Test Report

No. 5006465-CH46-R1  Date: February 23, 2023  Page 1 of 9

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

This report supersedes all previous documents bearing the test report number 5006465-CH46.

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

Black Molded Polymer
Country of Destination: USA
Model/ Part No.: Vectra V143XL

Sample Received Date: 01/19/2023
Testing Period: 01/24/2023 – 02/06/2023
Revision Date: 02/22/2023

Revision Summary: Sample description has been updated.

Test Requested: Please refer to the result summary.

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

Result Summary:

<table>
<thead>
<tr>
<th>Test(s) Requested</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Halogen Content</td>
<td>See Test Results</td>
</tr>
</tbody>
</table>

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

Prepared By:

Brian Murphy
Laboratory supervisor, Chemistry laboratory

Suzie Banik
Technical Report Writer, Chemistry Laboratory

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<table>
<thead>
<tr>
<th>Test Item(s):</th>
<th>Unit</th>
<th>Test Method</th>
<th>Results 1</th>
<th>MDL</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cadmium (Cd)</td>
<td>mg/kg</td>
<td>With reference to IEC 62321-5:2013 (Determination of Cd and Pb by ICP-OES and/or ICP-MS)</td>
<td>ND*</td>
<td>2</td>
<td>100</td>
</tr>
<tr>
<td>Lead (Pb)</td>
<td>mg/kg</td>
<td>With reference to IEC 62321-4:2013+A1:2017 (Determination of Hg by ICP-OES and/or ICP-MS)</td>
<td>ND*</td>
<td>2</td>
<td>1000</td>
</tr>
<tr>
<td>Mercury (Hg)</td>
<td>mg/kg</td>
<td>With reference to IEC 62321-7-2:2017 (Determination of CrVI by UV-Vis)</td>
<td>ND*</td>
<td>8</td>
<td>1000</td>
</tr>
<tr>
<td>Hexavalent Chromium (CrVI)</td>
<td>mg/kg</td>
<td>With reference to IEC 62321-6:2015 (Determination of PBB and PBDE by GC-MS)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sum of PBBs</td>
<td>mg/kg</td>
<td></td>
<td>ND</td>
<td>1000</td>
<td></td>
</tr>
<tr>
<td>Monobromobiphenyl</td>
<td>mg/kg</td>
<td></td>
<td>ND</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Dibromobiphenyl</td>
<td>mg/kg</td>
<td></td>
<td>ND</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Tribromobiphenyl</td>
<td>mg/kg</td>
<td></td>
<td>ND</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Tetrabromobiphenyl</td>
<td>mg/kg</td>
<td></td>
<td>ND</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Pentabromobiphenyl</td>
<td>mg/kg</td>
<td></td>
<td>ND</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Hexabromobiphenyl</td>
<td>mg/kg</td>
<td></td>
<td>ND</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Heptabromobiphenyl</td>
<td>mg/kg</td>
<td></td>
<td>ND</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Octabromobiphenyl</td>
<td>mg/kg</td>
<td></td>
<td>ND</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Nonabromobiphenyl</td>
<td>mg/kg</td>
<td></td>
<td>ND</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Decabromobiphenyl</td>
<td>mg/kg</td>
<td></td>
<td>ND</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Sum of PBDEs</td>
<td>mg/kg</td>
<td></td>
<td>ND</td>
<td>1000</td>
<td></td>
</tr>
<tr>
<td>Monobromodiphenyl ether</td>
<td>mg/kg</td>
<td></td>
<td>ND</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Dibromodiphenyl ether</td>
<td>mg/kg</td>
<td></td>
<td>ND</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Tribromodiphenyl ether</td>
<td>mg/kg</td>
<td></td>
<td>ND</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Tetrabromodiphenyl ether</td>
<td>mg/kg</td>
<td></td>
<td>ND</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Pentabromodiphenyl ether</td>
<td>mg/kg</td>
<td></td>
<td>ND</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Hexabromodiphenyl ether</td>
<td>mg/kg</td>
<td></td>
<td>ND</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Heptabromodiphenyl ether</td>
<td>mg/kg</td>
<td></td>
<td>ND</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Octabromodiphenyl ether</td>
<td>mg/kg</td>
<td></td>
<td>ND</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Nonabromodiphenyl ether</td>
<td>mg/kg</td>
<td></td>
<td>ND</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Decabromodiphenyl ether</td>
<td>mg/kg</td>
<td></td>
<td>ND</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Bis (2-ethylhexyl) Phthalate (DEHP)</td>
<td>mg/kg</td>
<td>IEC 62321-8:2017 (Determination of DEHP, BBP, DBP and DIBP by GC-MS)</td>
<td>ND</td>
<td>50</td>
<td>1000</td>
</tr>
<tr>
<td>Butyl Benzyl Phthalate (BBP)</td>
<td>mg/kg</td>
<td></td>
<td>ND</td>
<td>50</td>
<td>1000</td>
</tr>
<tr>
<td>Dibutyl Phthalate (DBP)</td>
<td>mg/kg</td>
<td></td>
<td>ND</td>
<td>50</td>
<td>1000</td>
</tr>
<tr>
<td>Diisobutyl Phthalate (DIBP)</td>
<td>mg/kg</td>
<td></td>
<td>ND</td>
<td>50</td>
<td>1000</td>
</tr>
</tbody>
</table>

### Conclusion

PASS

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**Sample Description:**

1. Bag 46 – Black Molded Polymer Vectra V143XL

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Note:

(a) mg/kg = ppm : 0.1wt% = 1000ppm
(b) ND= not detected
(c) MDL = Method Detection Limit
(d) - = not regulated
(e) * = Total Chromium analysis by ICP-MS and/or ICP-OES was not detected in submitted sample. Therefore, Hexavalent Chromium determination using UV-Visible Spectroscopy was not performed.
(f) IEC 62321 series is equivalent to EN 62321 series


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2. Halogen Content

Test Method(s): With reference to IEC 62321-3-2:2020 “Determination of certain substances in electrotechnical products – Part 3-2: Screening – Fluorine, bromine and chlorine in polymer and electronics by combustion-ion chromatography (C-IC), and/or with reference to BS EN 14582:2016 – Analysis was performed by ion chromatography.

<table>
<thead>
<tr>
<th>Test Item(s):</th>
<th>Unit</th>
<th>Results (ppm)</th>
<th>Reporting Limit (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluorine (F)</td>
<td>mg/kg</td>
<td>9060</td>
<td>50</td>
</tr>
<tr>
<td>Chlorine (Cl)</td>
<td>mg/kg</td>
<td>422</td>
<td>50</td>
</tr>
<tr>
<td>Bromine (Br)</td>
<td>mg/kg</td>
<td>160</td>
<td>50</td>
</tr>
<tr>
<td>Iodine (I)</td>
<td>mg/kg</td>
<td>ND</td>
<td>50</td>
</tr>
</tbody>
</table>

Sample Description:
1. Bag 46 – Black Molded Polymer Vectra V143XL

Note:  
1. ppm = parts per million  
2. mg/kg = ppm  
3. 1% = 10000 ppm (mg/kg)  
4. ND = Not Detected, reported when the reading is less than the reporting limit value.

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Flowchart for RoHS:

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

Flowchart:

- **Cutting / Preparation**
- **Weigh Sample**
- **Acid Digestion with appropriate acid**
  - **Filtration**
  - **Solution**
  - **Residue**
    - a. Dry Ashing
    - b. Dissolution by HNO\(_3\)/HCl
  - **ICP-MS**
- **Alkaline Extraction**
  - **Filtration, pH, Clean-up**
  - **Add reagent for color development**
    - UV-VIS
- **Solvent Extraction**
  - **Concentrate / Dilute extracted solution**
  - **Clean-up with florisil column**
    - **Solution**
    - **GC-MS**

Note:

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Flowchart for Phthalates:

1. Cutting/Preparation
2. Weighing
3. Solvent Extraction
4. Concentrate / Dilute extracted solution
5. Filtration
6. GC-MS
Flow Chart of Halogen Test by Combustion Ion Chromatography:

1. Sample cutting / preparation
2. Sample measurement
3. Combustion in furnace
4. Dissolved in absorption solvent
5. Analyzed by ion chromatography
6. Data analysis

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Halogen Testing Flow Chart (EN 14582):

1. Sample cutting / preparation
2. Sample measurement
3. Combustion in Oxygen Bomb
4. Dissolved in absorption
5. Filtration
6. Analyzed by Ion Chromatography
7. Data Analysis

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*** End of Report ***