

## Test Report

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TOWERJAZZ SEMICONDUCTOR  
RAMAT GAVRIEL INDUSTRIAL AREA MIGDAL HAEMEK ISRAEL 23105

The following samples was/were submitted and identified by/on behalf of the applicant as :


Sample Submitted By : TOWERJAZZ SEMICONDUCTOR  
Sample Description : SILICON WAFERS  
Style/Item No. : 0.18 $\mu$  8INCH TOWERJAZZ MH FAB2  
Buyer/Order No. : 4500288549  
Sample Receiving Date : 2019/12/26  
Testing Period : 2019/12/26 to 2020/01/07

=====  
**Test Requested :**

- (1) As specified by client, with reference to RoHS 2011/65/EU Annex II and amending Directive (EU) 2015/863 to determine Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP contents in the submitted sample(s).
- (2) Please refer to next pages for the other item(s).

**Test Result(s) :** Please refer to following pages.

**Conclusion :** (1) Based on the performed tests on submitted sample(s), the test results of Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP comply with the limits as set by RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.

  
Troy Chang / Manager - Tech  
Signed for and behalf of  
SGS TAIWAN LTD.  
Chemical Laboratory - Taipei



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## Test Result(s)

PART NAME No.1 : SILICON WAFERS

| Test Item(s)               | Unit  | Method   | MDL  | Result | Limit |
|----------------------------|-------|--|------|--------|-------|
|                            |       |  |      | No.1   |       |
| Cadmium (Cd)               | mg/kg | With reference to IEC 62321-5 (2013) and performed by ICP-OES.         | 2    | n.d.   | 100   |
| Lead (Pb)                  | mg/kg | With reference to IEC 62321-5 (2013) and performed by ICP-OES.         | 2    | n.d.   | 1000  |
| Mercury (Hg)               | mg/kg | With reference to IEC 62321-4:2013+AMD1:2017 and performed by ICP-OES. | 2    | n.d.   | 1000  |
| Hexavalent Chromium Cr(VI) | mg/kg | With reference to IEC 62321-7-2 (2017) and performed by UV-VIS.        | 8    | n.d.   | 1000  |
| <b>Sum of PBBs</b>         | mg/kg | With reference to IEC 62321-6 (2015) and performed by GC/MS.           | -    | n.d.   | 1000  |
| Monobromobiphenyl          | mg/kg |  | 5    | n.d.   | -     |
| Dibromobiphenyl            | mg/kg |  | 5    | n.d.   | -     |
| Tribromobiphenyl           | mg/kg |  | 5    | n.d.   | -     |
| Tetrabromobiphenyl         | mg/kg |  | 5    | n.d.   | -     |
| Pentabromobiphenyl         | mg/kg |  | 5    | n.d.   | -     |
| Hexabromobiphenyl          | mg/kg |  | 5    | n.d.   | -     |
| Heptabromobiphenyl         | mg/kg |  | 5    | n.d.   | -     |
| Octabromobiphenyl          | mg/kg |  | 5    | n.d.   | -     |
| Nonabromobiphenyl          | mg/kg |  | 5    | n.d.   | -     |
| Decabromobiphenyl          | mg/kg |  | 5    | n.d.   | -     |
| <b>Sum of PBDEs</b>        | mg/kg |  | -    | n.d.   | 1000  |
| Monobromodiphenyl ether    | mg/kg |  | 5    | n.d.   | -     |
| Dibromodiphenyl ether      | mg/kg |  | 5    | n.d.   | -     |
| Tribromodiphenyl ether     | mg/kg | 5  | n.d. | -      |       |
| Tetrabromodiphenyl ether   | mg/kg | 5  | n.d. | -      |       |
| Pentabromodiphenyl ether   | mg/kg | 5  | n.d. | -      |       |
| Hexabromodiphenyl ether    | mg/kg | 5  | n.d. | -      |       |
| Heptabromodiphenyl ether   | mg/kg | 5  | n.d. | -      |       |
| Octabromodiphenyl ether    | mg/kg | 5  | n.d. | -      |       |
| Nonabromodiphenyl ether    | mg/kg | 5  | n.d. | -      |       |
| Decabromodiphenyl ether    | mg/kg | 5  | n.d. | -      |       |

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| Test Item(s)  | Unit  | Method   | MDL | Result   | Limit |
|---|-------|--|-----|----------|-------|
|   |       |  |     | No.1     |       |
| Polychlorinated Biphenyls (PCBs)<br>(CAS No.: 1336-36-3)                                | mg/kg | With reference to US EPA 3550C (2007).<br>Analysis was performed by GC/MS.   | 0.5 | n.d.     | -     |
| Polychlorinated Terphenyls<br>(PCTs)  | mg/kg | With reference to US EPA 3550C (2007).<br>Analysis was performed by GC/MS.   | 0.5 | n.d.     | -     |
| Polychlorinated Naphthalene<br>(PCNs)   | mg/kg | With reference to US EPA 3550C (2007).<br>Analysis was performed by GC/MS.   | 5   | n.d.     | -     |
| Alkanes, C10-13, chloro (Short<br>Chain Chlorinated Paraffins)<br>(CAS No.: 85535-84-8) | mg/kg | With reference to US EPA 3550C (2007).<br>Analysis was performed by GC/MS.   | 100 | n.d.     | -     |
| <b>Asbestos</b>   |       |  |     |          |       |
| Chrysotile (CAS No.: 12001-29-5)  | %     | With reference to EPA 600/R-93/116 (1993).<br>Analysis was performed by Stereo Microscope<br>(SM), Dispersion Staining Polarized Light<br>Microscope (DS-PLM) and X-ray Diffraction<br>Spectrometer (XRD). | -   | Negative | -     |
| Amosite (CAS No.: 12172-73-5)   | %     |  | -   | Negative | -     |
| Crocidolite (CAS No.: 12001-28-4)   | %     |  | -   | Negative | -     |
| Anthophyllite (CAS No.: 77536-67-5)   | %     |  | -   | Negative | -     |
| Tremolite (CAS No.: 77536-68-6)   | %     |  | -   | Negative | -     |
| Actinolite (CAS No.: 77536-66-4)  | %     |  | -   | Negative | -     |
| <b>AZO</b>  |       |  |     |          |       |
| 1): 4-AMINODIPHENYL (CAS<br>No.: 92-67-1)   | mg/kg | With reference to LFGB 82.02-2 (2013).<br>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 (2013).<br>Analysis was performed by GC/MS.   | 3   | n.d.     | -     |
| 3): 4-CHLORO-O-TOLUIDINE<br>(CAS No.: 95-69-2)  | mg/kg | With reference to LFGB 82.02-2 (2013).<br>Analysis was performed by GC/MS.   | 3   | n.d.     | -     |
| 4): 2-NAPHTHYLAMINE (CAS<br>No.: 91-59-8)   | mg/kg | With reference to LFGB 82.02-2 (2013).<br>Analysis was performed by GC/MS.   | 3   | n.d.     | -     |
| 5): O-AMINOAZOTOLUENE<br>(CAS No.: 97-56-3)   | mg/kg | With reference to LFGB 82.02-2 (2013).<br>Analysis was performed by GC/MS.   | 3   | n.d.     | -     |
| 6): 2-AMINO-4-NITROTOLUENE<br>(CAS No.: 99-55-8)  | mg/kg | With reference to LFGB 82.02-2 (2013).<br>Analysis was performed by GC/MS.   | 3   | n.d.     | -     |

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| Test Item(s)   | Unit  | Method  | MDL | Result | Limit |
|--|-------|---|-----|--------|-------|
|  |       |   |     | No.1   |       |
| 7): P-CHLOROANILINE (CAS No.: 106-47-8)                            | mg/kg | With reference to LFGB 82.02-2 (2013). 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 (2013). Analysis was performed by GC/MS. | 3   | n.d.   | -     |
| 9): 4,4'-DIAMINODIPHENYLMETHANE (CAS No.: 101-77-9)                | mg/kg | With reference to LFGB 82.02-2 (2013). 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 (2013). 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 (2013). Analysis was performed by GC/MS. | 3   | n.d.   | -     |
| 12): 3,3'-DIMETHYLBENZIDINE (CAS No.: 119-93-7)                    | mg/kg | With reference to LFGB 82.02-2 (2013). Analysis was performed by GC/MS. | 3   | n.d.   | -     |
| 13): 3,3'-DIMETHYL-4,4'-DIAMINODIPHENYLMETHANE (CAS No.: 838-88-0) | mg/kg | With reference to LFGB 82.02-2 (2013). Analysis was performed by GC/MS. | 3   | n.d.   | -     |
| 14): P-CRESIDINE (2-METHOXY-5-METHYLANILINE) (CAS No.: 120-71-8)   | mg/kg | With reference to LFGB 82.02-2 (2013). Analysis was performed by GC/MS. | 3   | n.d.   | -     |
| 15): 4,4'-METHYLENE-BIS-(2-CHLOROANILINE) (CAS No.: 101-14-4)      | mg/kg | With reference to LFGB 82.02-2 (2013). Analysis was performed by GC/MS. | 3   | n.d.   | -     |
| 16): 4,4'-OXYDIANILINE (CAS No.: 101-80-4)                         | mg/kg | With reference to LFGB 82.02-2 (2013). Analysis was performed by GC/MS. | 3   | n.d.   | -     |
| 17): 4,4'-THIODIANILINE (CAS No.: 139-65-1)                        | mg/kg | With reference to LFGB 82.02-2 (2013). Analysis was performed by GC/MS. | 3   | n.d.   | -     |
| 18): O-TOLUIDINE (CAS No.: 95-53-4)                                | mg/kg | With reference to LFGB 82.02-2 (2013). Analysis was performed by GC/MS. | 3   | n.d.   | -     |
| 19): 2,4-TOLUYLENEDIAMINE (CAS No.: 95-80-7)                       | mg/kg | With reference to LFGB 82.02-2 (2013). Analysis was performed by GC/MS. | 3   | n.d.   | -     |
| 20): 2,4,5-TRIMETHYLANILINE (CAS No.: 137-17-7)                    | mg/kg | With reference to LFGB 82.02-2 (2013). Analysis was performed by GC/MS. | 3   | n.d.   | -     |
| 21): O-ANISIDINE (CAS No.: 90-04-0)                                | mg/kg | With reference to LFGB 82.02-2 (2013). Analysis was performed by GC/MS. | 3   | n.d.   | -     |

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| Test Item(s)   | Unit  | Method  | MDL   | Result | Limit |
|--|-------|---|-------|--------|-------|
|  |       |   |       | No.1   |       |
| 22): 4-AMINOAZOBENZENE (CAS No.: 60-09-3)  | mg/kg | With reference to LFGB 82.02-2 (2013). Analysis was performed by GC/MS.   | 3     | n.d.   | -     |
| 23): 2,4-XYLIDINE (CAS No.: 95-68-1)   | mg/kg | With reference to LFGB 82.02-2 (2013). Analysis was performed by GC/MS.   | 3     | n.d.   | -     |
| 24): 2,6-XYLIDINE (CAS No.: 87-62-7)   | mg/kg | With reference to LFGB 82.02-2 (2013). Analysis was performed by GC/MS.   | 3     | n.d.   | -     |
| Arsenic (As)   | mg/kg | With reference to US EPA 3052 (1996). Analysis was performed by ICP-OES.  | 2     | n.d.   | -     |
| Diarsenic trioxide (As <sub>2</sub> O <sub>3</sub> ) (CAS No.: 1327-53-3)  | mg/kg | Calculated from the result of Arsenic.                                    | 2 (▲) | n.d.   | -     |
| Diarsenic pentaoxide (As <sub>2</sub> O <sub>5</sub> )   | mg/kg | Calculated from the result of Arsenic.                                    | 2 (▲) | n.d.   | -     |
| Formaldehyde (CAS No.: 50-00-0)  | mg/kg | With reference to ISO 17226-1 (2018). Analysis was performed by HPLC/DAD. | 3     | n.d.   | -     |
| Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified (α-HBCDD, β-HBCDD, γ-HBCDD) (CAS No.: 25637-99-4 and 3194-55-6 (134237-51-7, 134237-50-6, 134237-52-8)) | mg/kg | With reference to IEC 62321 (2008). Analysis was performed by GC/MS.      | 5     | n.d.   | -     |
| Perchlorate (CAS No.: 14797-73-0)  | µg/g  | Analysis was performed by IC.   | 0.1   | 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.   | -     |
| 2-benzotriazol-2-yl-4,6-di-tert-butylphenol (UV-320) (CAS No.: 3846-71-7)  | mg/kg | With reference to US EPA 3550C (2007). Analysis was performed by GC/MS.   | 5     | n.d.   | -     |
| DBP (Dibutyl phthalate) (CAS No.: 84-74-2)   | mg/kg | With reference to IEC 62321-8 (2017). Analysis was performed by GC/MS.    | 50    | n.d.   | 1000  |
| DEHP (Di- (2-ethylhexyl) phthalate) (CAS No.: 117-81-7)  | mg/kg | With reference to IEC 62321-8 (2017). Analysis was performed by GC/MS.    | 50    | n.d.   | 1000  |
| DNOP (Di-n-octyl phthalate) (CAS No.: 117-84-0)  | mg/kg | With reference to IEC 62321-8 (2017). Analysis was performed by GC/MS.    | 50    | n.d.   | -     |

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| Test Item(s)  | Unit  | Method  | MDL      | Result | Limit |
|---|-------|---|----------|--------|-------|
|   |       |   |          | No.1   |       |
| DINP (Di-isononyl phthalate)<br>(CAS No.: 28553-12-0; 68515-48-0)     | mg/kg | With reference to IEC 62321-8 (2017).<br>Analysis was performed by GC/MS.   | 50       | n.d.   | -     |
| DIDP (Di-isodecyl phthalate)<br>(CAS No.: 26761-40-0; 68515-49-1)     | mg/kg | With reference to IEC 62321-8 (2017).<br>Analysis was performed by GC/MS.   | 50       | n.d.   | -     |
| BBP (Butyl Benzyl phthalate)<br>(CAS No.: 85-68-7)                    | mg/kg | With reference to IEC 62321-8 (2017).<br>Analysis was performed by GC/MS.   | 50       | n.d.   | 1000  |
| DIBP (Di-isobutyl phthalate) (CAS No.: 84-69-5)                       | mg/kg | With reference to IEC 62321-8 (2017).<br>Analysis was performed by GC/MS.   | 50       | n.d.   | 1000  |
| Tributyl Tin (TBT)  | mg/kg | With reference to ISO 17353 (2004). Analysis was performed by GC/FPD.   | 0.03     | n.d.   | -     |
| Diphenyltin   | mg/kg | With reference to ISO 17353 (2004). Analysis was performed by GC/FPD.   | 0.03     | n.d.   | -     |
| Bis(tributyltin)oxide (TBTO) (CAS No.: 56-35-9)                       | mg/kg | With reference to ISO 17353 (2004). Analysis was performed by GC/FPD. Calculated from the result of Tributyl Tin (TBT). | 0.03 (▲) | n.d.   | -     |
| Dibutyl Tin (DBT)   | mg/kg | With reference to ISO 17353 (2004). Analysis was performed by GC/FPD.   | 0.03     | n.d.   | -     |
| Diocetyl Tin (DOT)  | mg/kg | With reference to ISO 17353 (2004). Analysis was performed by GC/FPD.   | 0.03     | n.d.   | -     |
| Bromomethane (CAS No.: 74-83-9)                                       | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS.  | 1        | n.d.   | -     |
| Dimethyl Fumarate (CAS No.: 624-49-7)                                 | mg/kg | With reference to US EPA 3550C (2007).<br>Analysis was performed by GC/MS.  | 0.1      | n.d.   | -     |
| Cobalt dichloride (CAS No.: 7646-79-9)                                | mg/kg | SGS In-House method-RSTS-EE-SVHC-007.<br>Analyzed by ICP-OES.   | 50       | n.d.   | -     |
| Cobalt (Co)   | mg/kg | With reference to US EPA 3052 (1996).<br>Analysis was performed by ICP-OES.   | 2        | n.d.   | -     |
| Hexavalent Chromium Cr(VI)  | mg/kg | SGS In-House method-RSTS-EE-SVHC-007.<br>Analyzed by UV-Vis.  | 50       | n.d.   | -     |
| Strontium chromate*** (CAS No.: 7789-06-2)                            | mg/kg | SGS In-House method-RSTS-EE-SVHC-007.<br>Analyzed by UV-VIS.***   | -        | n.d.   | -     |
| Potassium hydroxyoctaoxodizincatedi-chromate*** (CAS No.: 11103-86-9) | mg/kg | SGS In-House method-RSTS-EE-SVHC-007.<br>Analyzed by UV-VIS.***   | -        | n.d.   | -     |

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| Test Item(s)  | Unit  | Method  | MDL | Result | Limit |
|---|-------|---|-----|--------|-------|
|   |       |   |     | No.1   |       |
| Pentazinc chromate octahydroxide*** (CAS No.: 49663-84-5)   | mg/kg | SGS In-House method-RSTS-EE-SVHC-007. Analyzed by UV-VIS.***            | -   | n.d.   | -     |
| Lead chromate*** (CAS No.: 7758-97-6) (※5)  | mg/kg | SGS In-House method-RSTS-EE-SVHC-007. Analyzed by UV-VIS, ICP-OES.      | -   | n.d.   | -     |
| Lead chromate molybdate sulphate red (C.I. Pigment Red 104)*** (CAS No.: 12656-85-8) (※5)             | mg/kg | SGS In-House method-RSTS-EE-SVHC-007. Analyzed by UV-VIS, ICP-OES.      | -   | n.d.   | -     |
| Lead sulfochromate yellow (C.I. Pigment Yellow 34)*** (CAS No.: 1344-37-2) (※5)                       | mg/kg | SGS In-House method-RSTS-EE-SVHC-007. Analyzed by UV-VIS, ICP-OES.      | -   | n.d.   | -     |
| Lead (Pb)   | mg/kg | SGS In-House method-RSTS-EE-SVHC-007. Analyzed by ICP-OES.              | 50  | n.d.   | -     |
| Tris (2-chloroethyl) phosphate (TCEP) (CAS No.: 115-96-8)   | mg/kg | With reference to US EPA 3550C (2007). Analysis was performed by GC/MS. | 5   | n.d.   | -     |
| Boron (B) (※2)  | mg/kg | SGS In-House method-RSTS-EE-SVHC-007. Analyzed by ICP-OES.              | 50  | n.d.   | -     |
| Boric acid*** (CAS No.: 10043-35-3; 11113-50-1)   | mg/kg | SGS In-House method-RSTS-EE-SVHC-007. Analyzed by ICP-OES.***           | -   | n.d.   | -     |
| Disodium tetraborate, anhydrous*** (CAS No.: 1303-96-4, 1330-43-4, 12179-04-3)                        | mg/kg | SGS In-House method-RSTS-EE-SVHC-007. Analyzed by ICP-OES.***           | -   | n.d.   | -     |
| Tetraboron disodium heptaoxide, hydrate (CAS No.: 12267-73-1) (* 2)                                   | mg/kg | SGS In-House method-RSTS-EE-SVHC-007. Analyzed by ICP-OES.              | -   | n.d.   | -     |
| DIHP (1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich) (CAS No.: 71888-89-6)     | mg/kg | With reference to IEC 62321-8 (2017). Analysis was performed by GC/MS.  | 50  | n.d.   | -     |
| DHNUP (1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters) (CAS No.: 68515-42-4) | mg/kg | With reference to IEC 62321-8 (2017). Analysis was performed by GC/MS.  | 50  | n.d.   | -     |
| DMEP (Bis (2-methoxyethyl) phthalate) (CAS No.: 117-82-8)   | mg/kg | With reference to IEC 62321-8 (2017). Analysis was performed by GC/MS.  | 50  | n.d.   | -     |
| Bis(2-methoxyethyl) ether (CAS No.: 111-96-6)   | mg/kg | SGS In-House method-RSTS-EE-SVHC-007. Analyzed by GC/MS.                | 500 | n.d.   | -     |

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| Test Item(s)  | Unit  | Method  | MDL | Result   | Limit |
|---|-------|---|-----|----------|-------|
|   |       |   |     | No.1     |       |
| N,N-dimethylacetamide (DMAC)<br>(CAS No.: 127-19-5)                                 | mg/kg | With reference to US EPA 3550C (2007).<br>Analysis was performed by GC/MS.            | 10  | n.d.     | -     |
| 4-(1,1,3,3-tetramethylbutyl)<br>phenol, (4-tert-Octylphenol) (CAS<br>No.: 140-66-9) | mg/kg | With reference to US EPA 3550C (2007).<br>Analysis was performed by GC/MS.            | 50  | n.d.     | -     |
| Beryllium (Be)  | mg/kg | With reference to US EPA 3052 (1996).<br>Analysis was performed by ICP-OES.           | 2   | n.d.     | -     |
| Hexabromobenzene  | mg/kg | With reference to US EPA 3550C (2007).<br>Analysis was performed by GC/MS.            | 5   | n.d.     | -     |
| Brominated styrene  | mg/kg | With reference to US EPA 3550C (2007).<br>Analysis was performed by GC/MS.            | 5   | n.d.     | -     |
| Tetrabromobisphenol A (TBBP-A)<br>(CAS No.: 79-94-7)                                | mg/kg | With reference to Global SOP RSTS-E&E-121<br>(2012). Analysis was performed by LC/MS. | 10  | n.d.     | -     |
| TBBP-A-bis (CAS No.: 21850-44-<br>2)  | mg/kg | With reference to US EPA 3550C (2007).<br>Analysis was performed by GC/MS.            | 5   | n.d.     | -     |
| Monomethyl dibromodiphenyl<br>methane (DBBT) (CAS No.:<br>99688-47-8)               | mg/kg | With reference to US EPA 3550C (2007).<br>Analysis was performed by GC/MS.            | 0.5 | n.d.     | -     |
| Monomethyl dichlorodiphenyl<br>methane (Ugilec121) (CAS No.:<br>81161-70-8)         | mg/kg | With reference to US EPA 3550C (2007).<br>Analysis was performed by GC/MS.            | 0.5 | n.d.     | -     |
| Monomethyl tetrachlorodiphenyl<br>methane (Ugilec141)                               | mg/kg | With reference to US EPA 3550C (2007).<br>Analysis was performed by GC/MS.            | 0.5 | n.d.     | -     |
| Polyvinyl chloride (PVC)  | **    | Analysis was performed by FTIR and FLAME<br>Test.                                     | -   | Negative | -     |
| <b>Halogen</b>  |       |   |     |          |       |
| Halogen-Fluorine (F)<br>(CAS No.: 14762-94-8)                                       | mg/kg | With reference to BS EN 14582 (2016).<br>Analysis was performed by IC.                | 50  | n.d.     | -     |
| Halogen-Chlorine (Cl)<br>(CAS No.: 22537-15-1)                                      | mg/kg | With reference to BS EN 14582 (2016).<br>Analysis was performed by IC.                | 50  | n.d.     | -     |
| Halogen-Bromine (Br)<br>(CAS No.: 10097-32-2)                                       | mg/kg | With reference to BS EN 14582 (2016).<br>Analysis was performed by IC.                | 50  | n.d.     | -     |
| Halogen-Iodine (I)<br>(CAS No.: 14362-44-8)   | mg/kg | With reference to BS EN 14582 (2016).<br>Analysis was performed by IC.                | 50  | n.d.     | -     |

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| Test Item(s)  | Unit  | Method   | MDL | Result | Limit |
|---|-------|--|-----|--------|-------|
|   |       |  |     | No.1   |       |
| Aluminosilicate, Refractory Ceramic Fibres 【oxides of aluminium and silicon are the main components present (in the fibres) within variable concentration ranges】                     | mg/kg | SGS In-House method-RSTS-EE-SVHC-007. Analyzed by gravimetric method, ICP-OES. | 500 | n.d.   | -     |
| Zirconia Aluminosilicate, Refractory Ceramic Fibres 【oxides of aluminium, silicon and zirconium are the main components present (in the fibres) within variable concentration ranges】 | mg/kg | SGS In-House method-RSTS-EE-SVHC-007. Analyzed by gravimetric method, ICP-OES. | 500 | n.d.   | -     |
| <b>CFC's (Chlorofluorocarbons)</b>  |       |  |     |        |       |
| <b>Group I</b>  |       |  |     |        |       |
| Chlorofluorocarbon-11 (CAS No.: 75-69-4)  | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS.        | 1   | n.d.   | -     |
| Chlorofluorocarbon-12 (CAS No.: 75-71-8)  | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS.        | 1   | n.d.   | -     |
| Chlorofluorocarbon-113 (CAS No.: 76-13-1)   | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS.        | 1   | n.d.   | -     |
| Chlorofluorocarbon-114 (CAS No.: 76-14-2)   | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS.        | 1   | n.d.   | -     |
| Chlorofluorocarbon-115 (CAS No.: 76-15-3)   | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS.        | 1   | n.d.   | -     |
| <b>Group III</b>  |       |  |     |        |       |
| Chlorofluorocarbon-13 (CAS No.: 75-72-9)  | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS.        | 1   | n.d.   | -     |
| Chlorofluorocarbon-111 (CAS No.: 354-56-3)  | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS.        | 1   | n.d.   | -     |
| Chlorofluorocarbon-112 (CAS No.: 76-12-0)   | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS.        | 1   | n.d.   | -     |
| Chlorofluorocarbon-211 (CAS No.: 422-78-6)  | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS.        | 1   | n.d.   | -     |
| Chlorofluorocarbon-212 (CAS No.: 3182-26-1)   | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS.        | 1   | n.d.   | -     |

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| Test Item(s)                                 | Unit  | Method  | MDL | Result | Limit |
|--|-------|---|-----|--------|-------|
|  |       |   |     | No.1   |       |
| Chlorofluorocarbon-213 (CAS No.: 2354-06-5)  | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| Chlorofluorocarbon-214 (CAS No.: 29255-31-0) | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| Chlorofluorocarbon-215 (CAS No.: 4259-43-2)  | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| Chlorofluorocarbon-216 (CAS No.: 661-97-2)   | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| Chlorofluorocarbon-217 (CAS No.: 422-86-6)   | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| <b>HCFCs<br/>(Hydrochlorofluorocarbons)</b>  |       |   |     |        |       |
| HCFC-21 (CAS No.: 75-43-4)                   | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HCFC-22 (CAS No.: 75-45-6)                   | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HCFC-31 (CAS No.: 593-70-4)                  | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HCFC-121 (CAS No.: 354-14-3)                 | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HCFC-122 (CAS No.: 354-21-2)                 | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HCFC-123 (CAS No.: 306-83-2)                 | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HCFC-124 (CAS No.: 2837-89-0)                | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HCFC-131 (CAS No.: 359-28-4)                 | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HCFC-132b (CAS No.: 1649-08-7)               | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HCFC-133a (CAS No.: 75-88-7)                 | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HCFC-141b (CAS No.: 1717-00-6)               | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS. | 1   | n.d.   | -     |

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| Test Item(s)                   | Unit  | Method   | MDL | Result | Limit |
|--------------------------------|-------|--|-----|--------|-------|
|                                |       |  |     | No.1   |       |
| HCFC-142b (CAS No.: 75-68-3)   | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HCFC-221 (CAS No.: 422-26-4)   | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HCFC-222 (CAS No.: 422-49-1)   | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HCFC-223 (CAS No.: 422-52-6)   | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HCFC-224 (CAS No.: 422-54-8)   | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HCFC-225ca (CAS No.: 422-56-0) | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HCFC-225cb (CAS No.: 507-55-1) | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HCFC-226 (CAS No.: 431-87-8)   | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HCFC-231 (CAS No.: 421-94-3)   | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HCFC-232 (CAS No.: 460-89-9)   | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HCFC-233 (CAS No.: 7125-84-0)  | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HCFC-234 (CAS No.: 425-94-5)   | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HCFC-235 (CAS No.: 460-92-4)   | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HCFC-241 (CAS No.: 666-27-3)   | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HCFC-242 (CAS No.: 460-63-9)   | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HCFC-243 (CAS No.: 460-69-5)   | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HCFC-244                       | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |

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| Test Item(s)   | Unit  | Method   | MDL | Result | Limit |
|--|-------|--|-----|--------|-------|
|  |       |  |     | No.1   |       |
| HCFC-251 (CAS No.: 421-41-0)                                 | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HCFC-252 (CAS No.: 819-00-1)                                 | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HCFC-253 (CAS No.: 460-35-5)                                 | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HCFC-261 (CAS No.: 420-97-3)                                 | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HCFC-262 (CAS No.: 421-02-03)                                | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HCFC-271 (CAS No.: 430-55-7)                                 | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| <b>Halons</b>  |       |  |     |        |       |
| Halon-1211 (CAS No.: 353-59-3)                               | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| Halon-1301 (CAS No.: 75-63-8)                                | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| Halon-2402 (CAS No.: 124-73-2)                               | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| <b>HBFCs<br/>(Hydrobromofluorocarbons)</b>                   |       |  |     |        |       |
| HBFC-21B2 (CHFBr <sub>2</sub> ) (CAS No.: 1868-53-7)         | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HBFC-22B1 (CHF <sub>2</sub> Br) (CAS No.: 1511-62-2)         | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HBFC-31B1 (CH <sub>2</sub> FBr) (CAS No.: 373-52-4)          | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HBFC-121B4 (C <sub>2</sub> HFBr <sub>4</sub> )               | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HBFC-122B3 (C <sub>2</sub> HF <sub>2</sub> Br <sub>3</sub> ) | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HBFC-123B2 (C <sub>2</sub> HF <sub>3</sub> Br <sub>2</sub> ) | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HBFC-124B1 (C <sub>2</sub> HF <sub>4</sub> Br)               | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |

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| Test Item(s)           | Unit  | Method   | MDL | Result | Limit |
|------------------------|-------|--|-----|--------|-------|
|                        |       |  |     | No.1   |       |
| HBFC-131B3 (C2H2FBr3)  | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HBFC-132B2 (C2H2F2Br2) | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HBFC-133B1 (C2H2F3Br)  | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HBFC-141B2 (C2H3FBr2)  | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HBFC-142B1 (C2H3F2Br)  | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HBFC-151B1 (C2H4FBr)   | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HBFC-221B6 (C3HFBr6)   | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HBFC-222B5 (C3HF2Br5)  | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HBFC-223B4 (C3HF3Br4)  | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HBFC-224B3 (C3HF4Br3)  | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HBFC-225B2 (C3HF5Br2)  | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HBFC-226B1 (C3HF6Br)   | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HBFC-231B5 (C3H2FBr5)  | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HBFC-232B4 (C3H2F2Br4) | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HBFC-233B3 (C3H2F3Br3) | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HBFC-234B2 (C3H2F4Br2) | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HBFC-235B1 (C3H2F5Br)  | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |

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RAMAT GAVRIEL INDUSTRIAL AREA MIGDAL HAEMEK ISRAEL 23105

| Test Item(s)                           | Unit  | Method   | MDL | Result | Limit |
|--|-------|--|-----|--------|-------|
|  |       |  |     | No.1   |       |
| HBFC-241B4 (C3H3FBr4)                  | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HBFC-242B3 (C3H3F2Br3)                 | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HBFC-243B2 (C3H3F3Br2)                 | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HBFC-244B1 (C3H3F4Br)                  | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HBFC-251B3 (C3H4FBr3)                  | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HBFC-252B2 (C3H4F2Br2)                 | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HBFC-253B1 (C3H4F3Br)                  | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HBFC-261B2 (C3H5FBr2)                  | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HBFC-262B1 (C3H5F2Br)                  | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HBFC-271B1 (C3H6FBr)                   | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| <b>HFCs (Hydrofluorocarbon)</b>        |       |  |     |        |       |
| HFC-23 (CHF3) (CAS No.: 75-46-7)       | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HFC-32 (CH2F2) (CAS No.: 75-10-5)      | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HFC-41 (CH3F) (CAS No.: 593-53-3)      | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HFC-43-10mee (C5H2F10)                 | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HFC-125 (C2HF5)                        | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HFC-134 (C2H2F4)                       | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HFC-134a (CH2FCF3) (CAS No.: 811-97-2) | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |

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| Test Item(s)                                    | Unit  | Method   | MDL | Result | Limit |
|---|-------|--|-----|--------|-------|
|   |       |  |     | No.1   |       |
| HFC-143 (CH3F3)                                 | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HFC-143a (CH3F3)                                | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HFC-152a (C2H4F2) (CAS No.: 75-37-6)            | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HFC-227ea (C3HF7) (CAS No.: 431-89-0)           | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HFC-236fa (C3H2F6)                              | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HFC-236ea (C3H2F6) (CAS No.: 431-63-0)          | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HFC-245ca (C3H3F5)                              | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HFC-245fa (C3H3F5)                              | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| HFC-365mfc (C4H5F5)                             | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| <b>PFCs (Perfluorocarbon)</b>                   |       |  |     |        |       |
| F14 (CAS No.: 75-73-0)                          | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| Fluorocarbon 116 (CAS No.: 76-16-4)             | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| Freon 218 (CAS No.: 76-19-7)                    | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| Decafluorobutane (CAS No.: 355-25-9)            | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| Freon C318 (CAS No.: 115-25-3)                  | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| Perfluor-1-butene (CAS No.: 357-26-6)           | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| perfluorisobutene (CAS No.: 382-21-8)           | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| 1,4-dihydrooctafluorobutane (CAS No.: 377-36-6) | mg/kg | With reference to US EPA 5021A (2014).<br>Analysis was performed by GC/MS. | 1   | n.d.   | -     |

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| Test Item(s)   | Unit  | Method  | MDL | Result | Limit |
|--|-------|---|-----|--------|-------|
|  |       |   |     | No.1   |       |
| Nonfluor-2- (trifluoromethyl) butane (CAS No.: 594-91-2) | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| Perfluoro-n-pentane (CAS No.: 678-26-2)                  | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| 2-perfluoromethylpentane (CAS No.: 355-04-4)             | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| Perfluorohexane (CAS No.: 355-42-0)                      | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| <b>CHCs (Chlorinate hydrocarbon)</b>                     |       |   |     |        |       |
| 1,1,1,2-Tetrachloroethane (CAS No.: 630-20-6)            | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| 1,1,1-Trichloroethane (CAS No.: 71-55-6)                 | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| 1,1,2,2-Tetrachloroethane (CAS No.: 79-34-5)             | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| 1,1,2-Trichloroethane (CAS No.: 79-00-5)                 | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| 1,1-Dichloroethane (CAS No.: 75-34-3)                    | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| 1,1-Dichloroethene (CAS No.: 75-35-4)                    | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| 1,1-Dichloropropene (CAS No.: 563-58-6)                  | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| 1,2,3-Trichloropropane (CAS No.: 96-18-4)                | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| 1,2-Dichloroethane (CAS No.: 107-06-2)                   | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| 1,2-Dichloropropane (CAS No.: 78-87-5)                   | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| 1,3-Dichloropropane (CAS No.: 142-28-9)                  | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS. | 1   | n.d.   | -     |
| 2,2-Dichloropropane (CAS No.: 594-20-7)                  | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS. | 1   | n.d.   | -     |

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| Test Item(s)  | Unit  | Method   | MDL | Result   | Limit |
|---|-------|--|-----|----------|-------|
|   |       |  |     | No.1     |       |
| Carbon tetrachloride (CAS No.: 56-23-5)                   | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS.                | 1   | n.d.     | -     |
| Chloroethane (CAS No.: 75-00-3)                           | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS.                | 1   | n.d.     | -     |
| Chloroform (CAS No.: 67-66-3)                             | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS.                | 1   | n.d.     | -     |
| Chloromethane (CAS No.: 74-87-3)                          | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS.                | 1   | n.d.     | -     |
| cis-1,2-Dichloroethene (CAS No.: 156-59-2)                | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS.                | 1   | n.d.     | -     |
| cis-1,3-Dichloropropene (CAS No.: 10061-01-5)             | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS.                | 1   | n.d.     | -     |
| Hexachlorobutadiene (CAS No.: 87-68-3)                    | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS.                | 1   | n.d.     | -     |
| Dichloromethane, Methylene chloride (CAS No.: 75-09-2)    | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS.                | 1   | n.d.     | -     |
| Tetrachloroethene (CAS No.: 127-18-4)                     | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS.                | 1   | n.d.     | -     |
| trans-1,2-Dichloroethene (CAS No.: 156-60-5)              | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS.                | 1   | n.d.     | -     |
| trans-1,3-Dichloropropene (CAS No.: 10061-02-6)           | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS.                | 1   | n.d.     | -     |
| Trichloroethylene (CAS No.: 79-01-6)                      | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS.                | 1   | n.d.     | -     |
| Bromochloromethane (CAS No.: 74-97-5)                     | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS.                | 1   | n.d.     | -     |
| Sulfur Hexafluoride (SF6) (CAS No.: 2551-62-4)            | mg/kg | With reference to US EPA 5021A (2014). Analysis was performed by GC/MS.                | 1   | n.d.     | -     |
| Red phosphorus  | **    | Analysis was performed by Pyrolyzer-GC/MS.   | -   | Negative | -     |
| Caesium (Cs) (Radioactive element) (CAS No.: 7440-46-2)   | mg/kg | With reference to US EPA 3052 (1996) & 6020B (2014). Analysis was performed by ICP-MS. | 1   | n.d.     | -     |
| Strontium (Sr) (Radioactive element) (CAS No.: 7440-24-6) | mg/kg | With reference to US EPA 3052 (1996) & 6020B (2014). Analysis was performed by ICP-MS. | 1   | n.d.     | -     |

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RAMAT GAVRIEL INDUSTRIAL AREA MIGDAL HAEMEK ISRAEL 23105

| Test Item(s)  | Unit  | Method   | MDL | Result | Limit |
|---|-------|--|-----|--------|-------|
|   |       |  |     | No.1   |       |
| Thorium (Th) (Radioactive element) (CAS No.: 7440-29-1) | mg/kg | With reference to US EPA 3052 (1996) & 6020B (2014). Analysis was performed by ICP-MS. | 1   | n.d.   | -     |
| Uranium (U) (Radioactive element) (CAS No.: 7440-61-1)  | mg/kg | With reference to US EPA 3052 (1996) & 6020B (2014). Analysis was performed by ICP-MS. | 1   | n.d.   | -     |

**Note :**

1. mg/kg = ppm ; 0.1wt% = 1000ppm
2. MDL = Method Detection Limit
3. n.d. = Not Detected = less than MDL
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".
8. (▲) : The MDL was evaluated for element / tested substance.
9. Parameter Conversion Table : [http://twap.sgs.com/sgsrsts/chn/download-REACH\\_tw.asp](http://twap.sgs.com/sgsrsts/chn/download-REACH_tw.asp)
10. (※2): The extracted soluble Boron is detected by ICP-OES.
11. (※5): Regarding the compound containing Cr(VI) and lead, lead and Cr(VI) are tested and respectively used for the calculation of the independent concentration of the compound containing Cr(VI) and lead. The minimum value of the two independently calculated concentrations is used as the final concentration for the report.
12. (\*2): Tetraboron disodium heptaoxide, hydrate: Only anhydrous form of disodium tetraborate is relevant and considered according to ECHA explanation (Ref no.: INC 000000032519).

**PFOS Reference Information : POPs - (EU) 2019/1021**

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/m<sup>2</sup>.

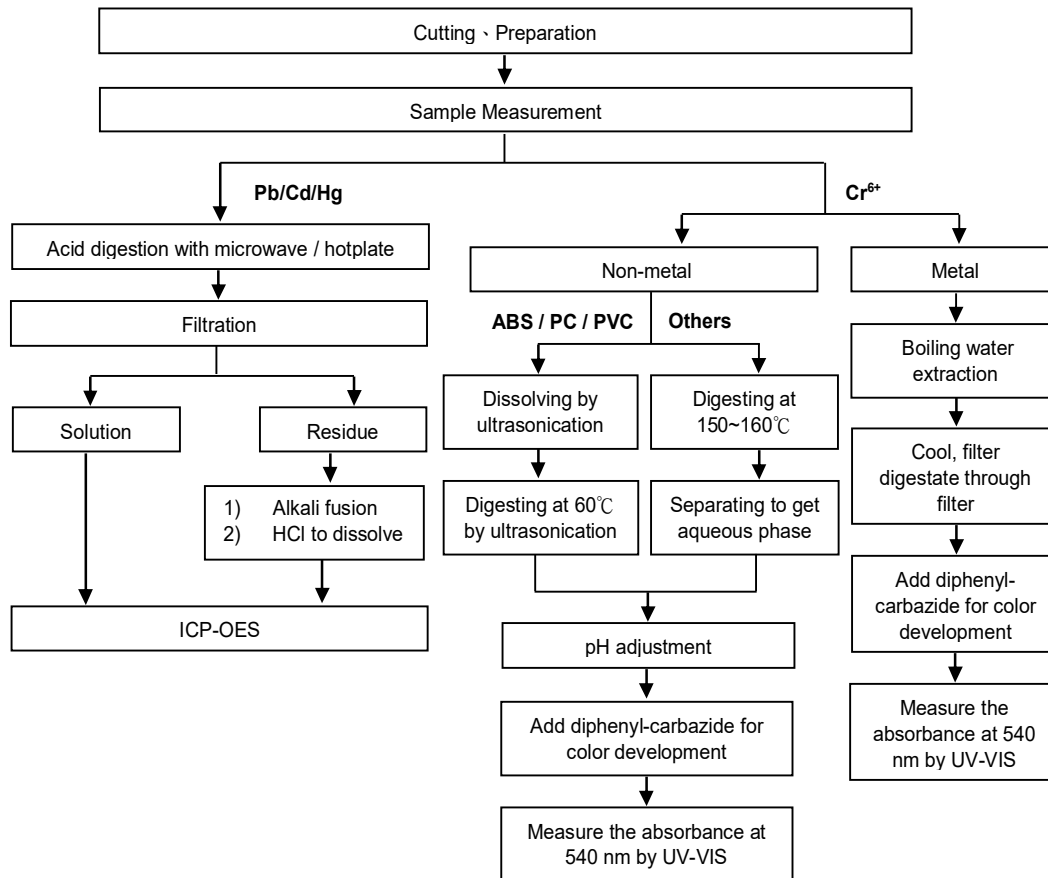
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TOWERJAZZ SEMICONDUCTOR  
RAMAT GAVRIEL INDUSTRIAL AREA MIGDAL HAEMEK ISRAEL 23105

### Analytical flow chart of Heavy Metal

These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr<sup>6+</sup> test method excluded)

- Technician : Rita Chen
- Supervisor: Troy Chang

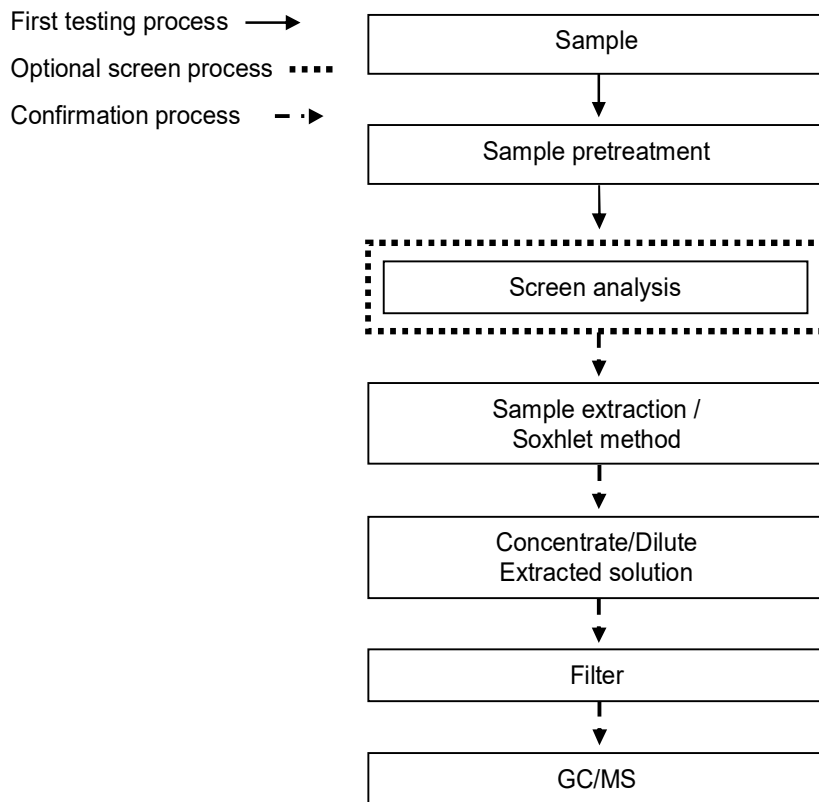


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TOWERJAZZ SEMICONDUCTOR  
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### Analytical flow chart – PBB / PBDE

- Technician : Yaling Tu
- Supervisor: Troy Chang



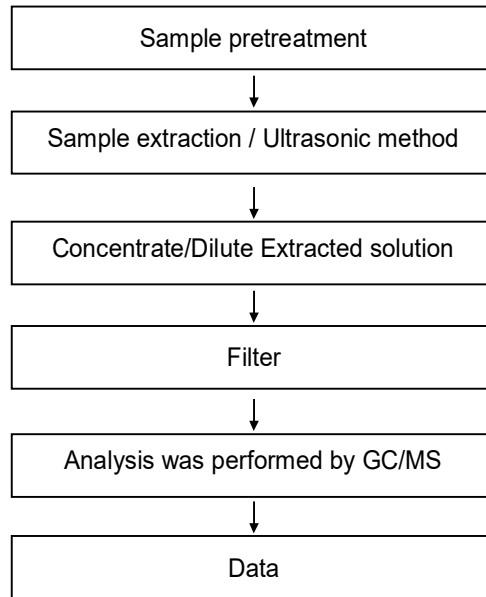
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TOWERJAZZ SEMICONDUCTOR  
 RAMAT GAVRIEL INDUSTRIAL AREA MIGDAL HAEMEK ISRAEL 23105

### Analytical flow chart - PCBs

- Technician: Yaling Tu
- Supervisor: Troy Chang

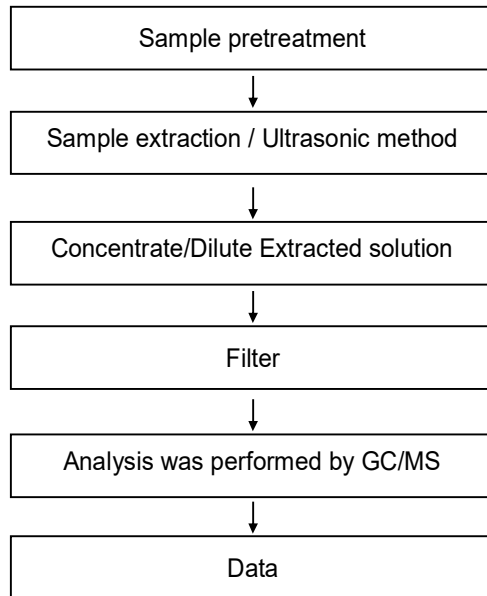


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TOWERJAZZ SEMICONDUCTOR  
 RAMAT GAVRIEL INDUSTRIAL AREA MIGDAL HAEMEK ISRAEL 23105

### Analytical flow chart - PCTs

- Technician: Yaling Tu
- Supervisor: Troy Chang

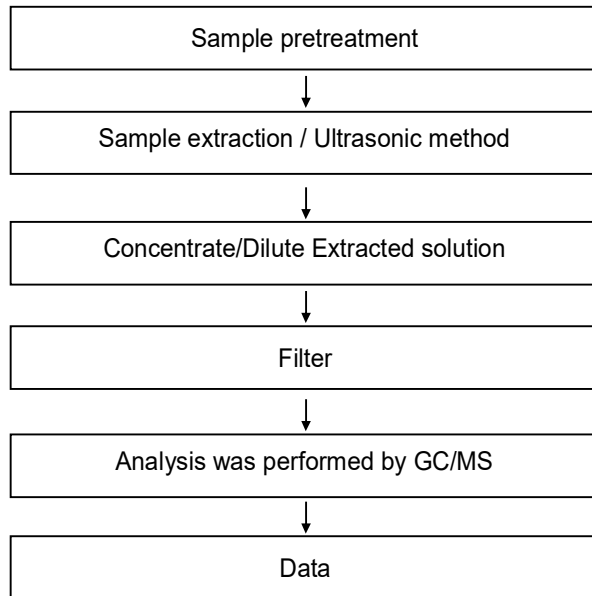


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TOWERJAZZ SEMICONDUCTOR  
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### Analytical flow chart - PCNs

- Technician: Yaling Tu
- Supervisor: Troy Chang

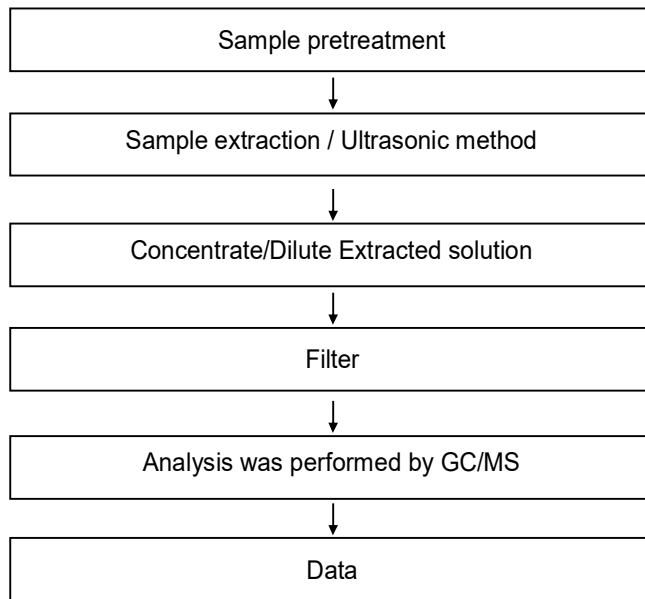


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### Analytical flow chart - Chlorinated Paraffins

- Technician: Yaling Tu
- Supervisor: Troy Chang



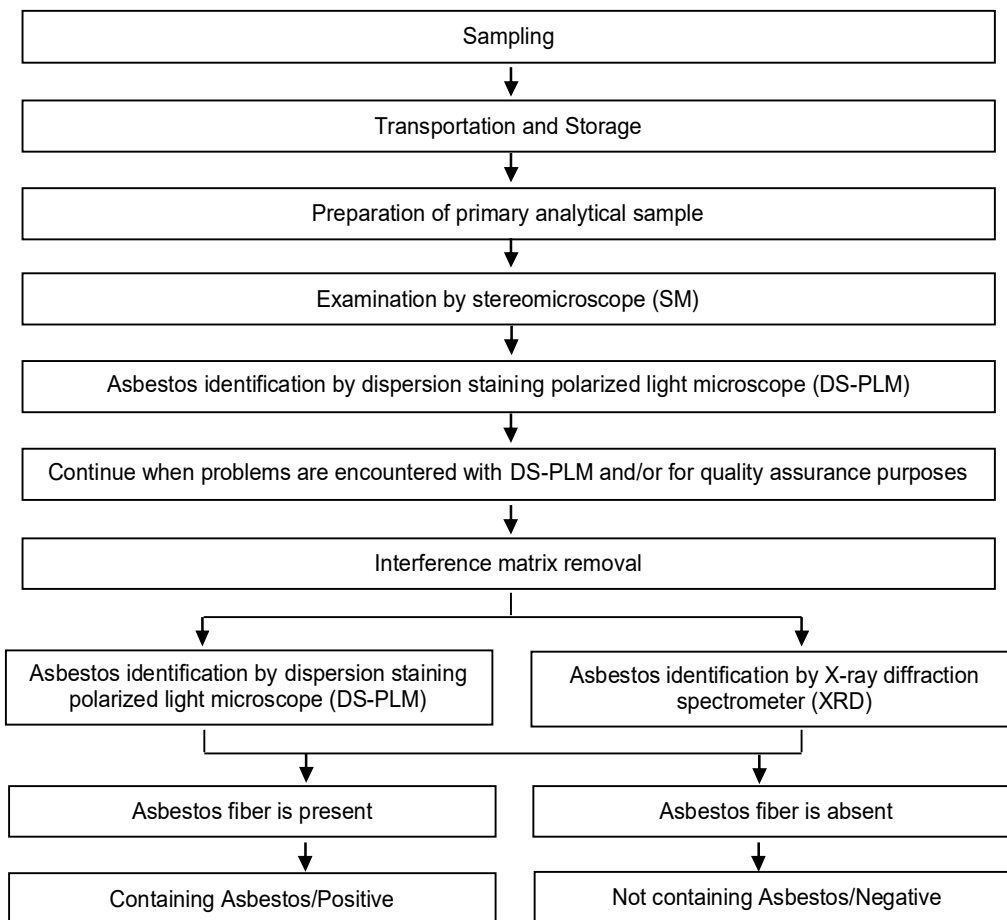
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### Analysis flow chart for determination of Asbestos

- Technician: David Lee
- Supervisor: Rachel Yang

**【 Reference method: EPA 600/R-93/116 】**



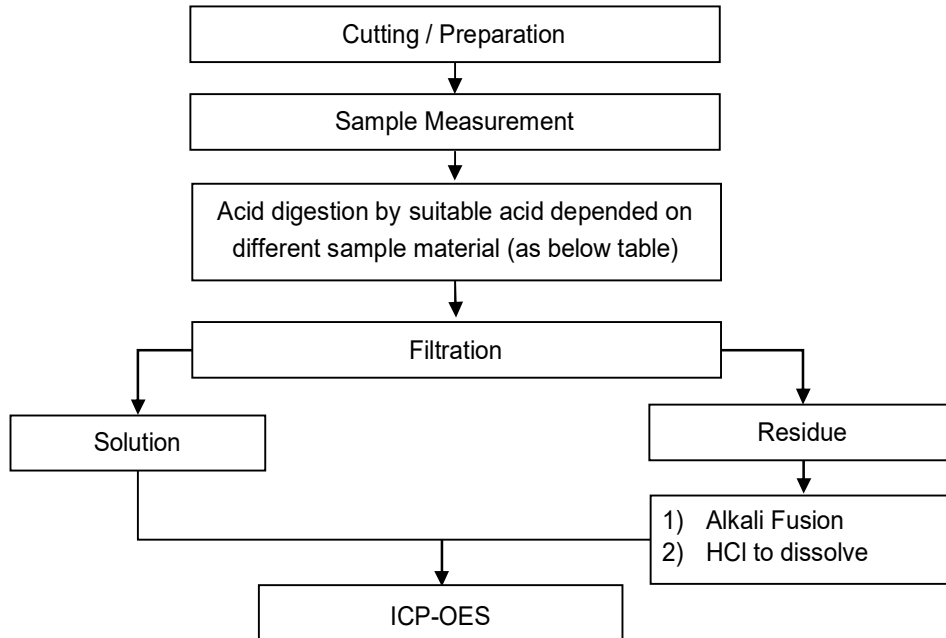
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These samples were dissolved totally by pre-conditioning method according to below flow chart.

- Technician: Rita Chen
- Supervisor: Troy Chang

### Flow Chart of digestion for the elements analysis performed by ICP-OES



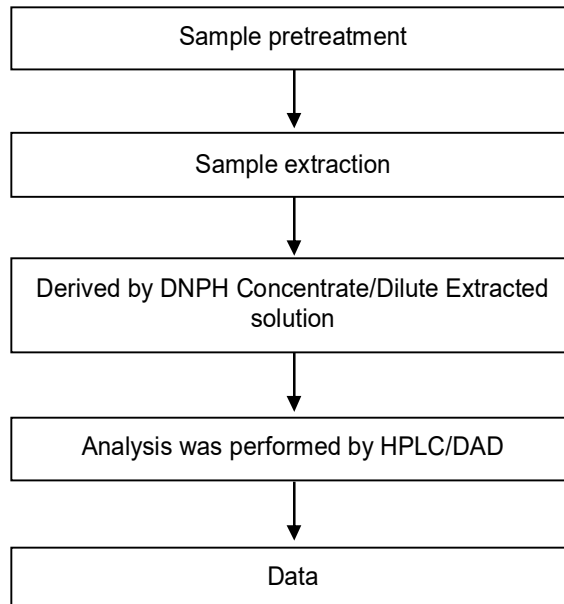
|                                    |   |
|------------------------------------|---|
| Steel, copper, aluminum, solder    | Aqua regia, HNO <sub>3</sub> , HCl, HF, H <sub>2</sub> O <sub>2</sub>                   |
| Glass                              | HNO <sub>3</sub> /HF  |
| Gold, platinum, palladium, ceramic | Aqua regia  |
| Silver                             | HNO <sub>3</sub>  |
| Plastic                            | H <sub>2</sub> SO <sub>4</sub> , H <sub>2</sub> O <sub>2</sub> , HNO <sub>3</sub> , HCl |
| Others                             | Added appropriate reagent to total digestion  |



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### Analytical flow chart - Formaldehyde

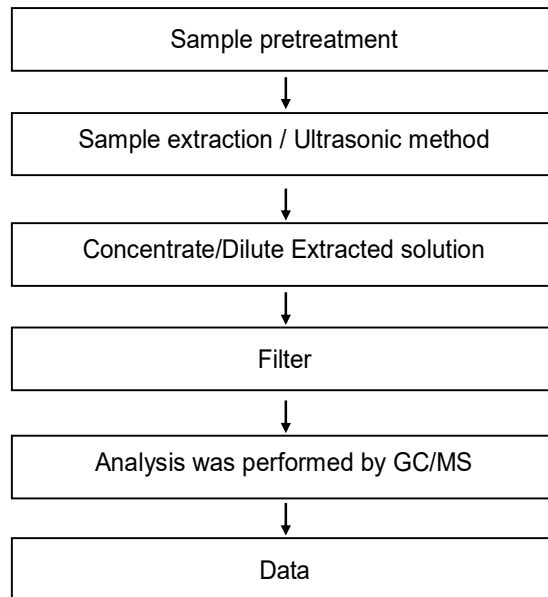
- Technician: Yaling Tu
- Supervisor: Troy Chang



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### Analytical flow chart - HBCDD

- Technician: Yaling Tu
- Supervisor: Troy Chang

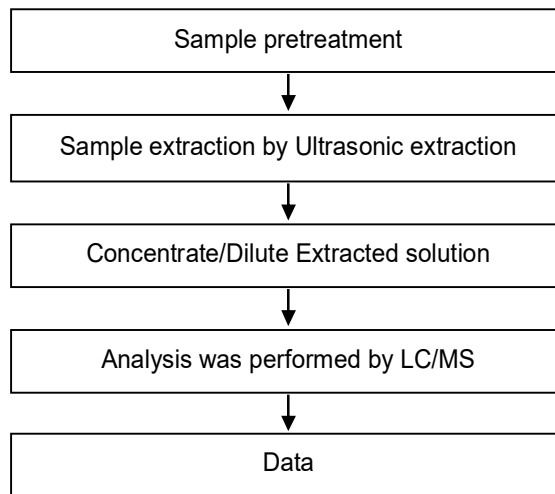


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### Analytical flow chart - PFOA/PFOS

- Technician: Yaling Tu
- Supervisor: Troy Chang



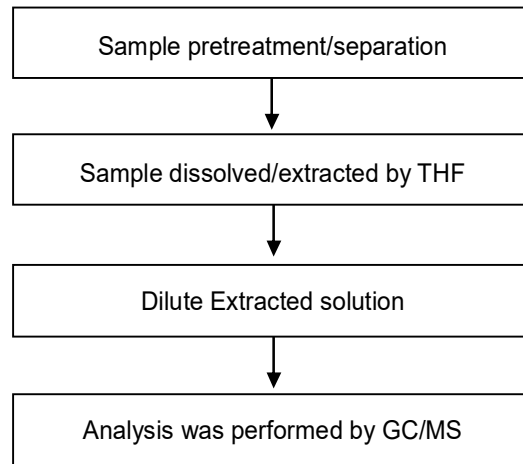
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### Analytical flow chart - Phthalate

- Technician: Yaling Tu
- Supervisor: Troy Chang

**【Test method: IEC 62321-8】**

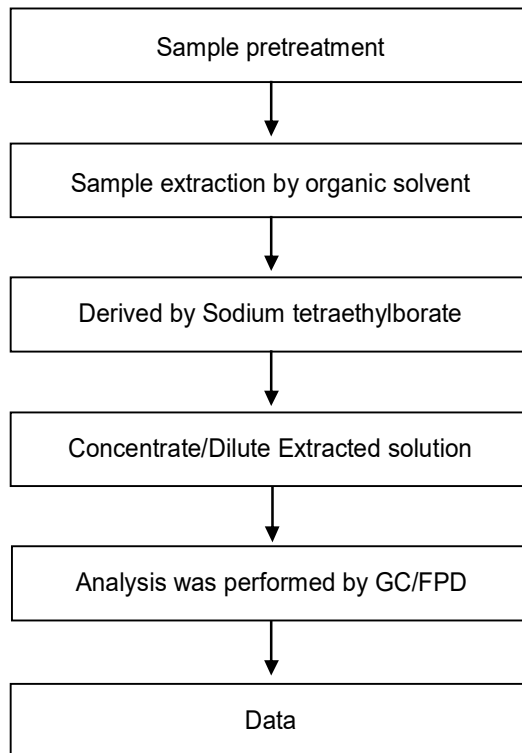


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### Analytical flow chart - Organic-Tin

- Technician: Yaling Tu
- Supervisor: Troy Chang

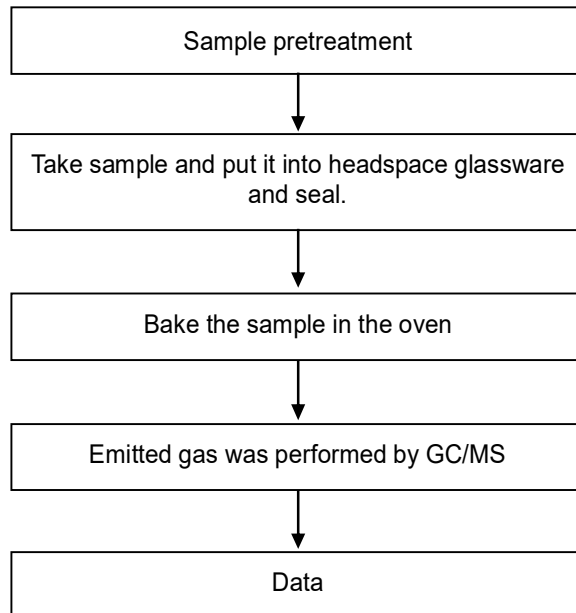


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### Analytical flow chart - volatile organic compounds (VOCs)

- Technician : Chun Wu
  - Supervisor : Shinjyh Chen
- 【Reference method : US EPA 5021, 5021A】

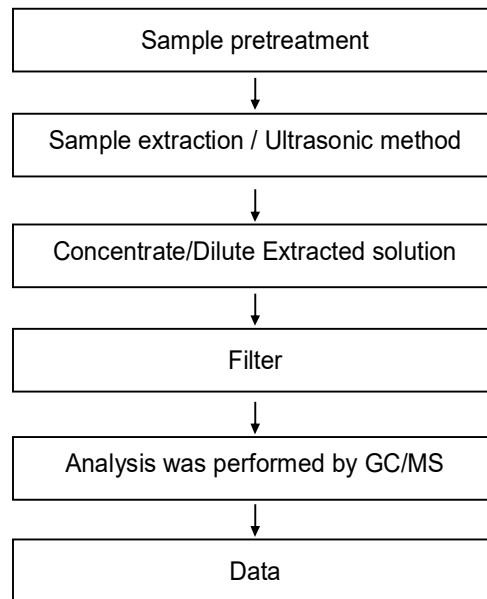


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### Analytical flow chart - Dimethyl Fumarate

- Technician: Yaling Tu
- Supervisor: Troy Chang



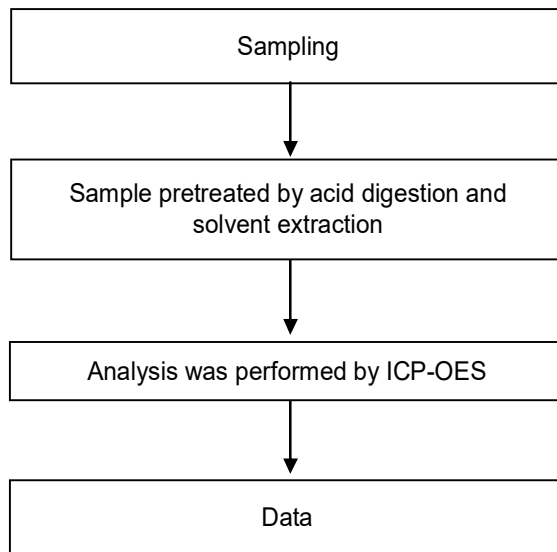
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### Analytical flow chart - Cobalt dichloride

- Technician: Rita Chen
- Supervisor: Troy Chang

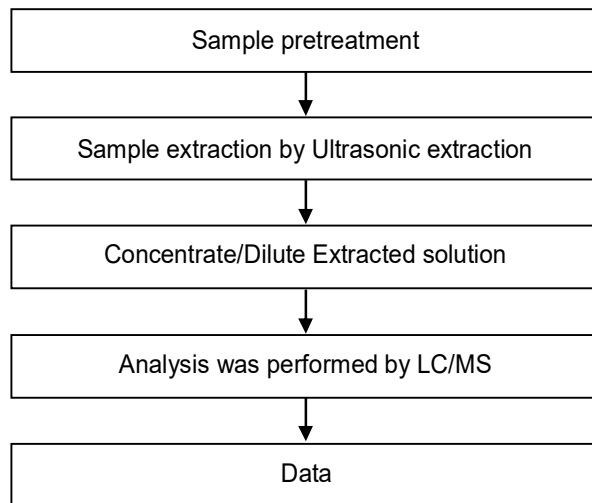


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### Analytical flow chart - TBBP-A

- Technician: Yaling Tu
- Supervisor: Troy Chang

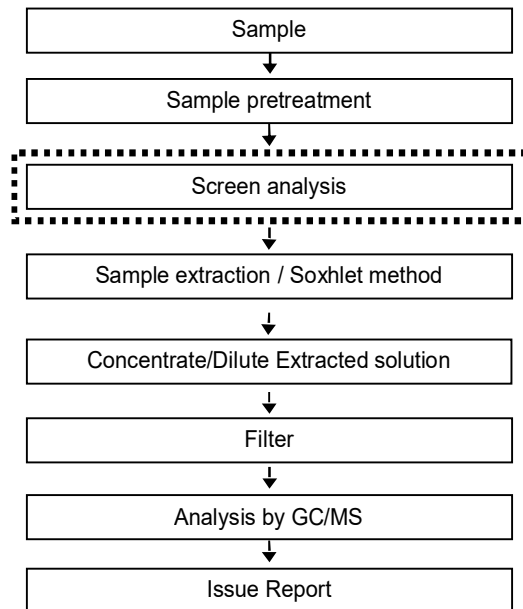


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### Analytical flow chart - TBBP-A-bis

- Technician: Yaling Tu
- Supervisor: Troy Chang

First testing process      —————>  
 Optional screen process    ········  
 Confirmation process      - - - ->

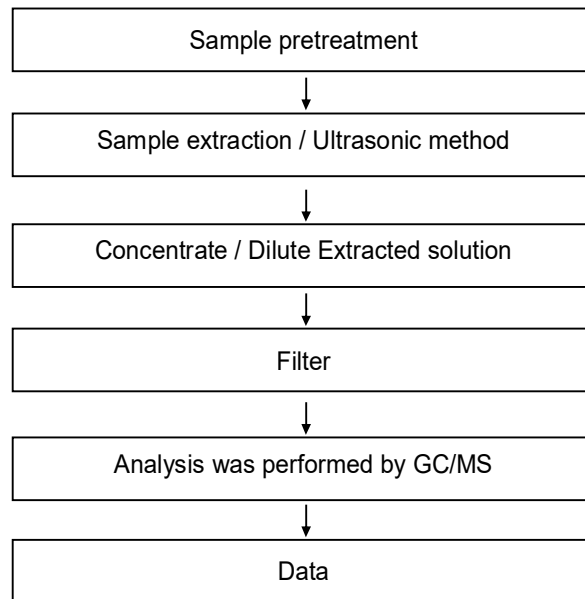


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### Analytical flow chart - DBBT

- Technician: Yaling Tu
- Supervisor: Troy Chang

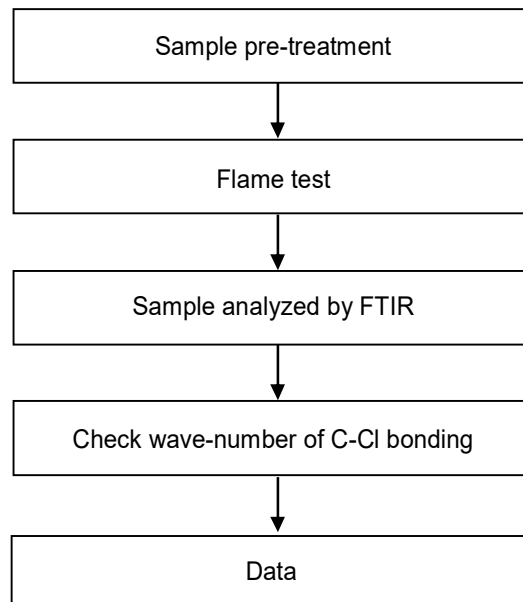


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### Analysis flow chart - PVC

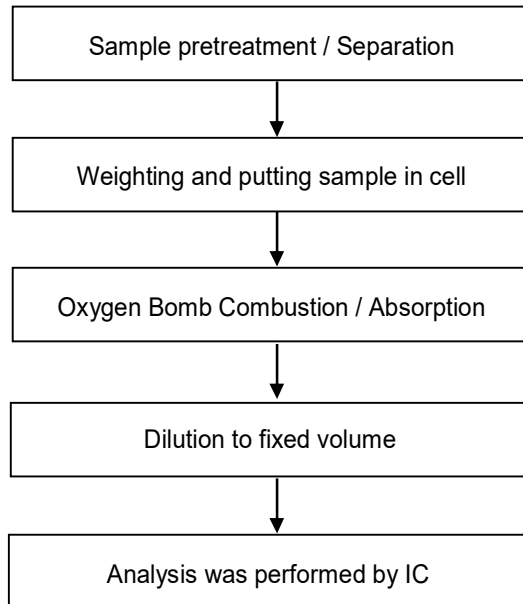
- Technician: Yaling Tu
- Supervisor: Troy Chang



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### Analytical flow chart - Halogen

- Technician: Rita Chen
- Supervisor: Troy Chang

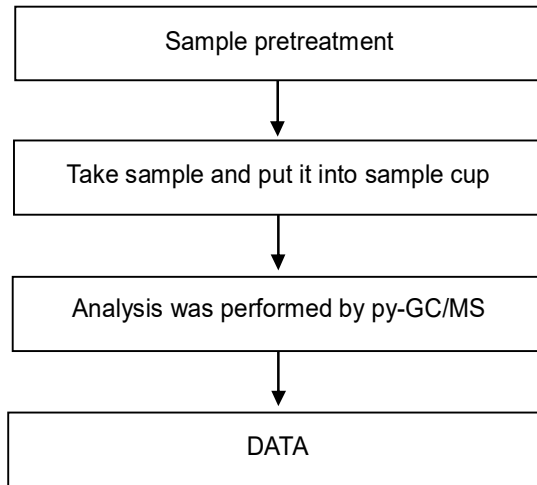


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### Analytical flow chart - Red phosphorus

- Technician: Yaling Tu
- Supervisor: Troy Chang



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## Test Report

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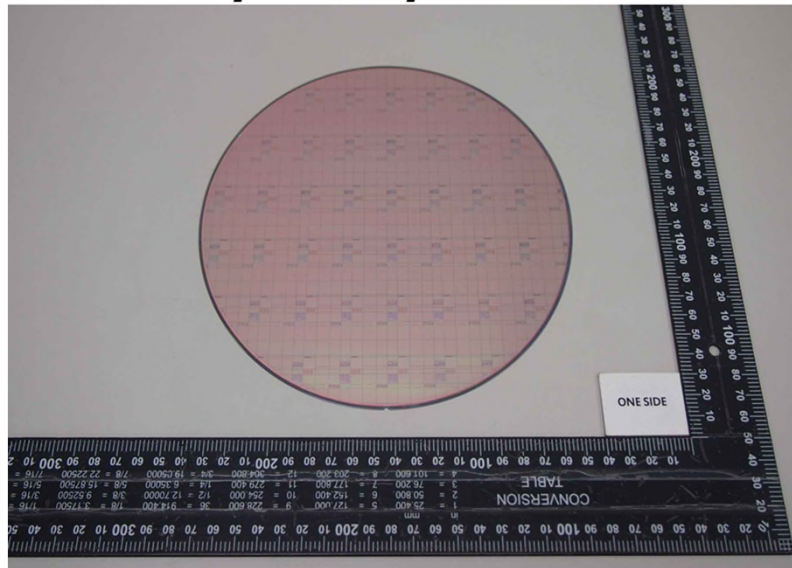
Date : 2020/01/07

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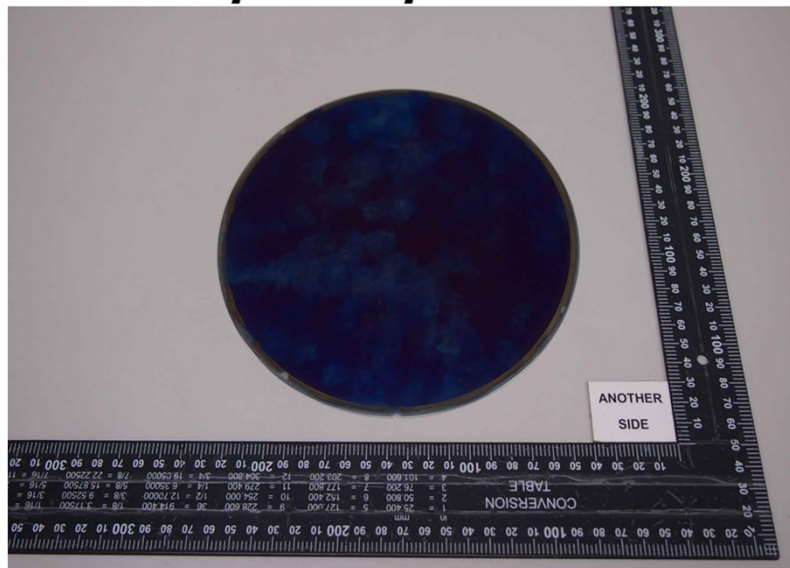
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\* The tested sample / part is marked by an arrow if it's shown on the photo. \*

### CE/2019/C4968



### CE/2019/C4968



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