

## Test Report

No. : CE/2009/47315D Date : 2009/07/14 Page : 1 of 42


VANGUARD INTERNATIONAL SEMICONDUCTOR CORPORATION  
NO. 123, PARK AVE-3RD, HSINCHU SCIENCE PARK, HSINCHU  
TAIWAN 30077, R. O. C.



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

Sample Description : VIS LOGIC WAFER BY AL PROCESS  
Style/Item No. : 2009VIS1F16L  
Sample Receiving Date : 2009/04/29  
Testing Period : 2009/04/29 TO 2009/05/14 AND 2009/05/15 TO 2009/05/25

=====  
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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VANGUARD INTERNATIONAL SEMICONDUCTOR CORPORATION  
NO. 123, PARK AVE-3RD, HSINCHU SCIENCE PARK, HSINCHU  
TAIWAN 30077, R. O. C.



## Test Result(s)

PART NAME NO.1 : MULTICOLOR 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.
Silver (Ag)	mg/kg	Analysis was performed by ICP-MS.	1	n.d.
Aluminum (Al)	mg/kg	Analysis was performed by ICP-MS.	1	2070
Arsenic (As)	mg/kg	Analysis was performed by ICP-MS.	1	n.d.
Gold (Au)	mg/kg	Analysis was performed by ICP-MS.	1	n.d.
Barium (Ba)	mg/kg	Analysis was performed by ICP-MS.	1	n.d.
Bismuth (Bi)	mg/kg	Analysis was performed by ICP-MS.	1	n.d.
Chromium (TCr)	mg/kg	Analysis was performed by ICP-MS.	1	n.d.
Copper (Cu)	mg/kg	Analysis was performed by ICP-MS.	1	12.7
Magnesium (Mg)	mg/kg	Analysis was performed by ICP-MS.	1	n.d.
Nickel (Ni)	mg/kg	Analysis was performed by ICP-MS.	1	n.d.
Palladium (Pd)	mg/kg	Analysis was performed by ICP-MS.	1	n.d.
Antimony (Sb)	mg/kg	Analysis was performed by ICP-MS.	1	n.d.
Selenium (Se)	mg/kg	Analysis was performed by ICP-MS.	1	n.d.
Tin (Sn)	mg/kg	Analysis was performed by ICP-MS.	1	n.d.
Tellurium (Te)	mg/kg	Analysis was performed by ICP-MS.	1	n.d.
Thallium (Tl)	mg/kg	Analysis was performed by ICP-MS.	1	n.d.
Zinc (Zn)	mg/kg	Analysis was performed by ICP-MS.	1	n.d.
Beryllium (Be)	mg/kg	Analysis was performed by ICP-MS.	1	n.d.
Lithium (TLi)	mg/kg	Analysis was performed by ICP-MS.	1	n.d.
Antimony trioxide (Sb <sub>2</sub> O <sub>3</sub> )*** (CAS No.: 001309-64-4)	mg/kg	Analysis was performed by ICP-MS.	-	n.d.
Beryllium oxide (BeO)***	mg/kg	Analysis was performed by ICP-MS.	-	n.d.
Cobalt dichloride (CAS No.: 007646-79-9)	mg/kg	SGS In-House method-RSTS-EE-SVHC-002. Analyzed by ICP-AES.	5	n.d.

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 TAIWAN 30077, R. O. C.



Test Item (s):	Unit	Method	MDL	Result
				No.1
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.
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 Terphenyls (PCTs)	mg/kg	With reference to US EPA 3540C method. Analysis was performed by GC/MS.	0.5	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 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.
PCP (Pentachlorophenol) (CAS No.: 000087-86-5)	mg/kg	With reference to LFGB §64 BVL B 82.02.8: 2001 method. Analysis was performed by GC/ECD.	5	n.d.
Tetrabromobisphenol A (TBBP-A) (CAS No.: 000079-94-7)	mg/kg	With reference to DIN 53313. Analysis was performed by GC/MS.	10	n.d.
TBBP-A-bis (CAS No.: 021850-44-2)	mg/kg	With reference to US EPA3540C method. Analysis was performed by HPLC/DAD/MS.	5	n.d.
PVC	**	Analysis was performed by FTIR and FLAME Test.	-	Negative
Formaldehyde (CAS No.: 000050-00-0)	mg/kg	With reference to DIN 53315 method. Analysis was performed by HPLC/DAD.	3	n.d.
Hexabromocyclododecane (HBCDD) (CAS No.: 025637-99-4)	mg/kg	With reference to US EPA 3540C: 1996 method. Analysis was performed by GC/MS.	5	n.d.
Hexabromobenzene	mg/kg	With reference to US EPA 8270D method. Analysis was performed by GC/MS.	5	n.d.

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Test Item (s):	Unit	Method	MDL	Result
				No.1
Brominated styrene	mg/kg	With reference to US EPA 3540C method. Analysis was performed by GC/MS.	5	n.d.
Bis(pentabromophenyl) ethane)	**	With reference to US EPA 3540C method. Analysis was performed by GC/MS.	-	Negative
Bromomethane (CAS No.: 000074-83-9)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
Polychlorinated Phenols	mg/kg	With reference to US EPA 8270D method. Analysis was performed by GC/MS.	10	n.d.
Monomethyl dibromodiphenyl methane (DBBT)	mg/kg	With reference to US EPA 8270D method. Analysis was performed by GC/MS.	0.5	n.d.
Monomethyl dichlorodiphenyl methane (Ugilec121)	mg/kg	With reference to US EPA 8270D method. Analysis was performed by GC/MS.	0.5	n.d.
Monomethyl tetrachlorodiphenyl methane (Ugilec141)	mg/kg	With reference to US EPA 8270D method. Analysis was performed by GC/MS.	0.5	n.d.
2,4,6-Tri-tert-butylphenol (CAS No.: 732-26-3)	mg/kg	With reference to US EPA 8270D. Analysis was performed by GC/MS.	5	n.d.
Benzene (CAS No.: 000071-43-2)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
Toluene (CAS No.: 000108-88-3)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
Xylenes	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
Chlordane (CAS No.: 000057-74-9)	mg/kg	With reference to US EPA 8270D method. Analysis was performed by GC/MS/MS.	0.1	n.d.
DDT (CAS No.: 000050-29-3)	mg/kg	With reference to US EPA 8270D method. Analysis was performed by GC/MS/MS.	0.1	n.d.
Aldrin (CAS No.: 000309-00-2)	mg/kg	With reference to US EPA 8270D method. Analysis was performed by GC/MS/MS.	0.1	n.d.
Endrin (CAS No.: 000072-20-8)	mg/kg	With reference to US EPA 8270D method. Analysis was performed by GC/MS/MS.	0.1	n.d.
Dieldrin (CAS No.: 000060-57-1)	mg/kg	With reference to US EPA 8270D method. Analysis was performed by GC/MS/MS.	0.1	n.d.
Hexachlorobenzene (CAS No.: 000118-74-1)	mg/kg	With reference to US EPA 8270D method. Analysis was performed by GC/MS.	5	n.d.
Toxaphene (CAS No.: 008001-35-2)	mg/kg	With reference to US EPA 8270D Method. Analysis was performed by GC/MS/MS.	5	n.d.

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TAIWAN 30077, R. O. C.



Test Item (s):	Unit	Method	MDL	Result
				No.1
CHCs (Chlorinate hydrocarbon)	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.
2,4'-DDE (CAS No.: 003424-82-6)	mg/kg	With reference to US EPA 3550C Method. Analysis was performed by GC/MS/MS.	0.2	n.d.
4,4'-DDD (CAS No.: 000072-54-8)	mg/kg	With reference to US EPA 3550C Method. Analysis was performed by GC/MS/MS.	0.2	n.d.
4,4'-DDE (CAS No.: 000072-55-9)	mg/kg	With reference to US EPA 3550C Method. Analysis was performed by GC/MS/MS.	0.2	n.d.
Bisphenol A (CAS No.: 000080-05-7)	mg/kg	With reference to US EPA 8270D method. Analysis was performed by GC/MS.	5	n.d.
Nonylphenol (NP) (CAS No.: 025154-52-3)	mg/kg	With reference to US EPA 3550C method. Analysis was performed by GC/MS.	10	n.d.
Nonyl Phenol Ethoxylates (NPEO)	mg/kg	reference to US EPA 3550C method. Analysis was performed by LC/MS.	5	n.d.
Bis Chloromethyl ether (CAS No.: 000542-88-1)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
Medium-Chained Chlorinated Paraffins (C14-C17) (MCCP) (CAS No.: 085535-85-9)	mg/kg	With reference to US EPA 3540C: 1996 method. Analysis was performed by GC/MS.	50	n.d.
Triclosan (CAS No.:003380-34-5)	mg/kg	With reference to US EPA 3540C: 1996 method for Triclosan Content. Analysis was performed by GC/MS.	5	n.d.
Musk Xylene (CAS No.:000081-15-2)	mg/kg	With reference to US EPA 3540C: 1996 method for Musk Xylene Content. Analysis was performed by GC/MS.	10	n.d.
DODMAC/DSDMAC (CAS No.: 000107-64-2)	mg/kg	With reference to US EPA 3540C: 1996 method for DODMAC/DSDMAC Content. Analysis was performed by LC/MS.	40 (total)	n.d.
DHTDMAC (CAS No.: 061789-80-8)	mg/kg	With reference to US EPA 3540C: 1996 method for DHTDMAC Content. Analysis was performed by LC/MS.		n.d.
DTDMAC (CAS No.: 068783-78-8)	mg/kg	With reference to US EPA 3540C: 1996 method for DTDMAC Content. Analysis was performed by LC/MS.		n.d.
p-Phenylenediamine (PPD) (CAS No.: 000106-50-3)	mg/kg	With reference to LMBG 82.02-2. Analysis was performed by GC/MS.	3	n.d.

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Test Item (s):	Unit	Method	MDL	Result
				No.1
Pentachloroethane (CAS No.: 000076-01-7)	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.
Heptachlor (CAS No.: 000076-44-8)	mg/kg	With reference to US EPA 8270D method. Analysis was performed by GC/MS.	5	n.d.
Tris-(2,3-dibromopropyl) Phosphate	mg/kg	With reference to US EPA 8270D method. Analysis was performed by GC/MS.	5	n.d.
Tris-(aziridinyl) phosphine oxide (TEPA)	mg/kg	With reference to US EPA 8270D method. Analysis was performed by GC/MS.	5	n.d.
Dicofol (CAS No.: 000115-32-2)	mg/kg	With reference to US EPA 3550C method. Analysis was performed by GC/MS.	0.1	n.d.
Phenol monomer (CAS No.: 000108-95-2)	mg/kg	With reference to US EPA 8270D method. Analysis was performed by GC/MS.	1	n.d.
Chlorobenzene (CAS No.: 000108-90-7)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
Perfluorooctane sulfonates (PFOS) PFOS – Acid PFOS – Metal Salt PFOS – Amide	mg/kg	With reference to US EPA 3540C: 1996 method for PFOS Content. Analysis was performed by LC/MS.	10	n.d.
PFOA (CAS No.: 000335-67-1)	mg/kg	With reference to US EPA 3540C: 1996 method for PFOA Content. Analysis was performed by LC/MS.	10	n.d.
2-(3,5-di-tert-butyl-2-hydroxyphenyl)-2H-benzotriazole (CAS No.: 003846-71-7)	mg/kg	With reference to US EPA 3540C method. Analysis was performed by GC/MS.	5	n.d.
Bromochloromethane (CAS No.: 000074-97-5)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
trans-1,3-Dichloropropene	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
cis-1,3-Dichloropropene	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	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.
Musk Ketone (CAS No.: 000081-14-1)	mg/kg	With reference to US EPA 3540C: 1996 method for Musk Ketone Content. Analysis was performed by GC/MS.	10	n.d.

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 TAIWAN 30077, R. O. C.



Test Item (s):	Unit	Method	MDL	Result
				No.1
Ethylene oxide	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
Halogenated naphthalenes	mg/kg	With reference to US EPA 3540C method. Analysis was performed by GC/MS.	5	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.
Trichloroethylene (CAS No.: 000079-01-6)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
<b>Sum of PBBs</b>	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.
<b>Sum of PBDEs</b>			-	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.		
<b>AZO</b>				
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.

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Test Item (s):	Unit	Method	MDL	Result
				No.1
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'-DICHLOROBENZIDINE (CAS No.: 000091-94-1)	mg/kg	With reference to LMBG 82.02-2. Analysis was performed by GC/MS.	3	n.d.
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.

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VANGUARD INTERNATIONAL SEMICONDUCTOR CORPORATION  
NO. 123, PARK AVE-3RD, HSINCHU SCIENCE PARK, HSINCHU  
TAIWAN 30077, R. O. C.



Test Item (s):	Unit	Method	MDL	Result
				No.1
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.
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.
<b>Asbestos</b>				
Actinolite (CAS No.: 013768-00-8)	%	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)	%	As per NIOSH 9000 method. Analysis was performed by XRD.	1	Negative
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)	%	As per NIOSH 9000 method. Analysis was performed by XRD.	1	Negative
<b>Phthalates</b>				
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.
DBP (Dibutyl phthalate) (CAS No.: 000084-74-2)	%	With reference to EN 14372: 2004. Analysis was performed by GC/MS.	0.003	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.
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.

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VANGUARD INTERNATIONAL SEMICONDUCTOR CORPORATION  
NO. 123, PARK AVE-3RD, HSINCHU SCIENCE PARK, HSINCHU  
TAIWAN 30077, R. O. C.



Test Item (s):	Unit	Method	MDL	Result
				No.1
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.
DCHP (Di-cyclohexyl phthalate) (CAS No.: 000084-61-7)	%	With reference to EN 14372: 2004. Analysis was performed by GC/MS.	0.003	n.d.
DEP (Di-ethyl phthalate) (CAS No.: 000084-66-2)	%	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.
DIBP (Di-isobutyl phthalate) (CAS No.: 000084-69-5)	%	With reference to EN 14372: 2004. Analysis was performed by GC/MS.	0.003	n.d.
DIOP (Di-isooctyl phthalate) (CAS No.: 027554-26-3)	%	With reference to EN 14372: 2004. Analysis was performed by GC/MS.	0.003	n.d.
DMP (Di-methyl phthalate) (CAS No.: 000131-11-3)	%	With reference to EN 14372: 2004. Analysis was performed by GC/MS.	0.003	n.d.
DNNP (Di-n-nonyl phthalate)(DNP) (CAS No.: 000084-76-4)	%	With reference to EN 14372: 2004. Analysis was performed by GC/MS.	0.003	n.d.
DPP (Di-pentyl phthalate) (CAS No.: 000131-18-0)	%	With reference to EN 14372: 2004. Analysis was performed by GC/MS.	0.003	n.d.
DPrP (Di-propyl phthalate) (CAS No.: 000131-16-8)	%	With reference to EN 14372: 2004. Analysis was performed by GC/MS.	0.003	n.d.
DEHA (Di-2-ethylhexyl adipate)(DOA) (CAS No.: 000103-23-1)	%	With reference to EN 14372: 2004. Analysis was performed by GC/MS.	0.003	n.d.
DMEP (Bis (2-methoxyethyl) phthalate) (CAS No.: 000117-82-8)	%	With reference to EN 14372: 2004. Analysis was performed by GC/MS.	0.003	n.d.
<b>CFC's (Chlorofluorocarbons)</b>				
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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VANGUARD INTERNATIONAL SEMICONDUCTOR CORPORATION  
 NO. 123, PARK AVE-3RD, HSINCHU SCIENCE PARK, HSINCHU  
 TAIWAN 30077, 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.
<b>Group III</b>				
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.
<b>Halons</b>				
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.
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.
<b>HCFCs</b>				
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.

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VANGUARD INTERNATIONAL SEMICONDUCTOR CORPORATION  
 NO. 123, PARK AVE-3RD, HSINCHU SCIENCE PARK, HSINCHU  
 TAIWAN 30077, R. O. C.



Test Item (s):	Unit	Method	MDL	Result
				No.1
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.
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.

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VANGUARD INTERNATIONAL SEMICONDUCTOR CORPORATION  
NO. 123, PARK AVE-3RD, HSINCHU SCIENCE PARK, HSINCHU  
TAIWAN 30077, R. O. C.



Test Item (s):	Unit	Method	MDL	Result
				No.1
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.
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.
<b>HBFCs (Hydrobromofluorocarbons)</b>				
HBFC-21B2 (CHFBr <sub>2</sub> ) (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 <sub>2</sub> Br) (CAS No.: 001511-62-2)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
HBFC-31B1 (CH <sub>2</sub> 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 <sub>2</sub> HFBr <sub>4</sub> )	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.

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 NO. 123, PARK AVE-3RD, HSINCHU SCIENCE PARK, HSINCHU  
 TAIWAN 30077, R. O. C.



Test Item (s):	Unit	Method	MDL	Result
				No.1
HBFC-122B3 (C2HF2Br3)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
HBFC-123B2 (C2HF3Br2)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
HBFC-124B1 (C2HF4Br)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
HBFC-131B3 (C2H2FBr3)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
HBFC-132B2 (C2H2F2Br2)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
HBFC-133B1 (C2H2F3Br)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
HBFC-141B2 (C2H3FBr2)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
HBFC-142B1 (C2H3F2Br)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
HBFC-151B1 (C2H4FBr)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
HBFC-221B6 (C3HFBr6)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
HBFC-222B5 (C3HF2Br5)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
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.

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VANGUARD INTERNATIONAL SEMICONDUCTOR CORPORATION  
 NO. 123, PARK AVE-3RD, HSINCHU SCIENCE PARK, HSINCHU  
 TAIWAN 30077, R. O. C.



Test Item (s):	Unit	Method	MDL	Result
				No.1
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.
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.
<b>HFCs (Hydrofluorocarbon)</b>				
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.

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VANGUARD INTERNATIONAL SEMICONDUCTOR CORPORATION  
NO. 123, PARK AVE-3RD, HSINCHU SCIENCE PARK, HSINCHU  
TAIWAN 30077, R. O. C.



Test Item (s):	Unit	Method	MDL	Result
				No.1
HFC-134 (C2H2F4)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
HFC-134a (CH2FCF3)(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 (CH3F3)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
HFC-143a (CH3F3)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
HFC-152a (C2H4F2)(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 (C3HF7)(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 (C3H2F6)(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 (C3H2F6)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
HFC-245ca (C3H3F5)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
HFC-245fa (C3H3F5)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
HFC-365mfc (C4H5F5)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
<b>PFCs (Perfluorocarbon)</b>				
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.
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.

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VANGUARD INTERNATIONAL SEMICONDUCTOR CORPORATION  
 NO. 123, PARK AVE-3RD, HSINCHU SCIENCE PARK, HSINCHU  
 TAIWAN 30077, R. O. C.



Test Item (s):	Unit	Method	MDL	Result
				No.1
Perfluorisobutene (CAS No.: 000357-26-6)	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.
<b>CHCs (Chlorinate hydrocarbon)</b>				
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.
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.

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VANGUARD INTERNATIONAL SEMICONDUCTOR CORPORATION  
NO. 123, PARK AVE-3RD, HSINCHU SCIENCE PARK, HSINCHU  
TAIWAN 30077, R. O. C.



Test Item (s):	Unit	Method	MDL	Result
				No.1
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.
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.
<b>Ethylene glycol ether</b>				
Ethylene glycol monomethyl ether (CAS No.: 000109-86-4)	mg/kg	With reference to US EPA 3550: 1996 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 3550: 1996 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 3550: 1996 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 3550: 1996 method. Analysis was performed by GC/MS.	10	n.d.

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VANGUARD INTERNATIONAL SEMICONDUCTOR CORPORATION  
NO. 123, PARK AVE-3RD, HSINCHU SCIENCE PARK, HSINCHU  
TAIWAN 30077, R. O. C.



Test Item (s):	Unit	Method	MDL	Result
				No.1
Diethylene glycol dimethyl ether	mg/kg	With reference to US EPA 3550: 1996 method. Analysis was performed by GC/MS.	10	n.d.
<b>Halogen</b>				
Halogen-Fluorine (F) (CAS No.: 014762-94-8)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC.	50	n.d.
Halogen-Chlorine (Cl) (CAS No.: 022537-15-1)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC.	50	n.d.
Halogen-Bromine (Br) (CAS No.: 010097-32-2)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC.	50	n.d.
Halogen-Iodine (I) (CAS No.: 014362-44-8)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC.	50	n.d.
<b>Organic phosphorus</b>				
TMP (Trimethyl phosphate) (CAS No.: 000512-56-1)	mg/kg	With reference to US EPA 3540C method. Analysis was performed by GC/MS.	5	n.d.
TBP (Tributyl phosphate) (CAS No.: 000126-73-8)	mg/kg	With reference to US EPA 3540C method. Analysis was performed by GC/MS.	5	n.d.
TPP (Triphenyl phosphate) (CAS No.: 000115-86-6)	mg/kg	With reference to US EPA 3540C method. Analysis was performed by GC/MS.	5	n.d.
<b>Organic-tin compounds</b>				
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.
Tetrabutyltin (TeBT)	mg/kg	With reference to DIN 38407-13. Analysis was performed by GC/FPD.	0.03	n.d.
Tributyl Tin Oxide (TBTO) <sup>***</sup> (CAS No.: 000056-35-9)	mg/kg	With reference to DIN 38407-13. Analysis was performed by GC/FPD.	-	n.d.
Dibutyl Tin (DBT)	mg/kg	With reference to DIN 38407-13. Analysis was performed by GC/FPD.	0.03	n.d.
Diocetyl Tin (DOT)	mg/kg	With reference to DIN 38407-13. Analysis was performed by GC/FPD.	0.03	n.d.
Monobutyl Tin (MBT)	mg/kg	With reference to DIN 38407-13. Analysis was performed by GC/FPD.	0.03	n.d.
MonooctylTin (MOT)	mg/kg	With reference to DIN 38407-13. Analysis was performed by GC/FPD.	0.03	n.d.

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VANGUARD INTERNATIONAL SEMICONDUCTOR CORPORATION  
 NO. 123, PARK AVE-3RD, HSINCHU SCIENCE PARK, HSINCHU  
 TAIWAN 30077, R. O. C.



Test Item (s):	Unit	Method	MDL	Result
				No.1
<b>Polynuclear Aromatic Hydrocarbons (PAHs)</b>				
Acenaphthene (CAS No.: 000083-32-9)	mg/kg	With reference to ZLS standard ZEK 01.2-08 method. Analysis was performed by GC/MS.	0.2	n.d.
Acenaphthylene (CAS No.: 000208-96-8)			0.2	n.d.
Anthracene (CAS No.: 000120-12-7)			0.2	n.d.
Benzo[a]anthracene (CAS No.: 000056-55-3)			0.2	n.d.
Benzo[a]pyrene (CAS No.: 000050-32-8)			0.2	n.d.
Benzo[b]fluoranthene (CAS No.: 000205-99-2)			0.2	n.d.
Benzo[g,h,i]perylene (CAS No.: 000191-24-2)			0.2	n.d.
Benzo[k]fluoranthene (CAS No.: 000207-08-9)			0.2	n.d.
Chrysene (CAS No.: 000218-01-9)			0.2	n.d.
Dibenzo[a,h]anthracene (CAS No.: 000053-70-3)			0.2	n.d.
Fluoranthene (CAS No.: 000206-44-0)			0.2	n.d.
Fluorene (CAS No.: 000086-73-7)			0.2	n.d.
Indeno[1,2,3-c,d] pyrene (CAS No.: 000193-39-5)			0.2	n.d.
Naphthalene (CAS No.: 000091-20-3)			0.2	n.d.
Phenanthrene (CAS No.: 000085-01-8)			0.2	n.d.
Pyrene (CAS No.: 000129-00-0)			0.2	n.d.
1-Methylnaphthalene (CAS No.: 000090-12-0)			0.2	n.d.
2-Methylnaphthalene (CAS No.: 000091-57-6)	0.2	n.d.		
Benzo[e]pyrene (CAS No.: 000192-97-2)	0.2	n.d.		

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NO. 123, PARK AVE-3RD, HSINCHU SCIENCE PARK, HSINCHU  
TAIWAN 30077, R. O. C.



Test Item (s):	Unit	Method	MDL	Result
				No.1
<b>Aliphatic CHCs (Chlorinated Hydrocarbons)</b>				
Pentachloroethane (CAS No.: 000076-01-7)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
Trichloromethane (CAS No.: 000067-66-3)	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.
1,1,1,2-Tetrachloroethane (CAS No.: 000630-20-6)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
1,1,2-trichloroethane (CAS No.: 000079-00-5)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
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.
Trichloroethylene (CAS No.: 000079-01-6)	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.
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.
1,3-Dichloropropane (CAS No.: 000142-28-9)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
Perchloroethylene (CAS No.: 000127-18-4)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.
<b>Halogenated Aromatic Compounds</b>				
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.

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# Test Report

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VANGUARD INTERNATIONAL SEMICONDUCTOR CORPORATION  
 NO. 123, PARK AVE-3RD, HSINCHU SCIENCE PARK, HSINCHU  
 TAIWAN 30077, R. O. C.



Test Item (s):	Unit	Method	MDL	Result
				No.1
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.
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.

- 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. \*\*\*: The substance was calculated by the test results of Tributyl Tin, Triphenyl Tin or element (Ex. Antimony 、Beryllium 、Silicon 、Zinc or Phosphorus respectively). The MDL is evaluated for Tributyl Tin, Triphenyl Tin or element (Ex. Antimony 、Beryllium 、Silicon 、Zinc or Phosphorus respectively.)
  10. Since beryllium copper is a metal alloy of copper and beryllium and the test result is n.d. for beryllium, we can have conclusion that the beryllium copper is n.d..

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# Test Report

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VANGUARD INTERNATIONAL SEMICONDUCTOR CORPORATION  
 NO. 123, PARK AVE-3RD, HSINCHU SCIENCE PARK, HSINCHU  
 TAIWAN 30077, R. O. C.



**Reference information:**

**Requirement of ZEK 01.2-08 : Restraining maximum values for products**

Parameter	Category 1	Category 2	Category 3
	Materials in contact with foodstuff or materials which are meant to put in the mouth as well as toys for children <36 months.	Materials with foreseeable skin contact >30 s (prolonged skin contact) and toys not covered by category 1.	Materials with foreseeable skin contact <30 s (short time skin contact) or without skin contact.
Benzo[a]pyrene (mg/kg)	<MDL (<0.2)**	1	20
Sum of 16 EPA-PAH (mg/kg)*	<MDL (<0.2)**	10	200

Remark : \* = Only PAH substances >0.2 mg/kg are taken into account while calculating the sum of PAHs  
 \*\* = In case that the maximum values exceed the limits of category 1, but are within the limits of category 2, one may confirm the suitability of the tested material for contact with foodstuff or oral mucosa by additional specific migration tests of PAH components based on DIN EN 1186ff and §64 LFGB 80.30-1. The conclusion of the migration test results must be made based on food law criteria.

**PFOS Reference Information : Directive 2006/122/EC**

- (1) May not be placed on the market or used as a substance or constituent of preparations in a concentration equal to or higher than 0.005 % by mass.
- (2) May not be placed on the market in semi-finished products or articles, or parts thereof, if the concentration of PFOS is equal to or higher than 0.1 % by mass calculated with reference to the mass of structurally or microstructurally distinct parts that contain PFOS or, for textiles or other coated materials, if the amount of PFOS is equal to or higher than 1µg/m<sup>2</sup> of the coated material.

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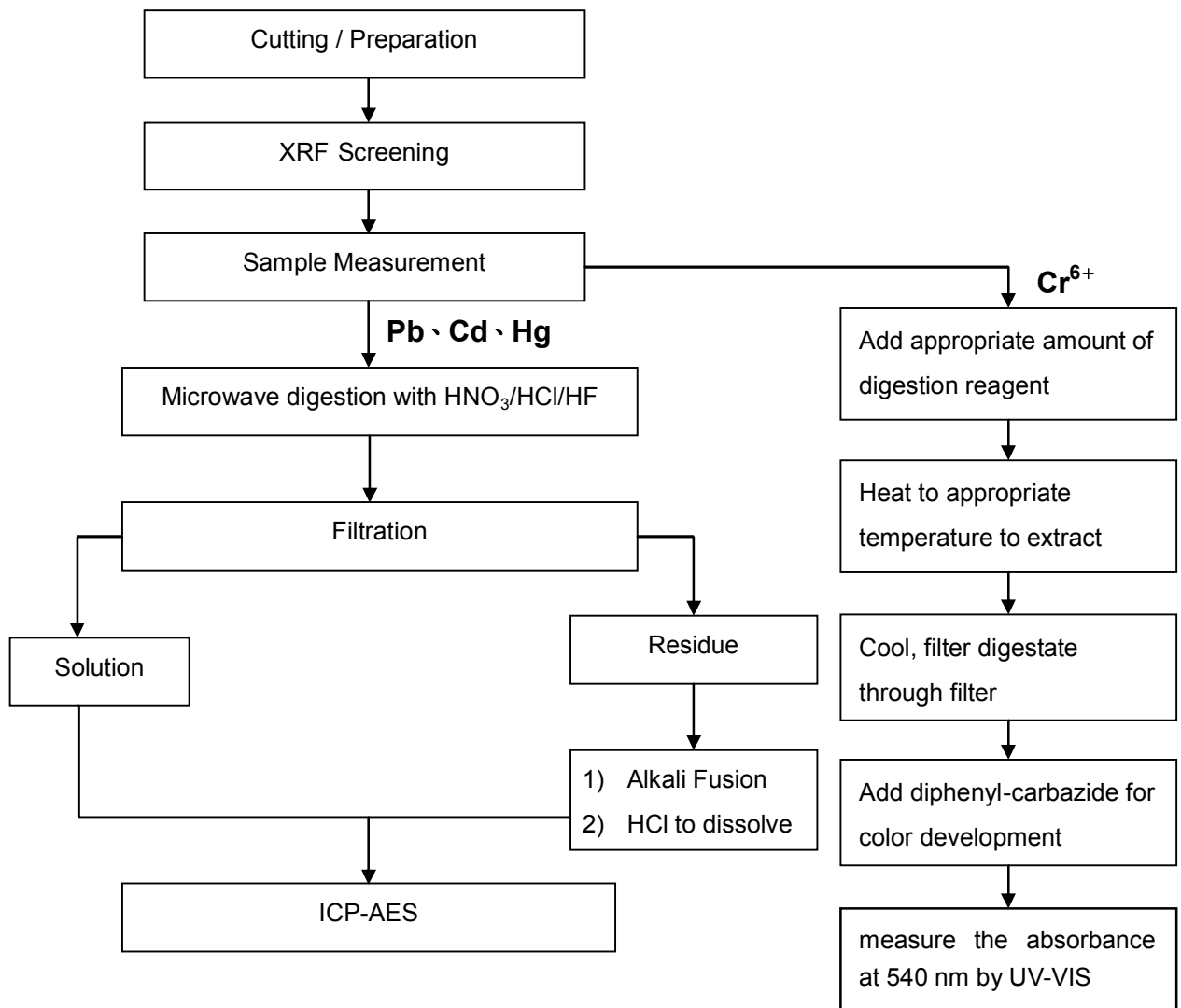
## Test Report

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VANGUARD INTERNATIONAL SEMICONDUCTOR CORPORATION  
 NO. 123, PARK AVE-3RD, HSINCHU SCIENCE PARK, HSINCHU  
 TAIWAN 30077, R. O. C.



- 1) These samples were dissolved totally by pre-conditioning method according to below flow chart.  
 ( Cr<sup>6+</sup> test method excluded )
- 2) Name of the person who made measurement: Climbgreat Yang
- 3) Name of the person in charge of measurement: Troy Chang



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## Test Report

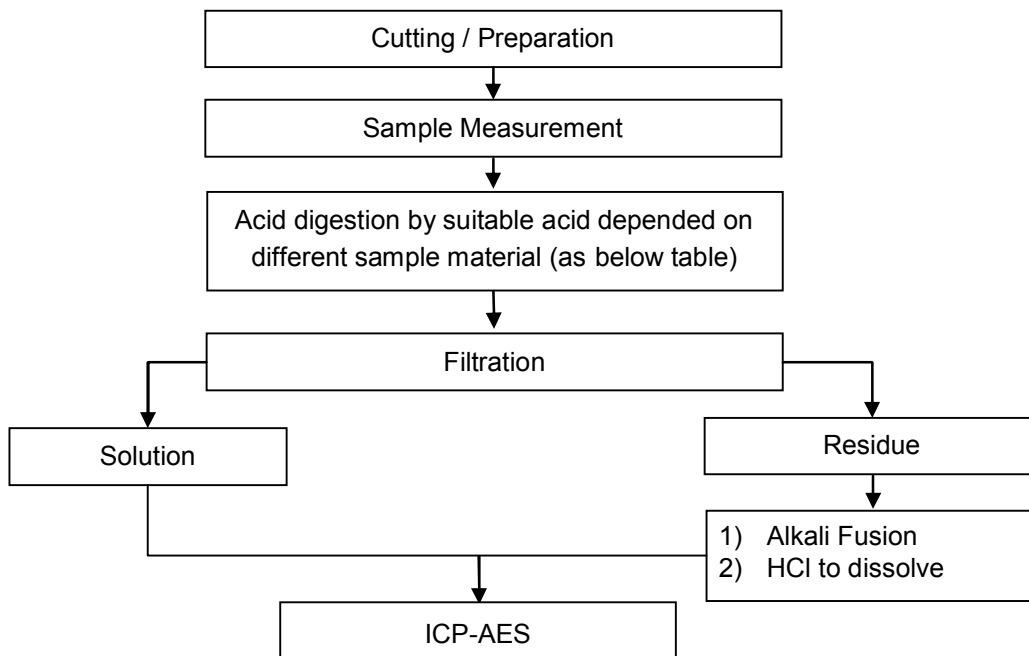
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VANGUARD INTERNATIONAL SEMICONDUCTOR CORPORATION  
 NO. 123, PARK AVE-3RD, HSINCHU SCIENCE PARK, HSINCHU  
 TAIWAN 30077, R. O. C.



- 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 <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	Any acid to total digestion

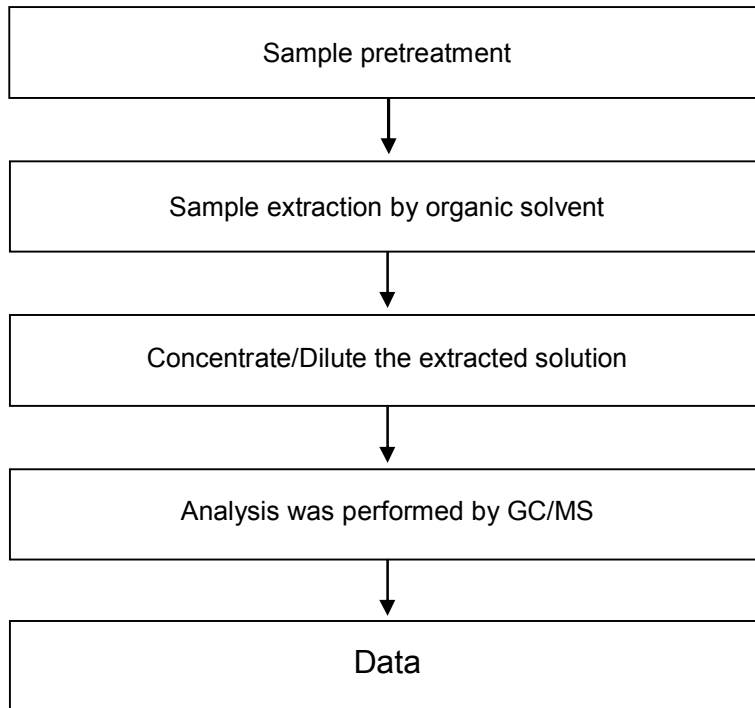
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### Chlorinated Flame retardant analytical flow chart

- 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, MCCC



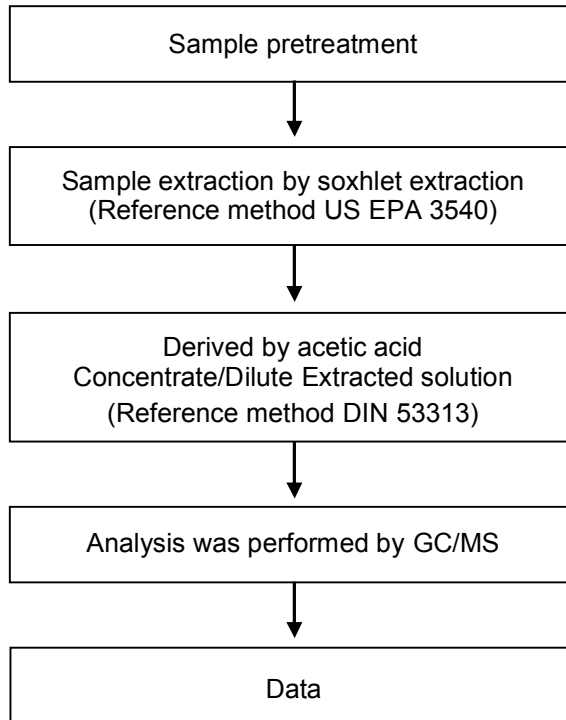
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### TBBP-A analytical flow chart

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



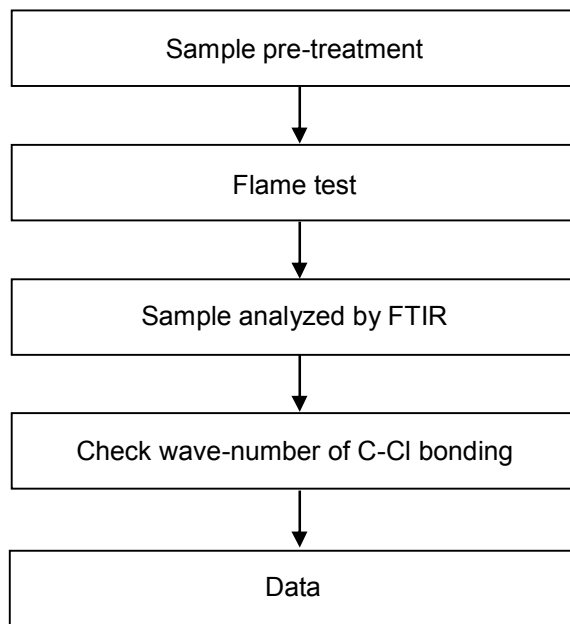
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### Analysis flow chart for determination of PVC in material

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



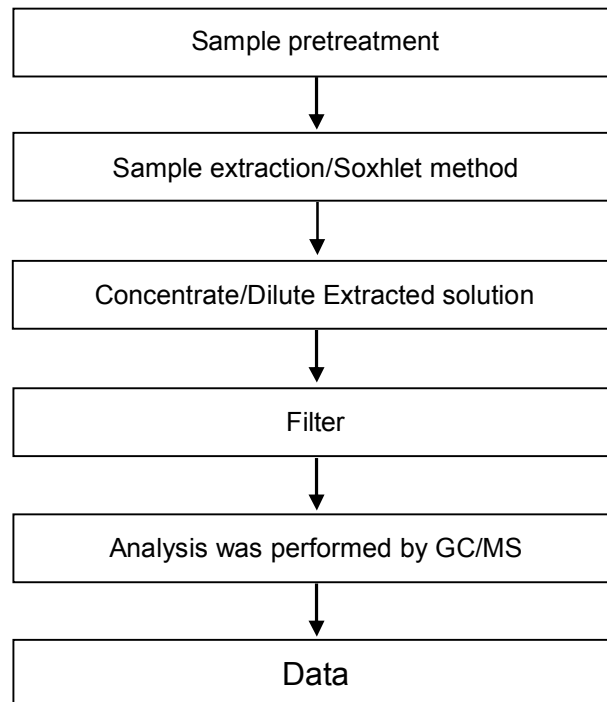
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### HBCDD Analytical FLOW CHART

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



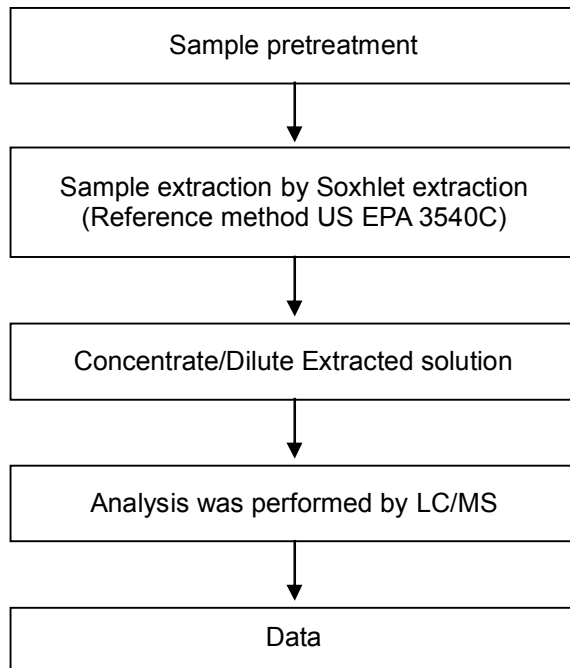
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### Analytical flow chart of PFOA/PFOS content

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



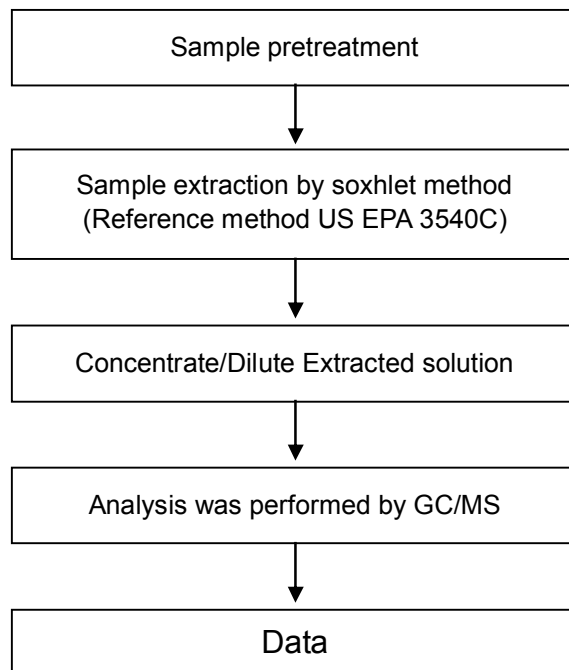
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### Analytical flow chart of benzotriazole content

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



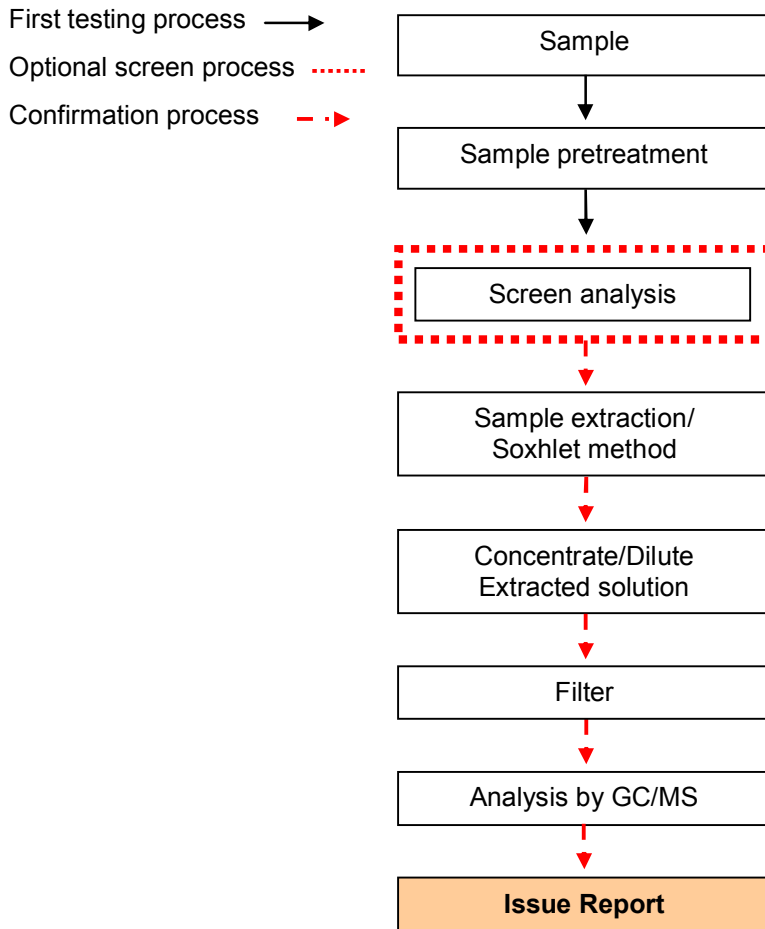
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### PBB/PBDE analytical FLOW CHART

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



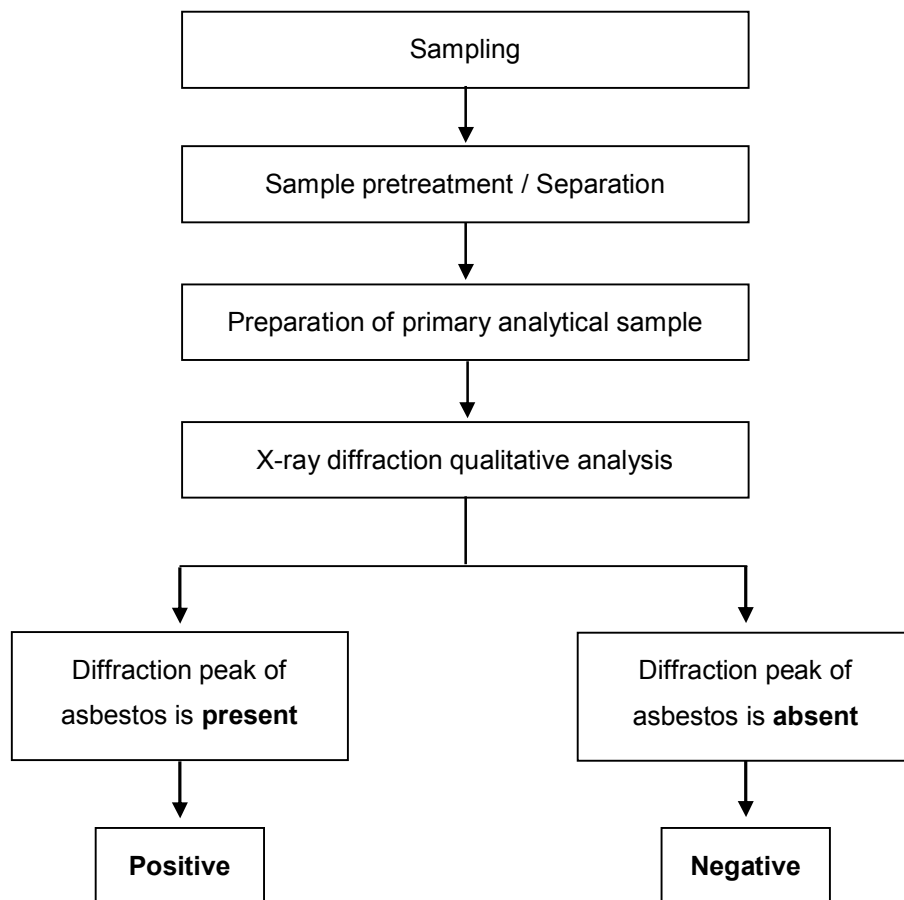
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### Analysis flow chart for determination of Asbestos

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



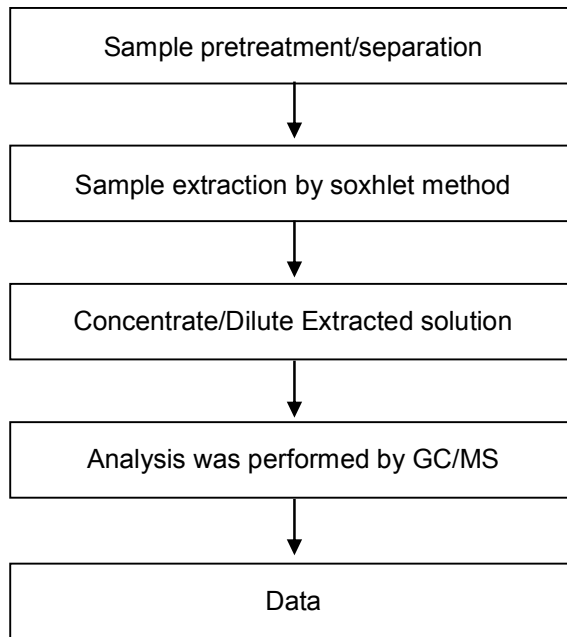
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### Analytical flow chart of phthalate content

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



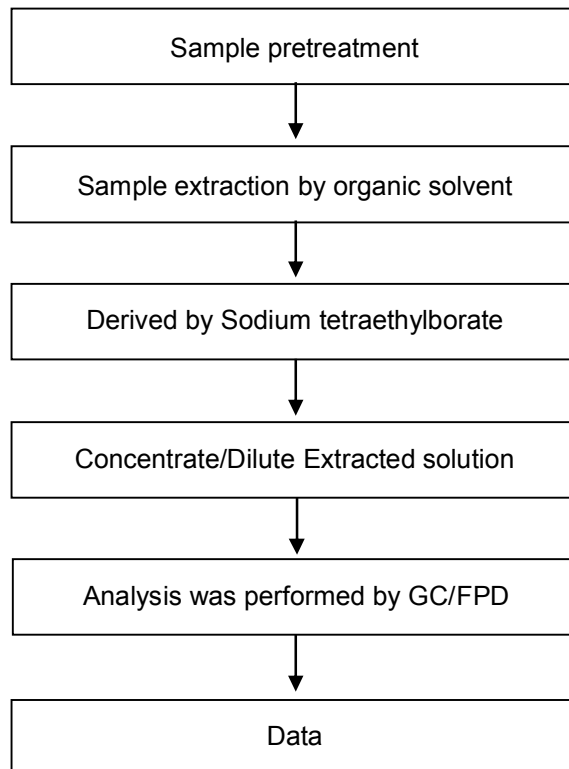
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### Analytical flow chart of Organic-Tin content

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



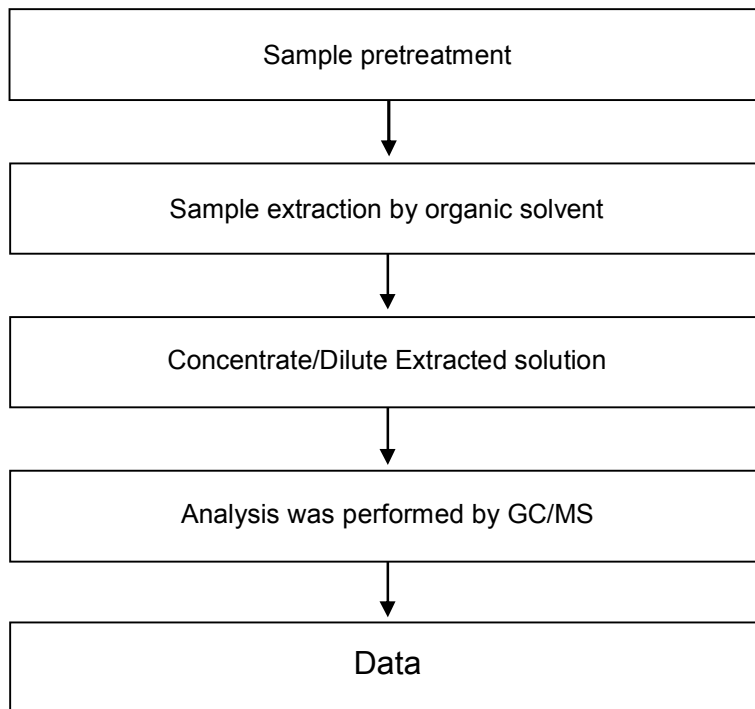
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### Analytical flow chart of Dimethyl Fumarate content

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



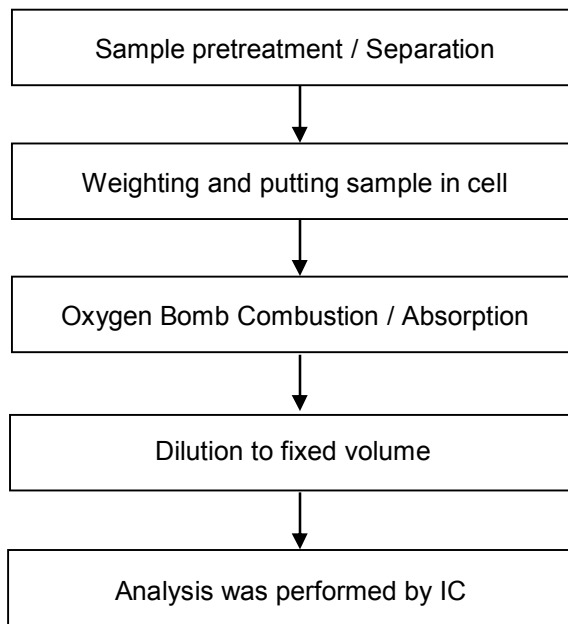
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### Analytical flow chart of halogen content

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



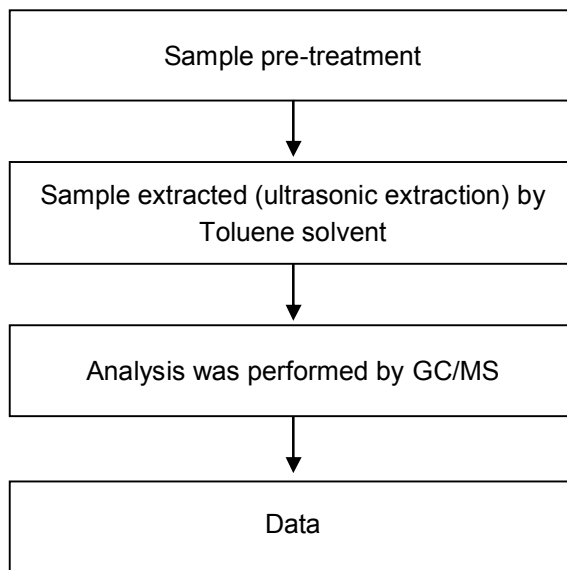
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### PAHs (Polynuclear Aromatic Hydrocarbons) analytical flow chart

- 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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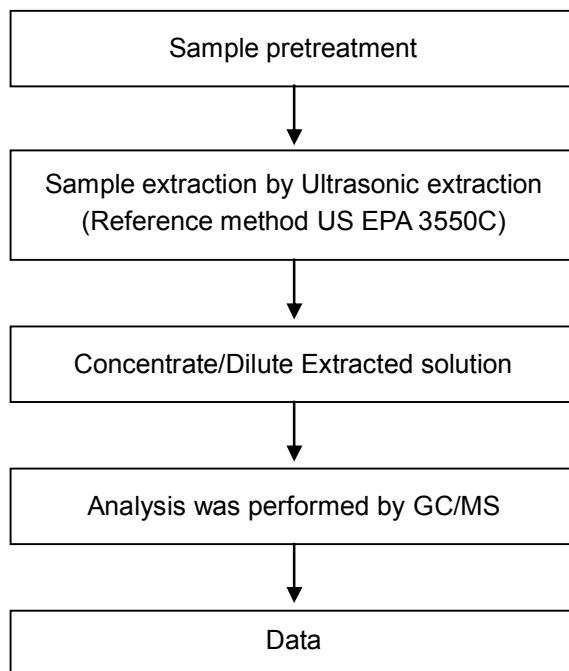
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### Analytical flow chart of AP content

$$AP = OP + NP$$

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



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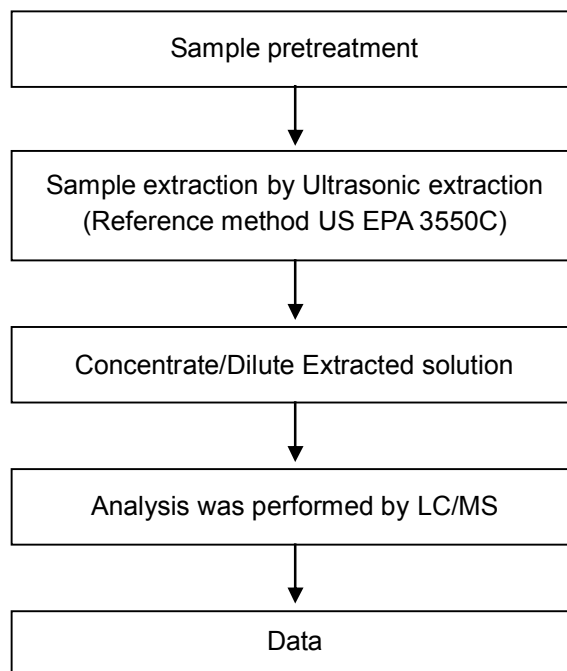
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### Analytical flow chart of APEO content

$$\text{APEO} = \text{OPEO} + \text{NPEO}$$

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



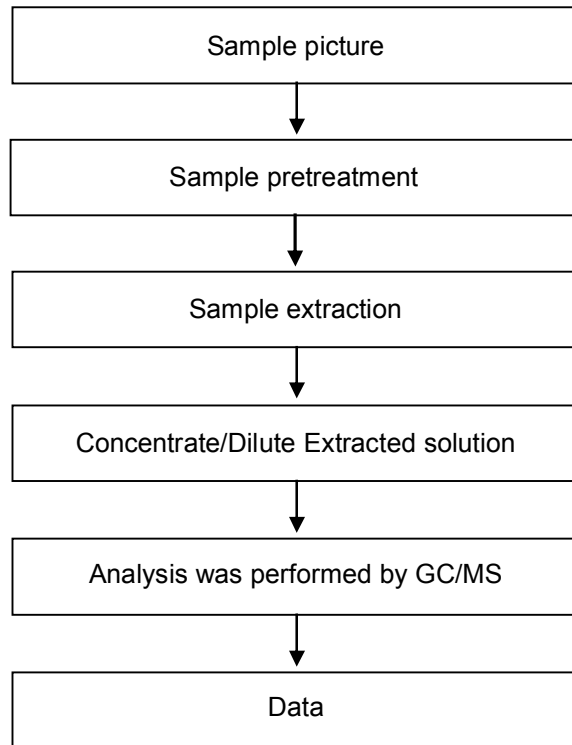
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### Bisphenol A analytical flow chart

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



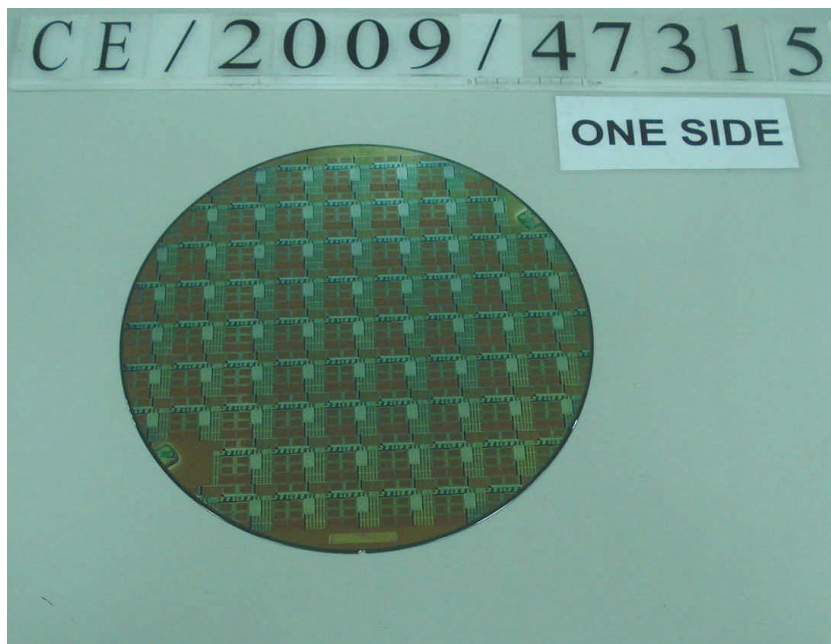
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VANGUARD INTERNATIONAL SEMICONDUCTOR CORPORATION  
NO. 123, PARK AVE-3RD, HSINCHU SCIENCE PARK, HSINCHU  
TAIWAN 30077, R. O. C.



**\*\* End of Report \*\***

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