

Samtec
520 Park East Blvd.
New Albany, IN 47151
United States

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

Black Molded Polymer
Model/Part No.: Vectra E-150
Country of Destination: USA

Sample Received Date: **6/28/2018**

Testing Period: **6/29/2018 – 7/20/2018**

Test Requested : Please refer to the result summary.

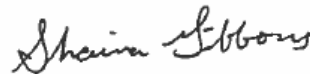
Test Method & Results : Please refer to next page(s).

Result Summary :

| Test Requested | Comment |
|---|------------------|
| 1. RoHS Directive 2011/65/EU Annex II | PASS |
| 2. Directive (EU) 2015/863 of amending RoHS Directive 2011/65/EU | PASS |
| 3. Halogen Content (Cl, Br, I, F) of the submitted sample(s) with reference to BS EN 14582:2016 | See Test Results |
| 4. Total Phosphorous Content (as requested by Client) | See Test Results |

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

Prepared By:

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1. RoHS Directive 2011/65/EU Annex II

| Test Item(s): | Unit | Test Method | Results | MDL | Limit |
|----------------------------|-------|--|---------|-----|-------|
| | | | 1 | | |
| Cadmium(Cd) | mg/kg | With reference to IEC 62321-5:2013 (Determination of Cd and Pb by ICP-OES and /or ICP-MS) | ND | 2 | 100 |
| Lead (Pb) | mg/kg | | 4.96 | 2 | 1000 |
| Mercury (Hg) | mg/kg | With reference to IEC 62321-4:2013 (Determination of Hg by ICP-OES and/ or ICP-MS) | ND | 2 | 1000 |
| Hexavalent Chromium (CrVI) | mg/kg | With reference to IEC 62321; EPA 3060A (Determination of CrVI by UV-VIS) | ND* | 2 | 1000 |
| Sum of PBBs | mg/kg | With reference to IEC 62321-6:2015 (Determination of PBB and PBDE by GC-MS) | ND | - | 1000 |
| Monobromobiphenyl | mg/kg | | ND | 5 | - |
| Dibromobiphenyl | mg/kg | | ND | 5 | - |
| Tribromobiphenyl | mg/kg | | ND | 5 | - |
| Tetrabromobiphenyl | mg/kg | | ND | 5 | - |
| Hexabromobiphenyl | mg/kg | | ND | 5 | - |
| Pentabromobiphenyl | mg/kg | | ND | 5 | - |
| Heptabromobiphenyl | mg/kg | | ND | 5 | - |
| Octabromobiphenyl | mg/kg | | ND | 5 | - |
| Nonabromobiphenyl | mg/kg | | ND | 5 | - |
| Decabromobiphenyl | mg/kg | | ND | 5 | - |
| Sum of PBDEs | mg/kg | | ND | - | 1000 |
| Monobromodiphenyl ether | mg/kg | | ND | 5 | - |
| Dibromodiphenyl ether | mg/kg | | ND | 5 | - |
| Tribromodiphenyl ether | mg/kg | | ND | 5 | - |
| Tetrabromodiphenyl ether | mg/kg | | ND | 5 | - |
| Pentabromodiphenyl ether | mg/kg | | ND | 5 | - |
| Hexabromodiphenyl ether | mg/kg | | ND | 5 | - |
| Heptabromodiphenyl ether | mg/kg | | ND | 5 | - |
| Octabromodiphenyl ether | mg/kg | | ND | 5 | - |
| Nonabromodiphenyl ether | mg/kg | ND | 5 | - | |
| Decabromodiphenyl ether | mg/kg | ND | 5 | - | |
| Conclusion | / | / | PASS | / | / |

Sample Description:

1. Black Molded Polymer - Model No.: Vectra E-150

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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. Directive (EU) 2015/863 of amending RoHS Directive 2011/65/EU

| Test Item(s): | Unit | Test Method | Results | MDL | Limit |
|-------------------------------------|-------|---|---------|-----|-------|
| | | | 1 | | |
| Bis (2-ethylhexyl) Phthalate (DEHP) | mg/kg | IEC 62321-8:2017 (Determination of DEHP, BBP, DBP and DIBP by GC-MS) | ND | 50 | 1000 |
| Butyl benzyl Phthalate (BBP) | mg/kg | | ND | 50 | 1000 |
| Dibutyl Phthalate (DBP) | mg/kg | | ND | 50 | 1000 |
| Diisobutyl Phthalate (DIBP) | mg/kg | | ND | 50 | 1000 |
| Conclusion | / | / | PASS | / | / |

Sample Description:

1. Black Molded Polymer - Model No.: Vectra E-150

Note :

- (a) mg/kg = ppm ; 0.1wt% = 1000ppm
- (b) ND= not detected
- (c) MDL = Method Detection Limit
- (d) - = not regulated
- (e) 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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3. Halogen Content (Cl, Br, I, F) of the submitted sample(s) with reference to BS EN 14582:2016:

With reference to **BS EN 14582:2016** "Characterization of waste – Halogen and sulfur content – Oxygen Combustion in closed systems and determination methods". Analysis was performed by Ion Chromatography.

| Test Items | Unit | Method Detection Limit | 1 |
|---|-------|------------------------|-------------|
| Halogen – Chlorine (Cl) CAS # 007782-50-5 | mg/kg | 50 | 81.5 |
| Halogen – Bromine (Br) CAS # 007726-95-6 | mg/kg | 50 | ND |
| Halogen – Fluorine (F) CAS # 007782-41-4 | mg/kg | 50 | 493 |
| Halogen – Iodine (I) CAS # 007553-56-2 | mg/kg | 50 | ND |

Sample Description:

1. Black Molded Polymer - Model No.: Vectra E-150

Note: 1. mg/kg = ppm
2. ND = Not Detected, reported when the reading is less than the detection limit value.

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4. Total Phosphorous Content (as requested by Client)

Method: EPA 3050B/EPA 3052 followed by analysis using Inductively Coupled Argon Plasma Spectrometry.

| Test Item | Result (mg/kg) | | Detection Limit (mg/kg) |
|-----------------|----------------|--|-------------------------|
| | 1 | | |
| Phosphorous (P) | 68.9 | | 20 |

Sample Description:

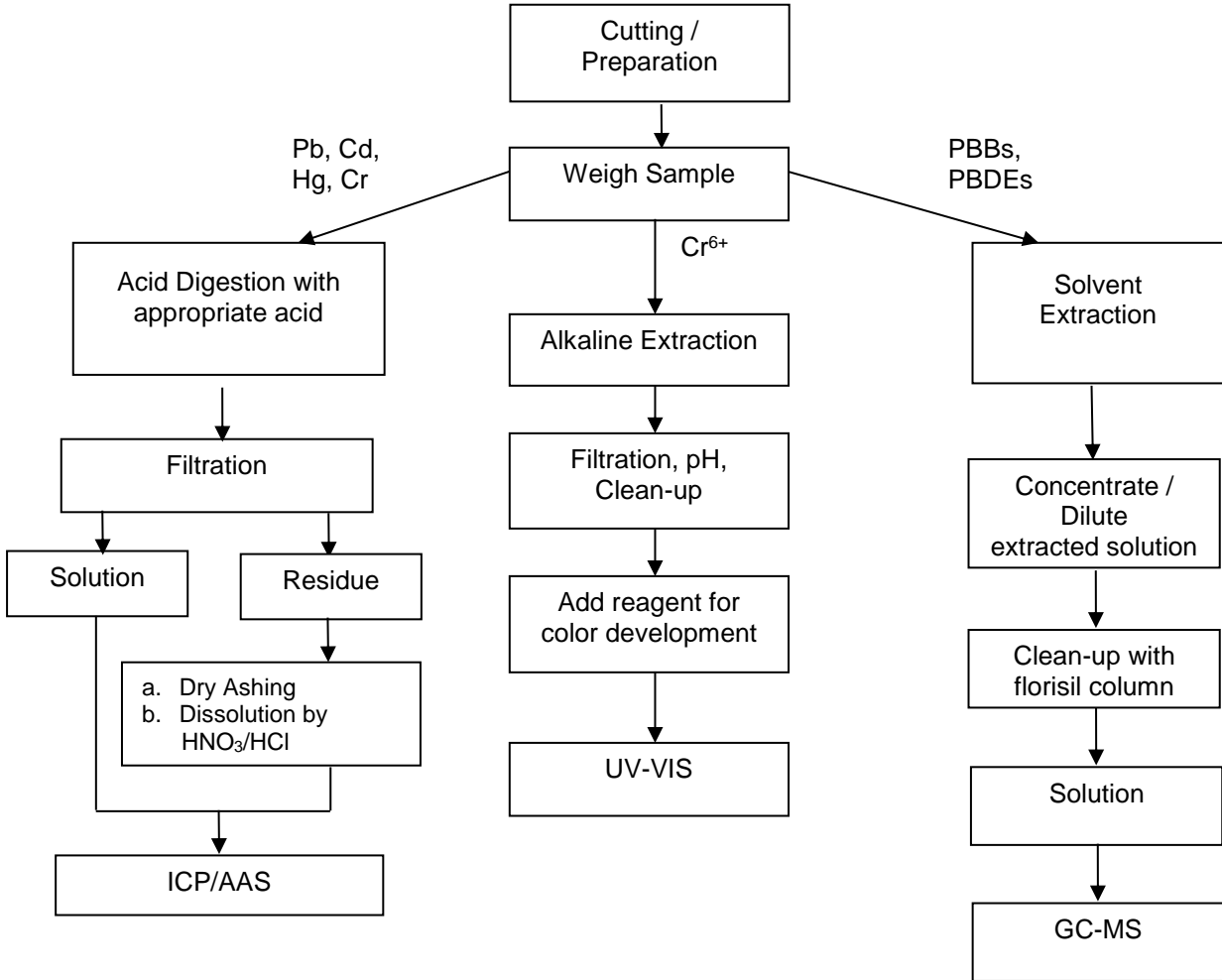
1. Black Molded Polymer - Model No.: Vectra E-150

Note :

1. ND = Not Detected = denoted less than reporting limit
2. 1 mg/kg = 1 ppm

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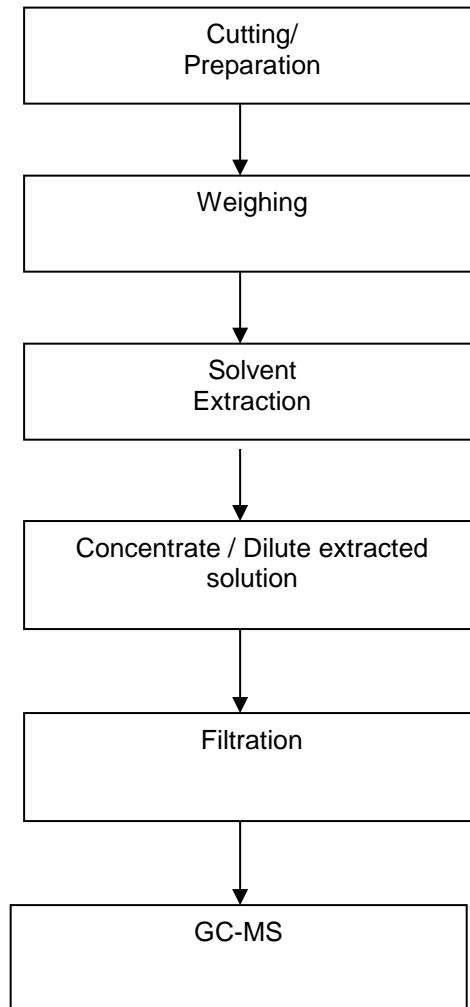
Flowchart for RoHS Testing:



- Note : 1. Cr⁶⁺ is performed only when total Cr is detected
 2. The Cr, Cd, Pb and Hg contents test on polymeric samples were dissolved totally by pre-conditioning method according to above flow chart.

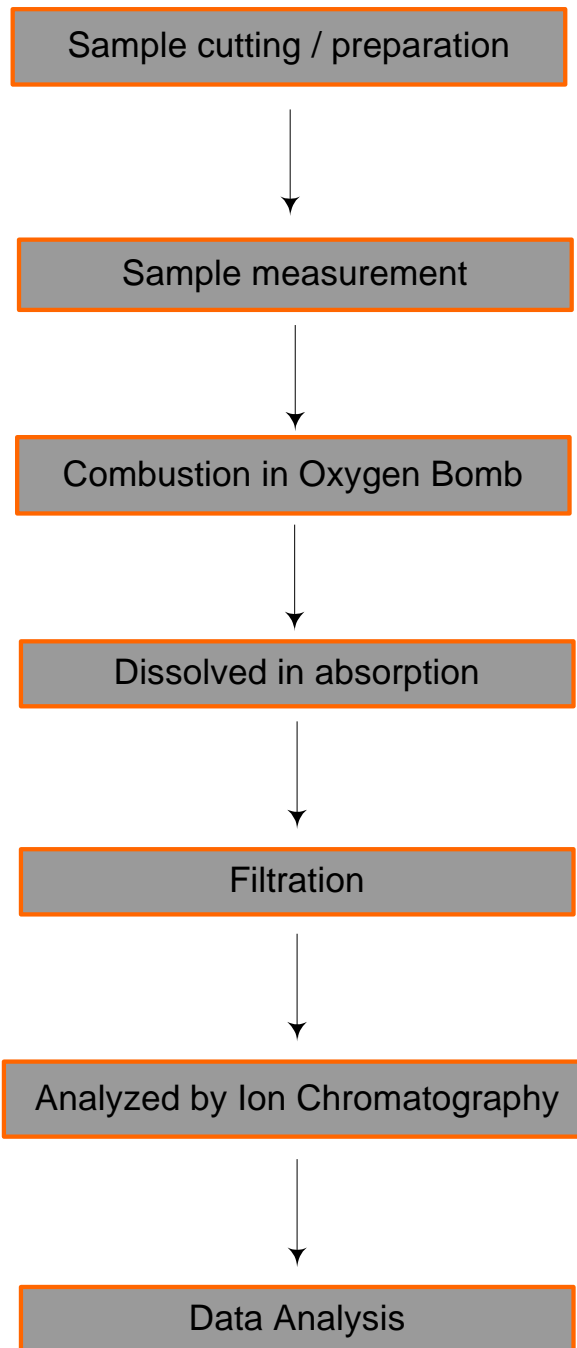
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Flowchart for Phthalates



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Halogen Testing Flow Chart



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Sample Photo(s):

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

*** End of Report ***

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