

Test Report

No. : CE/2009/53782 Date : 2009/06/03 Page : 1 of 31

UNITED MICROELECTRONICS CORP.
NO. 3, LI-HSIN RD., II, SCIENCE-BASED INDUSTRIAL PARK, HSIN-CHU
CITY, TAIWAN 300, R. O. C.



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

Sample Description : UMC WAFER-AI PROCESS
Sample Receiving Date : 2009/05/18
Testing Period : 2009/05/18 TO 2009/06/03

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Test Result(s) : Please refer to next page(s).

Chenyu Kung / Operation Manager
Signed for and on behalf of
SGS TAIWAN LTD.
Chemical Laboratory – Taipei

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UNITED MICROELECTRONICS CORP.
NO. 3, LI-HSIN RD., II, SCIENCE-BASED INDUSTRIAL PARK, HSIN-CHU
CITY, TAIWAN 300, R. O. C.



Test Result(s)

PART NAME NO.1 : WAFER

| Test Item (s): | Unit | Method | MDL | Result |
|---|-------|---|-----|--------|
| | | | | No.1 |
| Cadmium (Cd) | mg/kg | With reference to IEC 62321: 2008 and performed by ICP-AES. | 2 | n.d. |
| Lead (Pb) | mg/kg | With reference to IEC 62321: 2008 and performed by ICP-AES. | 2 | n.d. |
| Mercury (Hg) | mg/kg | With reference to IEC 62321: 2008 and performed by ICP-AES. | 2 | n.d. |
| Hexavalent Chromium Cr(VI) by alkaline extraction | mg/kg | With reference to IEC 62321: 2008 and performed by UV-VIS. | 2 | n.d. |
| Sum of PBBs | mg/kg | With reference to IEC 62321: 2008 and performed by GC/MS. | - | n.d. |
| Monobromobiphenyl | | | 5 | n.d. |
| Dibromobiphenyl | | | 5 | n.d. |
| Tribromobiphenyl | | | 5 | n.d. |
| Tetrabromobiphenyl | | | 5 | n.d. |
| Pentabromobiphenyl | | | 5 | n.d. |
| Hexabromobiphenyl | | | 5 | n.d. |
| Heptabromobiphenyl | | | 5 | n.d. |
| Octabromobiphenyl | | | 5 | n.d. |
| Nonabromobiphenyl | | | 5 | n.d. |
| Decabromobiphenyl | | | 5 | n.d. |
| Sum of PBDEs | | | - | n.d. |
| Monobromodiphenyl ether | | | 5 | n.d. |
| Dibromodiphenyl ether | | | 5 | n.d. |
| Tribromodiphenyl ether | | | 5 | n.d. |
| Tetrabromodiphenyl ether | | | 5 | n.d. |
| Pentabromodiphenyl ether | | | 5 | n.d. |
| Hexabromodiphenyl ether | | | 5 | n.d. |
| Heptabromodiphenyl ether | | | 5 | n.d. |
| Octabromodiphenyl ether | | | 5 | n.d. |
| Nonabromodiphenyl ether | 5 | n.d. | | |
| Decabromodiphenyl ether | 5 | n.d. | | |

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UNITED MICROELECTRONICS CORP.
NO. 3, LI-HSIN RD., II, SCIENCE-BASED INDUSTRIAL PARK, HSIN-CHU
CITY, TAIWAN 300, R. O. C.



| Test Item (s): | Unit | Method | MDL | Result |
|--|-------|--|------|--------|
| | | | | No.1 |
| Polychlorinated Biphenyls (PCBs) (CAS No.: 001336-36-3) | mg/kg | With reference to US EPA 3540C method. Analysis was performed by GC/MS. | 0.5 | n.d. |
| Polychlorinated Naphthalene (PCNs) | mg/kg | With reference to US EPA 3540C method. Analysis was performed by GC/MS. | 5 | n.d. |
| Mirex (CAS No.: 002385-85-5) | mg/kg | With reference to US EPA 8270D method. Analysis was performed by GC/MS. | 4 | n.d. |
| Chlorinated Paraffin (C10~C13) (CAS No.: 010871-26-2) | % | With reference to US EPA 3540C method. Analysis was performed by GC/MS. | 0.01 | n.d. |
| Polychlorinated Terphenyls (PCTs) | mg/kg | With reference to US EPA 3540C method. Analysis was performed by GC/MS. | 0.5 | n.d. |
| Organic-tin compounds | | | | |
| Tributyl Tin (TBT) (CAS No.: 000688-73-3) | mg/kg | With reference to DIN 38407-13. Analysis was performed by GC/FPD. | 0.03 | n.d. |
| Triphenyl Tin (TphT) (CAS No.: 000668-34-8) | mg/kg | With reference to DIN 38407-13. Analysis was performed by GC/FPD. | 0.03 | n.d. |
| Tributyl Tin Oxide (TBTO) (CAS No.: 000056-35-9) | mg/kg | With reference to DIN 38407-13. Analysis was performed by GC/FPD. (See Note 9) | 0.03 | n.d. |
| CFC's (Chlorofluorocarbons) | | | | |
| Group I | | | | |
| Chlorofluorocarbon-11 (CAS No.: 000075-69-4) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Chlorofluorocarbon-12 (CAS No.: 000075-71-8) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Chlorofluorocarbon-113 (CAS No.: 000076-13-1) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Chlorofluorocarbon-114 (CAS No.: 000076-14-2) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |

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UNITED MICROELECTRONICS CORP.
NO. 3, LI-HSIN RD., II, SCIENCE-BASED INDUSTRIAL PARK, HSIN-CHU
CITY, TAIWAN 300, R. O. C.



| Test Item (s): | Unit | Method | MDL | Result |
|---|-------|--|-----|--------|
| | | | | No.1 |
| Chlorofluorocarbon-115 (CAS No.: 000076-15-3) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Group III | | | | |
| Chlorofluorocarbon-13 (CAS No.: 000075-72-9) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Chlorofluorocarbon-111 (CAS No.: 000354-56-3) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Chlorofluorocarbon-112 (CAS No.: 000076-12-0) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Chlorofluorocarbon-211 (CAS No.: 000422-78-6) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Chlorofluorocarbon-212 (CAS No.: 003182-26-1) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Chlorofluorocarbon-213 (CAS No.: 002354-06-5) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Chlorofluorocarbon-214 (CAS No.: 029255-31-0) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Chlorofluorocarbon-215 (CAS No.: 004259-43-2) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Chlorofluorocarbon-216 (CAS No.: 000661-97-2) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Chlorofluorocarbon-217 (CAS No.: 000422-86-6) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Halons | | | | |
| Halon-1211 (CAS No.: 000353-59-3) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |

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NO. 3, LI-HSIN RD., II, SCIENCE-BASED INDUSTRIAL PARK, HSIN-CHU
CITY, TAIWAN 300, R. O. C.



| Test Item (s): | Unit | Method | MDL | Result |
|---|-------|--|-----|--------|
| | | | | No.1 |
| Halon-1301 (CAS No.: 000075-63-8) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Halon-2402 (CAS No.: 000124-73-2) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HCFCs (Hydrochlorofluorocarbons) | | | | |
| Hydrochlorofluorocarbon-21 (CAS No.: 000075-43-4) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Hydrochlorofluorocarbon-22 (CAS No.: 000075-45-6) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Hydrochlorofluorocarbon-31 (CAS No.: 000593-70-4) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Hydrochlorofluorocarbon-121 (CAS No.: 000354-14-3) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Hydrochlorofluorocarbon-122 (CAS No.: 000354-21-2) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Hydrochlorofluorocarbon-123 (CAS No.: 000306-83-2) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Hydrochlorofluorocarbon-124 (CAS No.: 002837-89-0) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Hydrochlorofluorocarbon-131 (CAS No.: 000359-28-4) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Hydrochlorofluorocarbon-132a (CAS No.: 000471-43-2) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Hydrochlorofluorocarbon-133a (CAS No.: 000075-88-7) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |

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NO. 3, LI-HSIN RD., II, SCIENCE-BASED INDUSTRIAL PARK, HSIN-CHU
CITY, TAIWAN 300, R. O. C.

| Test Item (s): | Unit | Method | MDL | Result |
|---|-------|--|-----|--------|
| | | | | No.1 |
| Hydrochlorofluorocarbon-141b (CAS No.: 001717-00-6) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Hydrochlorofluorocarbon-221 (CAS No.: 000422-26-4) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Hydrochlorofluorocarbon-222 (CAS No.: 000422-30-0) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Hydrochlorofluorocarbon-223 | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Hydrochlorofluorocarbon-224 | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Hydrochlorofluorocarbon-225ca (CAS No.: 000422-56-0) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Hydrochlorofluorocarbon-225cb (CAS No.: 000507-55-1) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Hydrochlorofluorocarbon-226 (CAS No.: 000431-87-8) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Hydrochlorofluorocarbon-231 | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Hydrochlorofluorocarbon-232 | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Hydrochlorofluorocarbon-233 | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Hydrochlorofluorocarbon-234 | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Hydrochlorofluorocarbon-235 (CAS No.: 013838-16-9) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |

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NO. 3, LI-HSIN RD., II, SCIENCE-BASED INDUSTRIAL PARK, HSIN-CHU
CITY, TAIWAN 300, R. O. C.

| Test Item (s): | Unit | Method | MDL | Result |
|---|-------|--|-----|--------|
| | | | | No.1 |
| Hydrochlorofluorocarbon-241 | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Hydrochlorofluorocarbon-242 | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Hydrochlorofluorocarbon-243 (CAS No.: 000338-75-0) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Hydrochlorofluorocarbon-244 | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Hydrochlorofluorocarbon-251 | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Hydrochlorofluorocarbon-252 | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Hydrochlorofluorocarbon-253 (CAS No.: 000354-06-1) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Hydrochlorofluorocarbon-261 (CAS No.: 000420-97-3) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Hydrochlorofluorocarbon-262 (CAS No.: 000420-99-5) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Hydrochlorofluorocarbon-271 | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HBFCs (Hydrobromofluorocarbons) | | | | |
| HBFC-21B2 (CHFBr ₂) (CAS No.: 0018685-53-7) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HBFC-22B1 (CHF ₂ Br) (CAS No.: 001511-62-2) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |

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NO. 3, LI-HSIN RD., II, SCIENCE-BASED INDUSTRIAL PARK, HSIN-CHU
CITY, TAIWAN 300, R. O. C.



| Test Item (s): | Unit | Method | MDL | Result |
|--|-------|--|-----|--------|
| | | | | No.1 |
| HBFC-31B1 (CH ₂ FBr) (CAS No.: 000373-52-4) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HBFC-121B4 (C ₂ H ₂ FBr ₄) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HBFC-122B3 (C ₂ H ₂ F ₂ Br ₃) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HBFC-123B2 (C ₂ H ₂ F ₃ Br ₂) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HBFC-124B1 (C ₂ H ₂ F ₄ Br) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HBFC-131B3 (C ₂ H ₂ FBr ₃) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HBFC-132B2 (C ₂ H ₂ F ₂ Br ₂) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HBFC-133B1 (C ₂ H ₂ F ₃ Br) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HBFC-141B2 (C ₂ H ₃ FBr ₂) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HBFC-142B1 (C ₂ H ₃ F ₂ Br) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HBFC-151B1 (C ₂ H ₄ FBr) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HBFC-221B6 (C ₃ H ₂ FBr ₆) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HBFC-222B5 (C ₃ H ₂ F ₂ Br ₅) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |

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NO. 3, LI-HSIN RD., II, SCIENCE-BASED INDUSTRIAL PARK, HSIN-CHU
CITY, TAIWAN 300, R. O. C.



| Test Item (s): | Unit | Method | MDL | Result |
|------------------------|-------|--|-----|--------|
| | | | | No.1 |
| HBFC-223B4 (C3HF3Br4) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HBFC-224B3 (C3HF4Br3) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HBFC-225B2 (C3HF5Br2) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HBFC-226B1 (C3HF6Br) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HBFC-231B5 (C3H2FBr5) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HBFC-232B4 (C3H2F2Br4) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HBFC-233B3 (C3H2F3Br3) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HBFC-234B2 (C3H2F4Br2) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HBFC-235B1 (C3H2F5Br) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HBFC-241B4 (C3H3FBr4) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HBFC-242B3 (C3H3F2Br3) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HBFC-243B2 (C3H3F3Br2) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HBFC-244B1 (C3H3F4Br) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |

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UNITED MICROELECTRONICS CORP.
NO. 3, LI-HSIN RD., II, SCIENCE-BASED INDUSTRIAL PARK, HSIN-CHU
CITY, TAIWAN 300, R. O. C.



| Test Item (s): | Unit | Method | MDL | Result |
|--|-------|--|-----|--------|
| | | | | No.1 |
| HBFC-251B3 (C3H4FBr3) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HBFC-252B2 (C3H4F2Br2) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HBFC-253B1 (C3H4F3Br) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HBFC-261B2 (C3H5FBr2) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HBFC-262B1 (C3H5F2Br) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HBFC-271B1 (C3H6FBr) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Bromomethane (CAS No.: 000074-83-9) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| CHCs (Chlorinate hydrocarbon) | | | | |
| 1,1,1,2-Tetrachloroethane (CAS No.: 000630-20-6) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| 1,1,1-Trichloroethane (CAS No.: 000071-55-6) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| 1,1,2,2-Tetrachloroethane (CAS No.: 000079-34-5) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| 1,1,2-Trichloroethane (CAS No.: 000079-00-5) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| 1,1-Dichloroethane (CAS No.: 000075-34-3) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |

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Test Report

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UNITED MICROELECTRONICS CORP.
NO. 3, LI-HSIN RD., II, SCIENCE-BASED INDUSTRIAL PARK, HSIN-CHU
CITY, TAIWAN 300, R. O. C.



| Test Item (s): | Unit | Method | MDL | Result |
|--|-------|--|-----|--------|
| | | | | No.1 |
| 1,1-Dichloroethene (CAS No.: 000075-35-4) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| 1,1-Dichloropropene (CAS No.: 000563-58-6) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| 1,2,3-Trichloropropane (CAS No.: 000096-19-5) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| 1,2-Dichloroethane (CAS No.: 000107-06-2) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| 1,2-Dichloropropane (CAS No.: 000078-87-5) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| 1,3-Dichloropropane (CAS No.: 000142-28-9) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| 2,2-Dichloropropane (CAS No.: 000594-20-7) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Carbon tetrachloride (CAS No.: 000056-23-5) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Chloroethane (CAS No.: 000075-00-3) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Chloroform (CAS No.: 000067-66-3) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Chloromethane (CAS No.: 000074-87-3) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| cis-1,2-Dichloroethene (CAS No.: 000156-59-2) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| cis-1,3-Dichloropropene (CAS No.: 010061-01-5) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |

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UNITED MICROELECTRONICS CORP.
NO. 3, LI-HSIN RD., II, SCIENCE-BASED INDUSTRIAL PARK, HSIN-CHU
CITY, TAIWAN 300, R. O. C.



| Test Item (s): | Unit | Method | MDL | Result |
|--|-------|--|-----|--------|
| | | | | No.1 |
| Hexachlorobutadiene (CAS No.: 000087-68-3) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Methylene Chloride (CAS No.: 000075-09-2) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Tetrachloroethene (CAS No.: 000127-18-4) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| trans-1,2-Dichloroethene (CAS No.: 000156-60-5) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| trans-1,3-Dichloropropene (CAS No.: 010061-02-6) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Trichloroethylene (CAS No.: 000079-01-6) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HFCs (Hydrofluorocarbon) | | | | |
| HFC-23 (CHF3)(CAS No.: 000075-46-7) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HFC-32 (CH2F2)(CAS No.: 000075-10-5) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HFC-41 (CH3F)(CAS No.: 000593-53-3) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HFC-43-10mee (C5H2F10) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HFC-125 (C2HF5) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HFC-134 (C2H2F4) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |

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UNITED MICROELECTRONICS CORP.
NO. 3, LI-HSIN RD., II, SCIENCE-BASED INDUSTRIAL PARK, HSIN-CHU
CITY, TAIWAN 300, R. O. C.



| Test Item (s): | Unit | Method | MDL | Result |
|---|-------|--|-----|--------|
| | | | | No.1 |
| HFC-134a (CH ₂ FCF ₃)(CAS No.: 000811-97-2) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HFC-143 (CH ₃ F ₃) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HFC-143a (CH ₃ F ₃) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HFC-152a (C ₂ H ₄ F ₂)(CAS No.: 000075-37-6) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HFC-227ea (C ₃ HF ₇)(CAS No.: 000431-89-0) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HFC-236ea (C ₃ H ₂ F ₆)(CAS No.: 000431-63-0) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HFC-236fa (C ₃ H ₂ F ₆) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HFC-245ca (C ₃ H ₃ F ₅) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HFC-245fa (C ₃ H ₃ F ₅) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| HFC-365mfc (C ₄ H ₅ F ₅) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| PFCs (Perfluorocarbon) | | | | |
| F14 (CAS No.: 000075-73-0) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Fluorocarbon 116 (CAS No.: 000076-16-4) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |

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UNITED MICROELECTRONICS CORP.
NO. 3, LI-HSIN RD., II, SCIENCE-BASED INDUSTRIAL PARK, HSIN-CHU
CITY, TAIWAN 300, R. O. C.



| Test Item (s): | Unit | Method | MDL | Result |
|--|-------|--|-----|----------|
| | | | | No.1 |
| Freon 218 (CAS No.: 000076-19-7) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Decafluorobutane (CAS No.: 000355-25-9) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Freon C318 (CAS No.: 000115-25-3) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Perfluor-1-butene (CAS No.: 000357-26-6) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| perfluorisobutene (CAS No.: 000382-21-8) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| 1,4-dihydrooctafluorobutane (CAS No.: 000377-36-6) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Nonafluor-2- (trifluoromethyl) butane (CAS No.: 000594-91-2) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Perfluoro-n-pentane (CAS No.: 000678-26-2) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| 2-perfluoromethylpentane (CAS No.: 000355-04-4) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Perfluorohexane (CAS No.: 000355-42-0) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Asbestos | | | | |
| Actinolite (CAS No.: 013768-00-8, 077536-66-4) | % | As per NIOSH 9000 method. Analysis was performed by XRD. | 1 | Negative |
| Amosite (CAS No.: 012172-73-5) | % | As per NIOSH 9000 method. Analysis was performed by XRD. | 1 | Negative |
| Anthophyllite (CAS No.: 017068-78-9, 077536-67-5) | % | As per NIOSH 9000 method. Analysis was performed by XRD. | 1 | Negative |

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UNITED MICROELECTRONICS CORP.
NO. 3, LI-HSIN RD., II, SCIENCE-BASED INDUSTRIAL PARK, HSIN-CHU
CITY, TAIWAN 300, R. O. C.



| Test Item (s): | Unit | Method | MDL | Result |
|--|-------|--|-----|----------|
| | | | | No.1 |
| Chrysotile (CAS No.: 012001-29-5) | % | As per NIOSH 9000 method. Analysis was performed by XRD. | 1 | Negative |
| Crocidolite (CAS No.: 012001-28-4) | % | As per NIOSH 9000 method. Analysis was performed by XRD. | 1 | Negative |
| Tremolite (CAS No.: 014567-73-8, 077536-68-6) | % | As per NIOSH 9000 method. Analysis was performed by XRD. | 1 | Negative |
| AZO | | | | |
| 1): 4-AMINODIPHENYL (CAS No.: 000092-67-1) | mg/kg | With reference to LMBG 82.02-2. Analysis was performed by GC/MS. | 3 | n.d. |
| 2): BENZIDINE (CAS No.: 00092-87-5) | mg/kg | With reference to LMBG 82.02-2. Analysis was performed by GC/MS. | 3 | n.d. |
| 3): 4-CHLORO-O-TOLUIDINE (CAS No.: 000095-69-2) | mg/kg | With reference to LMBG 82.02-2. Analysis was performed by GC/MS. | 3 | n.d. |
| 4): 2-NAPHTHYLAMINE (CAS No.: 000091-59-8) | mg/kg | With reference to LMBG 82.02-2. Analysis was performed by GC/MS. | 3 | n.d. |
| 5): O-AMINOAZOTOLUENE (CAS No.: 000097-56-3) | mg/kg | With reference to LMBG 82.02-2. Analysis was performed by GC/MS. | 3 | n.d. |
| 6): 2-AMINO-4-NITROTOLUENE (CAS No.: 000099-55-8) | mg/kg | With reference to LMBG 82.02-2. Analysis was performed by GC/MS. | 3 | n.d. |
| 7): P-CHLOROANILINE (CAS No.: 000106-47-8) | mg/kg | With reference to LMBG 82.02-2. Analysis was performed by GC/MS. | 3 | n.d. |
| 8): 2,4-DIAMINOANISOLE (CAS No.: 000615-05-4) | mg/kg | With reference to LMBG 82.02-2. Analysis was performed by GC/MS. | 3 | n.d. |
| 9): 4,4'-DIAMINODIPHENYLMETHANE (CAS No.: 000101-77-9) | mg/kg | With reference to LMBG 82.02-2. Analysis was performed by GC/MS. | 3 | n.d. |
| 10): 3,3'-DICHLOOROBENZIDINE (CAS No.: 000091-94-1) | mg/kg | With reference to LMBG 82.02-2. Analysis was performed by GC/MS. | 3 | n.d. |

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No. : CE/2009/53782 Date : 2009/06/03 Page : 16 of 31

UNITED MICROELECTRONICS CORP.
NO. 3, LI-HSIN RD., II, SCIENCE-BASED INDUSTRIAL PARK, HSIN-CHU
CITY, TAIWAN 300, R. O. C.



| Test Item (s): | Unit | Method | MDL | Result |
|--|-------|--|-----|--------|
| | | | | No.1 |
| 11): 3,3'-DIMETHOXYBENZIDINE (CAS No.: 000119-90-4) | mg/kg | With reference to LMBG 82.02-2. Analysis was performed by GC/MS. | 3 | n.d. |
| 12): 3,3'-DIMETHYLBENZIDINE (CAS No.: 000119-93-7) | mg/kg | With reference to LMBG 82.02-2. Analysis was performed by GC/MS. | 3 | n.d. |
| 13): 3,3'-DIMETHYL-4,4'- DIAMINODIPHENYLMETHANE (CAS No.: 000838-88-0) | mg/kg | With reference to LMBG 82.02-2. Analysis was performed by GC/MS. | 3 | n.d. |
| 14): P-CRESIDINE (2-METHOXY- 5-METHYLANILINE) (CAS No.: 000120-71-8) | mg/kg | With reference to LMBG 82.02-2. Analysis was performed by GC/MS. | 3 | n.d. |
| 15): 4,4'-METHYLENE-BIS- (2- CHLOROANILINE) (CAS No.: 000101-14-4) | mg/kg | With reference to LMBG 82.02-2. Analysis was performed by GC/MS. | 3 | n.d. |
| 16): 4,4'-OXYDIANILINE (CAS No.: 000101-80-4) | mg/kg | With reference to LMBG 82.02-2. Analysis was performed by GC/MS. | 3 | n.d. |
| 17): 4,4'-THIODIANILINE (CAS No.: 000139-65-1) | mg/kg | With reference to LMBG 82.02-2. Analysis was performed by GC/MS. | 3 | n.d. |
| 18): O-TOLUIDINE (CAS No.: 000095-53-4) | mg/kg | With reference to LMBG 82.02-2. Analysis was performed by GC/MS. | 3 | n.d. |
| 19): 2,4-TOLUYLENEDIAMINE (CAS No.: 000095-80-7) | mg/kg | With reference to LMBG 82.02-2. Analysis was performed by GC/MS. | 3 | n.d. |
| 20): 2,4,5-TRIMETHYLANILINE (CAS No.: 000137-17-7) | mg/kg | With reference to LMBG 82.02-2. Analysis was performed by GC/MS. | 3 | n.d. |
| 21): O-ANISIDINE (CAS No.: 000090-04-0) | mg/kg | With reference to LMBG 82.02-2. Analysis was performed by GC/MS. | 3 | n.d. |
| 22): P-AMINOAZOBENZENE (CAS No.: 000060-09-3) | mg/kg | With reference to LMBG 82.02-2. Analysis was performed by GC/MS. | 3 | n.d. |
| 23): 2,4-XYLIDINE (CAS No.: 000095-68-1) | mg/kg | With reference to LMBG 82.02-2. Analysis was performed by GC/MS. | 3 | n.d. |

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Test Report

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UNITED MICROELECTRONICS CORP.
NO. 3, LI-HSIN RD., II, SCIENCE-BASED INDUSTRIAL PARK, HSIN-CHU
CITY, TAIWAN 300, R. O. C.



| Test Item (s): | Unit | Method | MDL | Result |
|---|-------|--|-----|----------|
| | | | | No.1 |
| 24): 2,6-XYLIDINE (CAS No.: 000087-62-7) | mg/kg | With reference to LMBG 82.02-2. Analysis was performed by GC/MS. | 3 | n.d. |
| Ethylene glycol ether | | | | |
| Ethylene glycol monomethyl ether (CAS No.: 000109-86-4) | mg/kg | With reference to US EPA 3550C: 2007 method. Analysis was performed by GC/MS. | 10 | n.d. |
| Ethylene glycol monoethyl ether (CAS No.: 000110-80-5) | mg/kg | With reference to US EPA 3550C: 2007 method. Analysis was performed by GC/MS. | 10 | n.d. |
| Ethylene glycol monomethyl ether acetate (CAS No.: 000110-49-6) | mg/kg | With reference to US EPA 3550C: 2007 method. Analysis was performed by GC/MS. | 10 | n.d. |
| Ethylene glycol monoethyl ether acetate (CAS No.: 000111-15-9) | mg/kg | With reference to US EPA 3550C: 2007 method. Analysis was performed by GC/MS. | 10 | n.d. |
| Diethylene glycol dimethyl ether | mg/kg | With reference to US EPA 3550C: 2007 method. Analysis was performed by GC/MS. | 10 | n.d. |
| Bis Chloromethyl ether (CAS No.: 000542-88-1) | mg/kg | With reference to US EPA 8270D method. Analysis was performed by GC/MS. | 1 | n.d. |
| Caesium (Cs) (CAS No.: 007440-46-2) | mg/kg | With reference to US EPA 3052 & 6020 method. Analysis was performed by ICP-MS. | 1 | n.d. |
| Thorium (Th) (CAS No.: 007440-29-1) | mg/kg | With reference to US EPA 3052 & 6020 method. Analysis was performed by ICP-MS. | 1 | n.d. |
| Uranium (U) (CAS No.: 007440-61-1) | mg/kg | With reference to US EPA 3052 & 6020 method. Analysis was performed by ICP-MS. | 1 | n.d. |
| Strontium (Sr) (CAS No.: 007440-24-6) | mg/kg | With reference to US EPA 3052 & 6020 method. Analysis was performed by ICP-MS. | 1 | n.d. |
| PVC (CAS No.: 9002-86-2) | ** | Analysis was performed by FTIR and FLAME Test. | - | Negative |
| Arsenic (As) | mg/kg | With reference to US EPA Method 3052 for Arsenic Content. Analysis was performed by ICP-AES. | 2 | n.d. |

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UNITED MICROELECTRONICS CORP.
NO. 3, LI-HSIN RD., II, SCIENCE-BASED INDUSTRIAL PARK, HSIN-CHU
CITY, TAIWAN 300, R. O. C.



| Test Item (s): | Unit | Method | MDL | Result |
|---|-------|---|-----|--------|
| | | | | No.1 |
| Beryllium (Be) | mg/kg | With reference to US EPA Method 3050B for Beryllium Content. Analysis was performed by ICP-AES. | 2 | n.d. |
| Nickel (Ni) | mg/kg | With reference to US EPA Method 3050B for Nickel Content. Analysis was performed by ICP-AES. | 2 | n.d. |
| Benzene | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| 1,1-Dichloroethylene | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| 1,2-Dichloroethylene | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Tetrachloroethylene | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Dichloromethane | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Pentachloroethane (CAS No.: 000076-01-7) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Formaldehyde (CAS No.: 000050-00-0) | mg/kg | With reference to DIN 53315 method. Analysis was performed by HPLC/DAD. | 3 | n.d. |
| Aliphatic CHCs (Chlorinated Hydrocarbons) | | | | |
| Dichloroethylene (CAS No.: 000156-59-2、000156-60-5、000075-35-4) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |
| Perchloroethylene (CAS No.: 000127-18-4) | mg/kg | With reference to US EPA 5021 method. Analysis was performed by GC/MS. | 1 | n.d. |

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UNITED MICROELECTRONICS CORP.
NO. 3, LI-HSIN RD., II, SCIENCE-BASED INDUSTRIAL PARK, HSIN-CHU
CITY, TAIWAN 300, R. O. C.



| Test Item (s): | Unit | Method | MDL | Result |
|--|-------|---|-----|--------|
| | | | | No.1 |
| Halogenated Aromatic Compounds | | | | |
| 2-Chlorophenol (CAS No.: 000095-57-8) | mg/kg | With reference to US EPA 3550C: 2007 method. Analysis was performed by GC/MS. | 20 | n.d. |
| 1,3-Dichlorobenzene (CAS No.: 000541-73-1) | mg/kg | With reference to US EPA 3550C: 2007 method. Analysis was performed by GC/MS. | 20 | n.d. |
| 1,4-Dichlorobenzene (CAS No.: 000106-46-7) | mg/kg | With reference to US EPA 3550C: 2007 method. Analysis was performed by GC/MS. | 20 | n.d. |
| 1,2-Dichlorobenzene (CAS No.: 000095-50-1) | mg/kg | With reference to US EPA 3550C: 2007 method. Analysis was performed by GC/MS. | 20 | n.d. |
| 1,2,4-Trichlorobenzene (CAS No.: 000120-82-1) | mg/kg | With reference to US EPA 3550C: 2007 method. Analysis was performed by GC/MS. | 20 | n.d. |
| 2,4-Dichlorophenol (CAS No.: 000120-83-2) | mg/kg | With reference to US EPA 3550C: 2007 method. Analysis was performed by GC/MS. | 20 | n.d. |
| 4-Chloroaniline (CAS No.: 000106-47-8) | mg/kg | With reference to US EPA 3550C: 2007 method. Analysis was performed by GC/MS. | 20 | n.d. |
| 4-Chloro-3-methylphenol (CAS No.: 000059-50-7) | mg/kg | With reference to US EPA 3550C: 2007 method. Analysis was performed by GC/MS. | 20 | n.d. |
| 2,4,6-Trichlorophenol (CAS No.: 000088-06-2) | mg/kg | With reference to US EPA 3550C: 2007 method. Analysis was performed by GC/MS. | 20 | n.d. |
| 2,4,5-Trichlorophenol (CAS No.: 000095-95-4) | mg/kg | With reference to US EPA 3550C: 2007 method. Analysis was performed by GC/MS. | 20 | n.d. |
| 2-Chloronaphthalene (CAS No.: 000091-58-7) | mg/kg | With reference to US EPA 3550C: 2007 method. Analysis was performed by GC/MS. | 20 | n.d. |
| 4-Chlorophenyl phenyl ether (CAS No.: 007005-72-3) | mg/kg | With reference to US EPA 3550C: 2007 method. Analysis was performed by GC/MS. | 20 | n.d. |

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UNITED MICROELECTRONICS CORP.
NO. 3, LI-HSIN RD., II, SCIENCE-BASED INDUSTRIAL PARK, HSIN-CHU
CITY, TAIWAN 300, R. O. C.



| Test Item (s): | Unit | Method | MDL | Result |
|--|-------|---|-------|--------|
| | | | | No.1 |
| Hexachlorobenzene (CAS No.: 000118-74-1) | mg/kg | With reference to US EPA 3550C: 2007 method. Analysis was performed by GC/MS. | 20 | n.d. |
| Pentachlorophenol (CAS No.: 000087-86-5) | mg/kg | With reference to US EPA 3550C: 2007 method. Analysis was performed by GC/MS. | 20 | n.d. |
| 3,3-Dichlorobenzidine (CAS No.: 000091-94-1) | mg/kg | With reference to US EPA 3550C: 2007 method. Analysis was performed by GC/MS. | 20 | n.d. |
| Phthalates | | | | |
| DBP (Dibutyl phthalate) (CAS No.: 000084-74-2) | % | With reference to EN 14372: 2004. Analysis was performed by GC/MS. | 0.003 | n.d. |
| DINP (Di-isononyl phthalate) (CAS No.: 028553-12-0) | % | With reference to EN 14372: 2004. Analysis was performed by GC/MS. | 0.01 | n.d. |
| DEHP (Di- (2-ethylhexyl) phthalate) (CAS No.: 000117-81-7) | % | With reference to EN 14372: 2004. Analysis was performed by GC/MS. | 0.003 | n.d. |
| DIDP (Di-isodecyl phthalate) (CAS No.: 026761-40-0) | % | With reference to EN 14372: 2004. Analysis was performed by GC/MS. | 0.01 | n.d. |
| DNOP (Di-n-octyl phthalate) (CAS No.: 000117-84-0) | % | With reference to EN 14372: 2004. Analysis was performed by GC/MS. | 0.003 | n.d. |
| BBP (Benzyl butyl phthalate) (CAS No.: 000085-68-7) | % | With reference to EN 14372: 2004. Analysis was performed by GC/MS. | 0.003 | n.d. |
| DNHP (Di-n-hexyl phthalate) (CAS No.: 000084-75-3) | % | With reference to EN 14372: 2004. Analysis was performed by GC/MS. | 0.003 | n.d. |
| Selenium (Se) | mg/kg | With reference to US EPA Method 3052 for Selenium Content. Analysis was performed by ICP-AES. | 2 | n.d. |
| Pentachlorophenol (PCP) (CAS No.: 000087-86-5) | mg/kg | With reference to US EPA 8041A method. Analysis was performed by GC/MS. | 1 | n.d. |

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UNITED MICROELECTRONICS CORP.
 NO. 3, LI-HSIN RD., II, SCIENCE-BASED INDUSTRIAL PARK, HSIN-CHU
 CITY, TAIWAN 300, R. O. C.



| Test Item (s): | Unit | Method | MDL | Result |
|--|-------|--|-----|--------|
| | | | | No.1 |
| Barium (Ba) | mg/kg | With reference to US EPA Method 3050B for Barium Content. Analysis was performed by ICP-AES. | 2 | n.d. |
| Dimethyl Fumarate (CAS No.: 000624-49-7) | mg/kg | With reference to US EPA 3550C method. Analysis was performed by GC/MS. | 0.1 | n.d. |

- 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. Negative = "< 1.0 %", Positive = "> 1.0 %"
 8. The MDL is 5ppm for the single compound of CP
 9. Tributyl tin oxide [(C₄H₉)₃Sn]₂ O: Calculate from Tributyltin content multiply 1.0276 factor.

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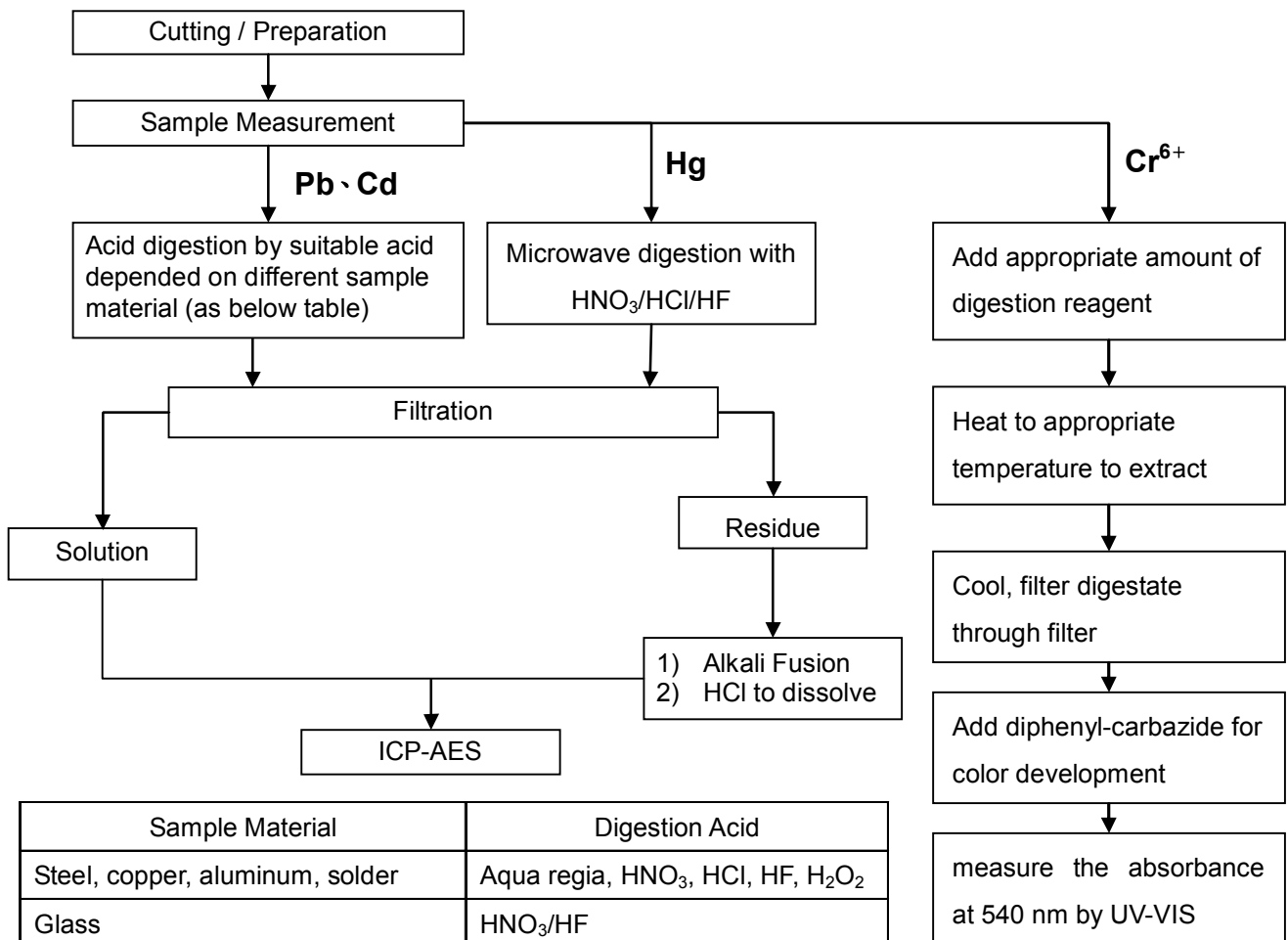
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UNITED MICROELECTRONICS CORP.
NO. 3, LI-HSIN RD., II, SCIENCE-BASED INDUSTRIAL PARK, HSIN-CHU
CITY, TAIWAN 300, R. O. C.



- 1) These samples were dissolved totally by pre-conditioning method according to below flow chart.
(Cr⁶⁺ test method excluded)
- 2) Name of the person who made measurement: Climbgreat Yang
- 3) Name of the person in charge of measurement: Troy Chang



| Sample Material | Digestion Acid |
|------------------------------------|---|
| Steel, copper, aluminum, solder | Aqua regia, HNO ₃ , HCl, HF, H ₂ O ₂ |
| Glass | HNO ₃ /HF |
| Gold, platinum, palladium, ceramic | Aqua regia |
| Silver | HNO ₃ |
| Plastic | H ₂ SO ₄ , H ₂ O ₂ , HNO ₃ , HCl |
| Others | Any acid to total digestion |

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Test Report

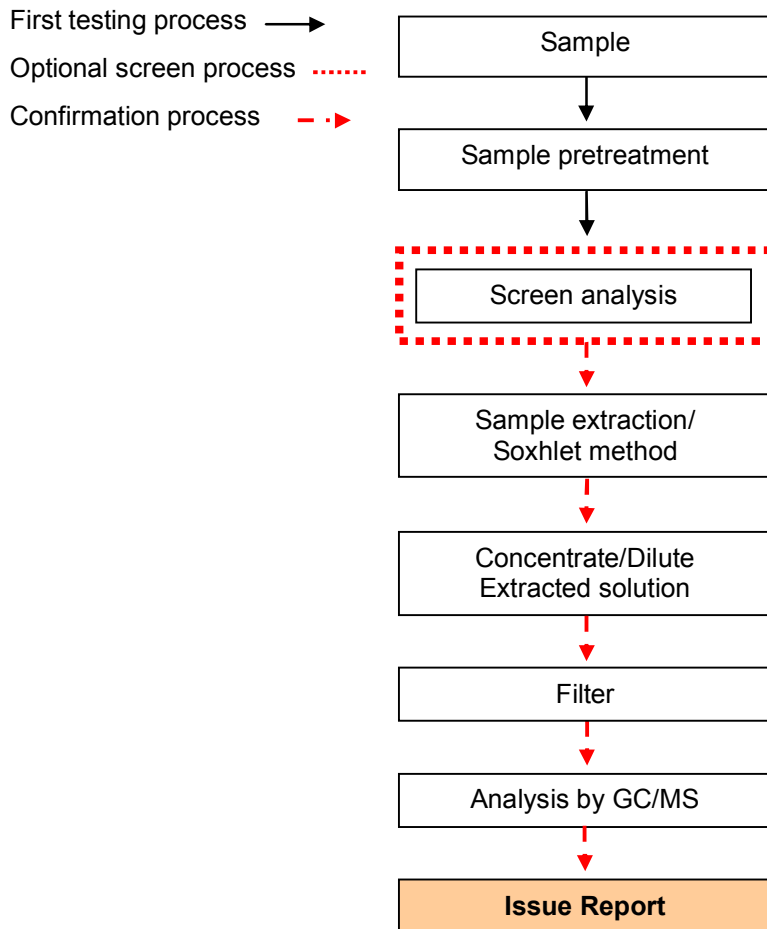
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UNITED MICROELECTRONICS CORP.
 NO. 3, LI-HSIN RD., II, SCIENCE-BASED INDUSTRIAL PARK, HSIN-CHU
 CITY, TAIWAN 300, R. O. C.



PBB/PBDE analytical FLOW CHART

- 1) Name of the person who made measurement: Roman Wong
- 2) Name of the person in charge of measurement: Shinjyh Chen



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Test Report

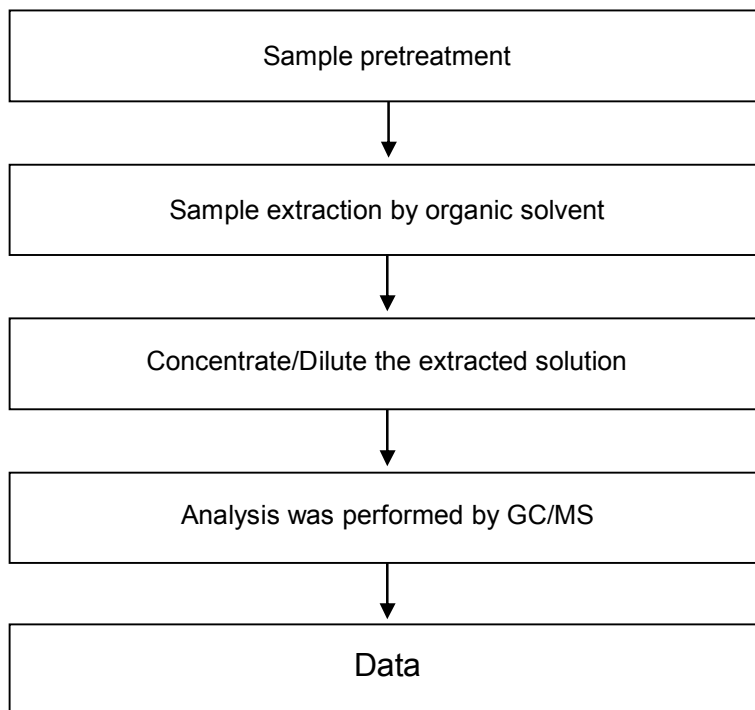
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UNITED MICROELECTRONICS CORP.
 NO. 3, LI-HSIN RD., II, SCIENCE-BASED INDUSTRIAL PARK, HSIN-CHU
 CITY, TAIWAN 300, R. O. C.



Chlorinated Flame retardant analytical flow chart

- 1) Name of the person who made measurement: Max Liu
 - 2) Name of the person in charge of measurement: Shinjyh Chen
- Reference method: US EPA 8270D, US EPA 3540
 - Test Items: PCBs, PCNs, PCTs, Mirex, CP, M CCP



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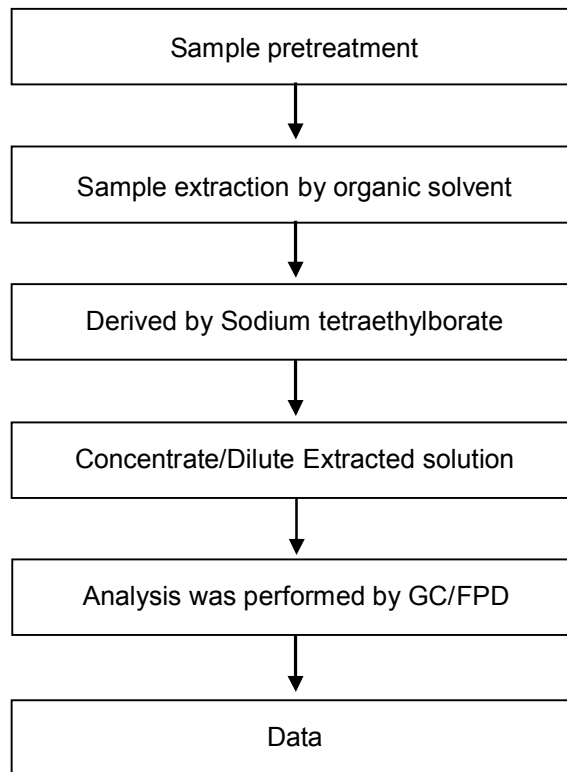
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UNITED MICROELECTRONICS CORP.
 NO. 3, LI-HSIN RD., II, SCIENCE-BASED INDUSTRIAL PARK, HSIN-CHU
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Analytical flow chart of Organic-Tin content

- 1) Name of the person who made measurement: Vita Tu
- 2) Name of the person in charge of measurement: Shinjyh Chen



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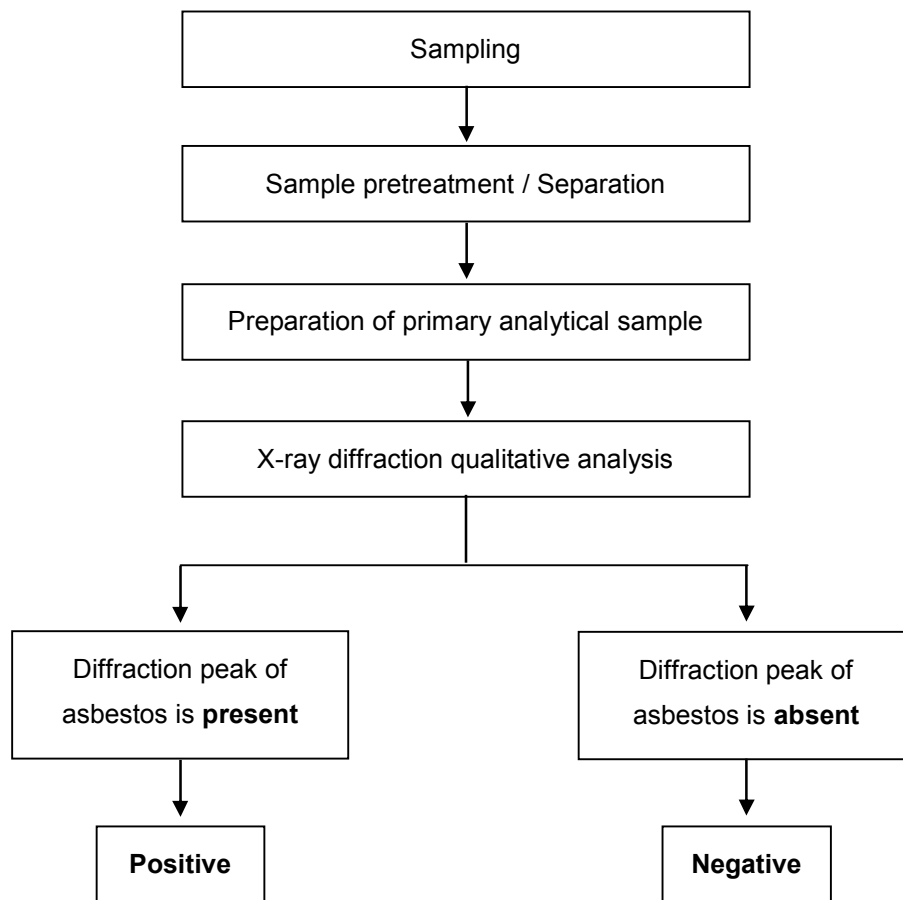
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UNITED MICROELECTRONICS CORP.
NO. 3, LI-HSIN RD., II, SCIENCE-BASED INDUSTRIAL PARK, HSIN-CHU
CITY, TAIWAN 300, R. O. C.



Analysis flow chart for determination of Asbestos

- 1) Name of the person who made measurement: Victor Kao
- 2) Name of the person in charge of measurement: James Lu



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Test Report

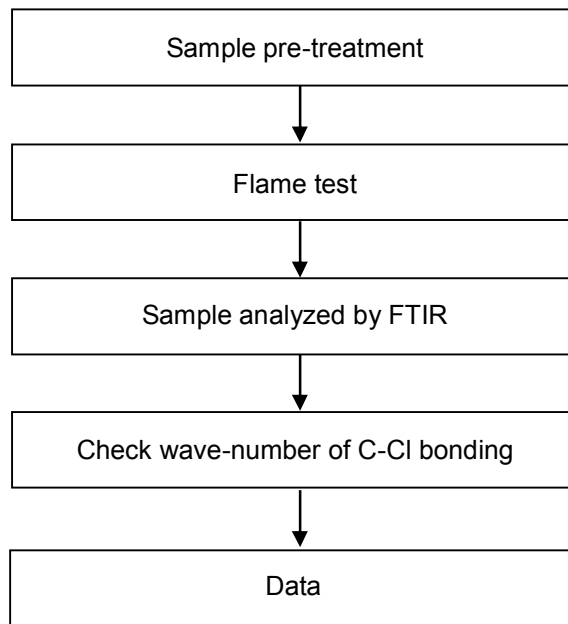
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UNITED MICROELECTRONICS CORP.
 NO. 3, LI-HSIN RD., II, SCIENCE-BASED INDUSTRIAL PARK, HSIN-CHU
 CITY, TAIWAN 300, R. O. C.



Analysis flow chart for determination of PVC in material

- 1) Name of the person who made measurement: Eva Chao
- 2) Name of the person in charge of measurement: Shinjyh Chen



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Test Report

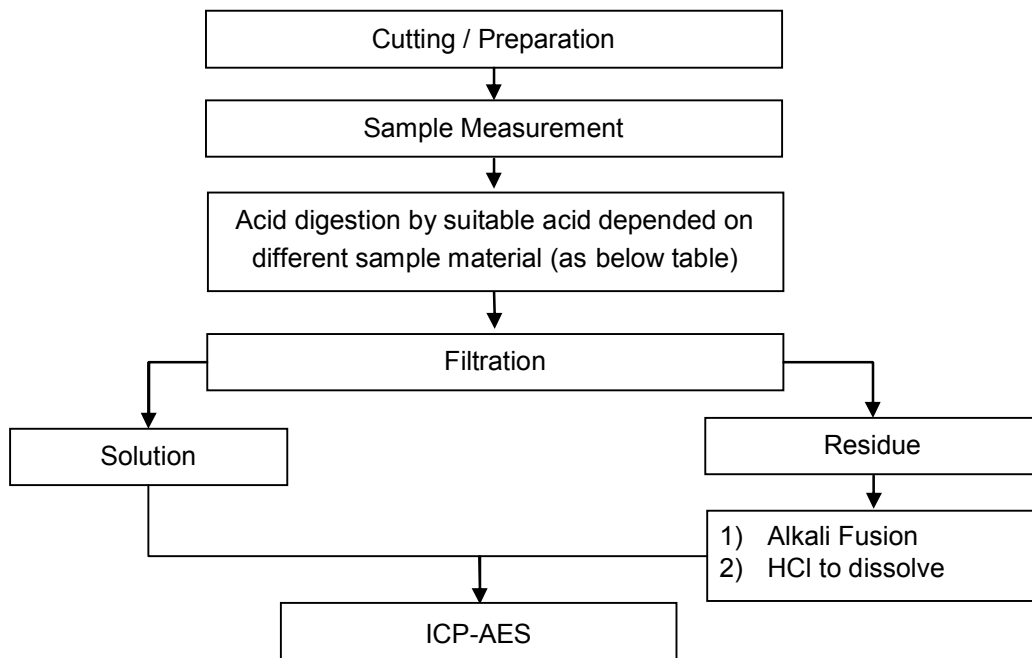
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NO. 3, LI-HSIN RD., II, SCIENCE-BASED INDUSTRIAL PARK, HSIN-CHU
CITY, TAIWAN 300, R. O. C.



- 1) These samples were dissolved totally by pre-conditioning method according to below flow chart.
- 2) Name of the person who made measurement: Climbgreat Yang
- 3) Name of the person in charge of measurement: Troy Chang

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



| | |
|------------------------------------|---|
| Steel, copper, aluminum, solder | Aqua regia, HNO ₃ , HCl, HF, H ₂ O ₂ |
| Glass | HNO ₃ /HF |
| Gold, platinum, palladium, ceramic | Aqua regia |
| Silver | HNO ₃ |
| Plastic | H ₂ SO ₄ , H ₂ O ₂ , HNO ₃ , HCl |
| Others | Any acid to total digestion |

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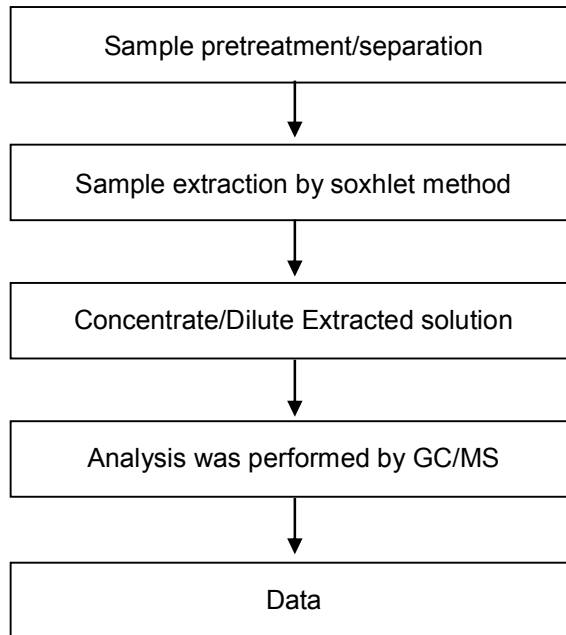
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Analytical flow chart of phthalate content

- 1) Name of the person who made measurement: Andy Shu
- 2) Name of the person in charge of measurement: Shinjyh Chen



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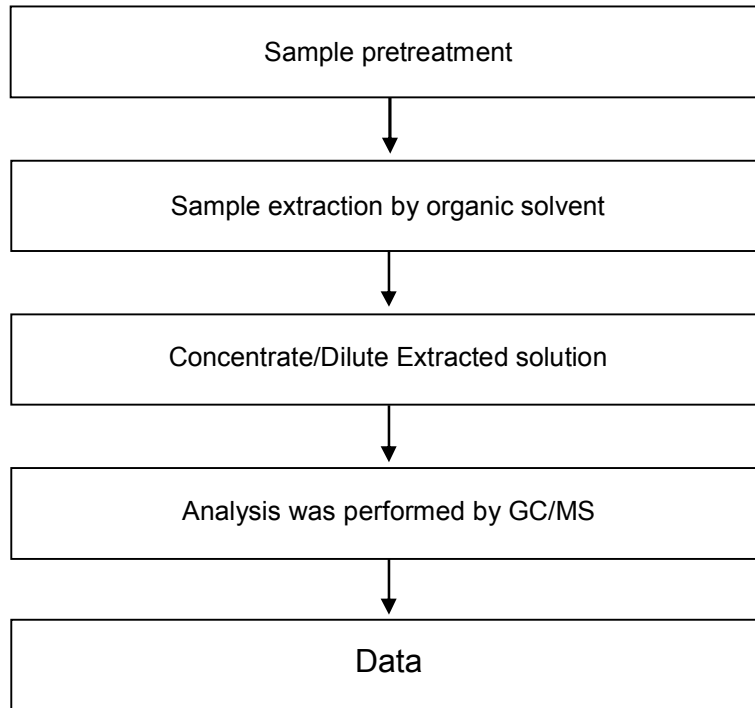
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Analytical flow chart of Dimethyl Fumarate content

- 1) Name of the person who made measurement: Ivy Chang
- 2) Name of the person in charge of measurement: Shinjyh Chen



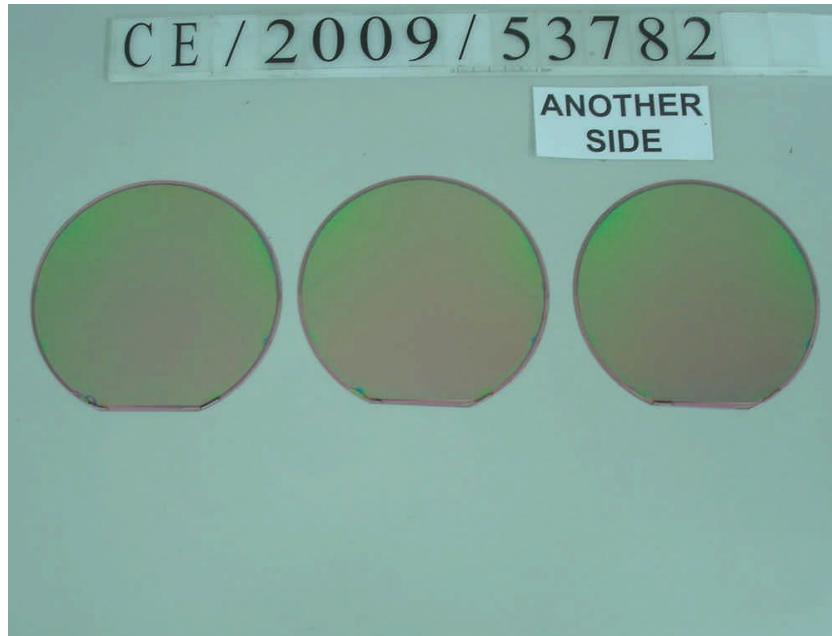
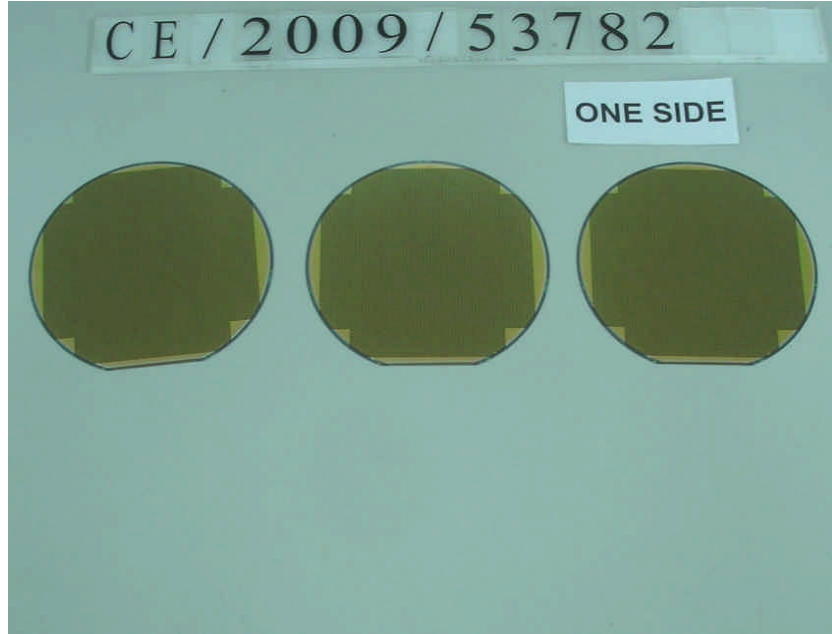
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**** End of Report ****

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