

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

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

**Multi-conductor cable with black TPU jacket, Outer PTFE wrap, Internal FEP Jacket, Copper Braid Sleeve, Internal PTFE Wrap insulated around copper conductors
Country of Destination: USA
Model/ Part No.: SBWC**

Sample Received Date: 01/19/2023

Testing Period: 01/24/2023 – 02/06/2023

Test Requested : Please refer to the result summary.

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

Result Summary :

| Test(s) Requested | Conclusion |
|---|------------------|
| 1. RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU | See Test Results |
| 2. Halogen Content | See Test Results |

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

Prepared By:



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1. RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU

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

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| Test Item(s): | Unit | Test Method | Results | | MDL |
|-------------------------------------|-------|---|---------|-----|-----|
| | | | 3 | 4 | |
| Cadmium (Cd) | mg/kg | With reference to IEC 62321-5:2013 (Determination of Cd and Pb by ICP-OES and /or ICP-MS) | ND | ND | 2 |
| Lead (Pb) | mg/kg | | ND | ND | 2 |
| Mercury (Hg) | mg/kg | With reference to IEC 62321-4:2013+A1:2017 (Determination of Hg by ICP-OES and/ or ICP-MS) | ND | ND | 2 |
| Hexavalent Chromium (CrVI) | mg/kg | With reference to IEC 62321-7-2:2017 (Determination of CrVI by UV-Vis) | ND* | ND* | 8 |
| Sum of PBBs | mg/kg | With reference to IEC 62321-6:2015 (Determination of PBB and PBDE by GC-MS) | ND | ND | - |
| Monobromobiphenyl | mg/kg | | ND | ND | 5 |
| Dibromobiphenyl | mg/kg | | ND | ND | 5 |
| Tribromobiphenyl | mg/kg | | ND | ND | 5 |
| Tetrabromobiphenyl | mg/kg | | ND | ND | 5 |
| Pentabromobiphenyl | mg/kg | | ND | ND | 5 |
| Hexabromobiphenyl | mg/kg | | ND | ND | 5 |
| Heptabromobiphenyl | mg/kg | | ND | ND | 5 |
| Octabromobiphenyl | mg/kg | | ND | ND | 5 |
| Nonabromobiphenyl | mg/kg | | ND | ND | 5 |
| Decabromobiphenyl | mg/kg | | ND | ND | 5 |
| Sum of PBDEs | mg/kg | | ND | ND | - |
| Monobromodiphenyl ether | mg/kg | | ND | ND | 5 |
| Dibromodiphenyl ether | mg/kg | | ND | ND | 5 |
| Tribromodiphenyl ether | mg/kg | ND | ND | 5 | |
| Tetrabromodiphenyl ether | mg/kg | ND | ND | 5 | |
| Pentabromodiphenyl ether | mg/kg | ND | ND | 5 | |
| Hexabromodiphenyl ether | mg/kg | ND | ND | 5 | |
| Heptabromodiphenyl ether | mg/kg | ND | ND | 5 | |
| Octabromodiphenyl ether | mg/kg | ND | ND | 5 | |
| Nonabromodiphenyl ether | mg/kg | ND | ND | 5 | |
| Decabromodiphenyl ether | mg/kg | ND | ND | 5 | |
| Bis (2-ethylhexyl) Phthalate (DEHP) | mg/kg | IEC 62321-8:2017 (Determination of DEHP, BBP, DBP and DIBP by GC-MS) | ND | ND | 50 |
| Butyl Benzyl Phthalate (BBP) | mg/kg | | ND | ND | 50 |
| Dibutyl Phthalate (DBP) | mg/kg | | ND | ND | 50 |
| Diisobutyl Phthalate (DIBP) | mg/kg | | ND | ND | 50 |

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| Test Item(s): | Unit | Test Method | Results | | MDL |
|----------------------------|-------|--|---------|-----|-----|
| | | | 5 | 6 | |
| Cadmium (Cd) | mg/kg | With reference to IEC 62321-5:2013 | ND | ND | 2 |
| Lead (Pb) | mg/kg | (Determination of Cd and Pb by ICP-OES and /or ICP-MS) | 4.43 | ND | 2 |
| Mercury (Hg) | mg/kg | With reference to IEC 62321-4:2013+A1:2017 (Determination of Hg by ICP-OES and/ or ICP-MS) | ND | ND | 2 |
| Hexavalent Chromium (CrVI) | mg/kg | With reference to IEC 62321-7-2:2017 (Determination of CrVI by UV-Vis) | ND | ND* | 8 |

Sample Description:

1. Bag 19 – White Inner FEP Jacket in between Braid and Copper Conductor
2. Bag 19 – Black Outer TPU Jacket
3. Bag 19 – White Inner PTFE Wrap
4. Bag 19 – White Outer PTFE Wrap
5. Bag 19 – Tin Plated Copper Conductor
6. Bag 19 – Copper Braid

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
http://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP_ORG_ID,FSP_LANG_ID:1258637,25

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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.

| Test Item(s): | Unit | Results (ppm) | | Reporting Limit (ppm) |
|---------------|-------|---------------|--------|-----------------------|
| | | 1 | 2 | |
| Fluorine (F) | mg/kg | 2250 | 208000 | 50 |
| Chlorine (Cl) | mg/kg | ND | ND | 50 |
| Bromine (Br) | mg/kg | ND | ND | 50 |
| Iodine (I) | mg/kg | ND | ND | 50 |

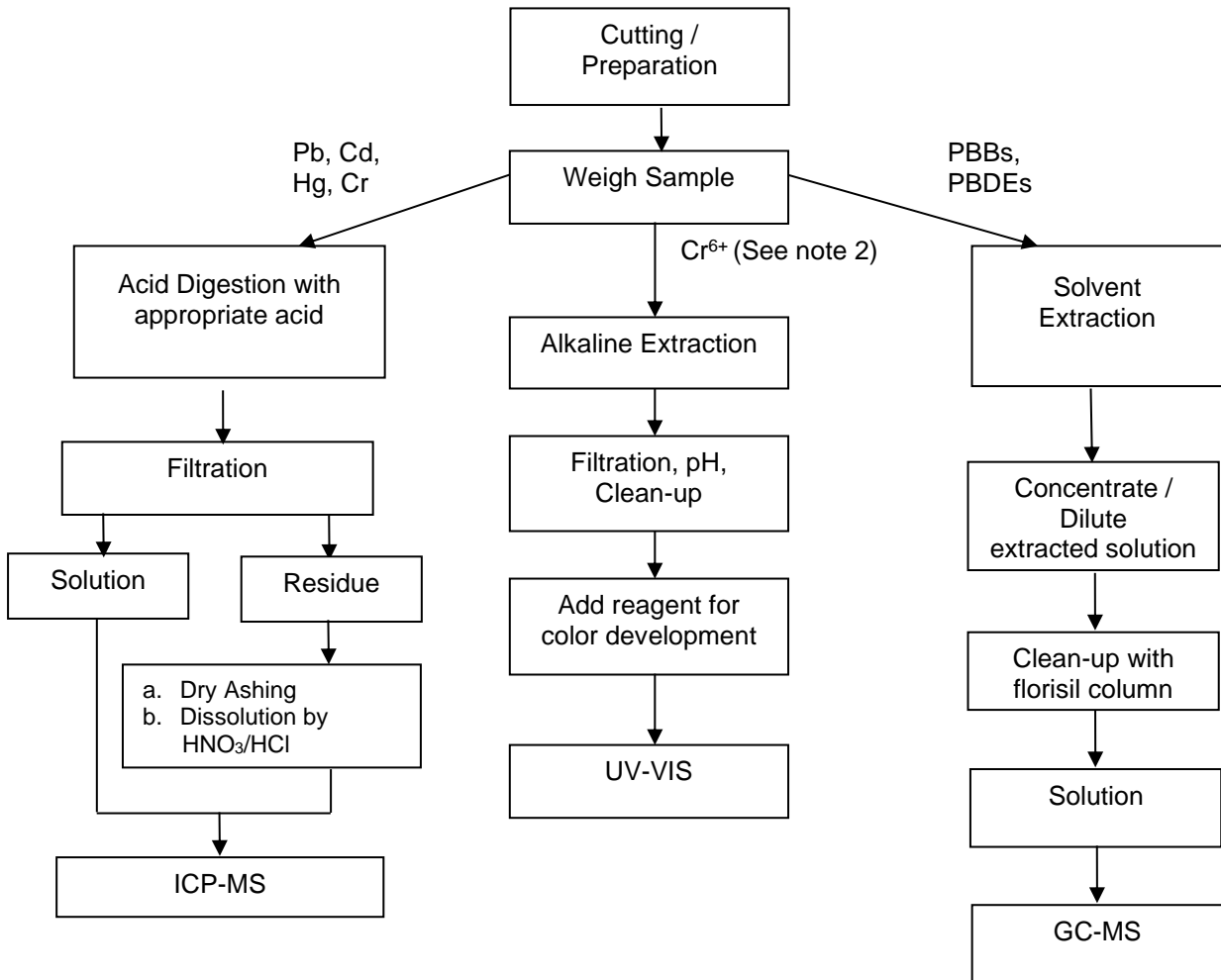
Sample Description:

1. Bag 19 – Black Outer TPU Jacket
2. Bag 19 – White Outer PTFE Wrap

- 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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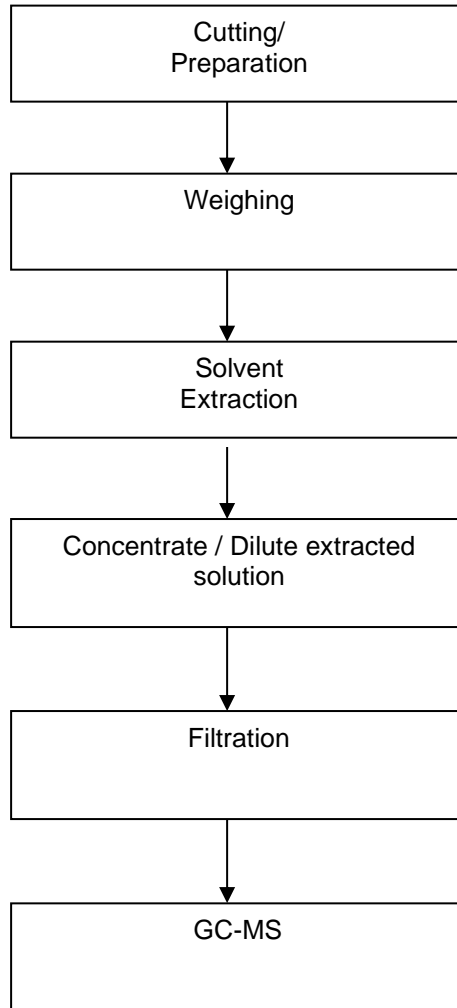
Flowchart for RoHS:



- Note : 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. Cr⁶⁺ is performed only when total Cr is detected

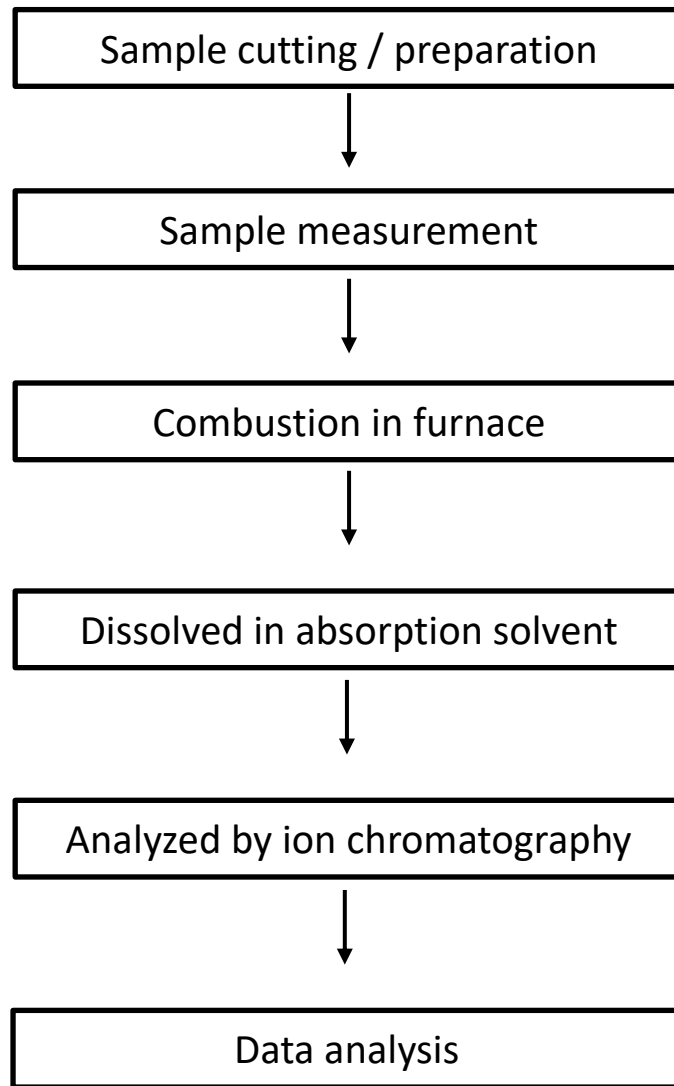
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Flowchart for Phthalates:



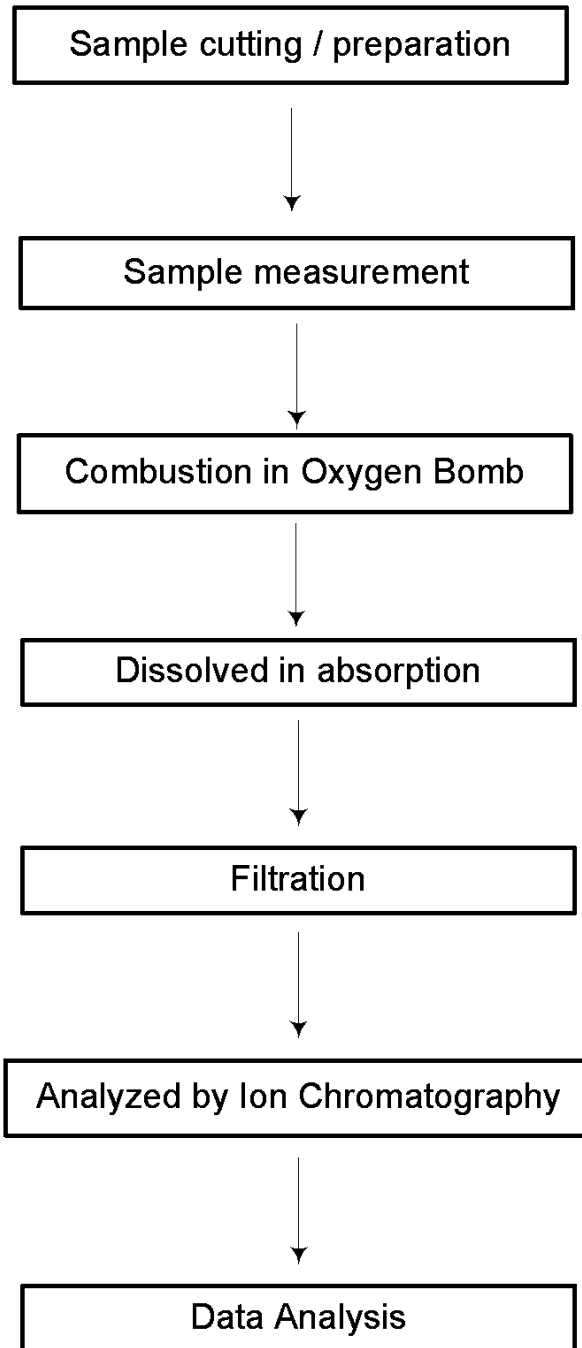
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Flow Chart of Halogen Test by Combustion Ion Chromatography:



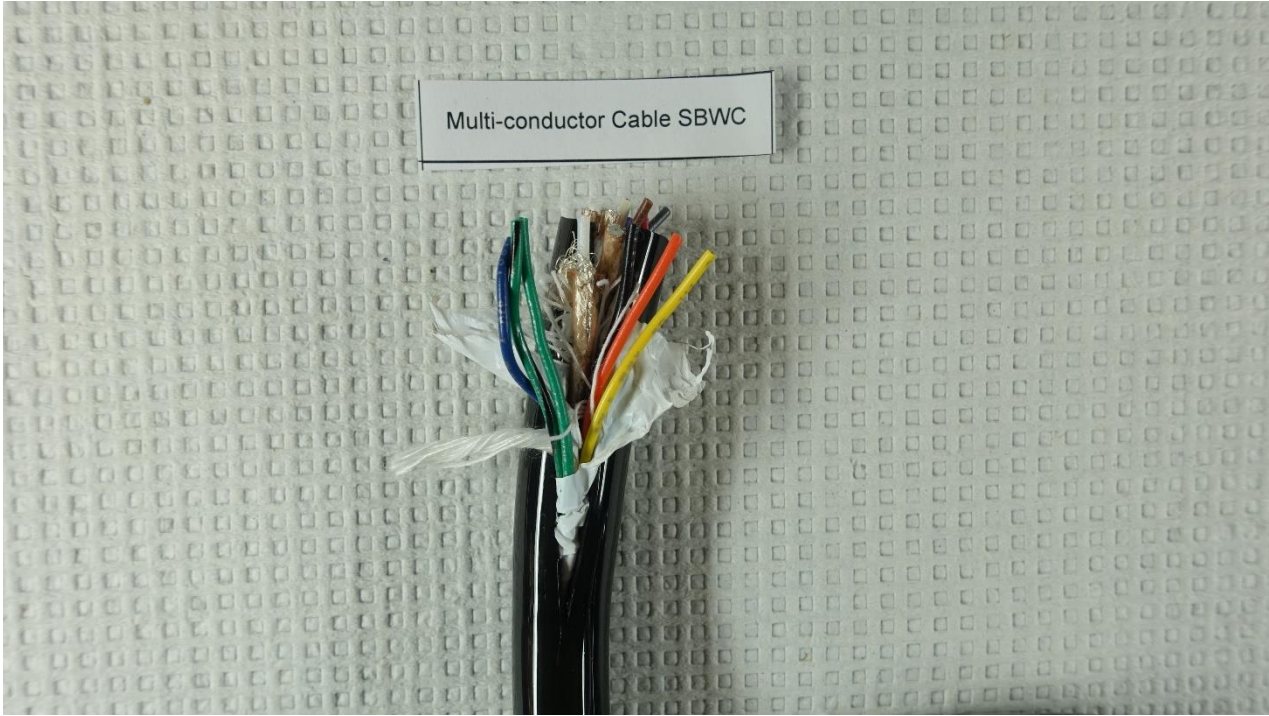
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Halogen Testing Flow Chart (EN 14582):



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Sample Photo(s):



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

*** End of Report ***

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