 0453003.MR 04533.15MR 045303.5MR 0453004.MR 0453005.MR</td>
</tr>
<tr>
<td>4</td>
<td>Element- 2% by weight Ag clad Cu</td>
<td>082xxx</td>
<td>045306.3MR 0453007.MR 0453008.MR 0453010.MR 0453012.MR 0453015.MR</td>
</tr>
<tr>
<td>5</td>
<td>Element - Cu Clad Fe 58 42Ni 5Ag by weight</td>
<td>11-0803 (497xxx)</td>
<td>04531.25MR 045301.5MR 045301.6MR</td>
</tr>
</tbody>
</table>