Test Report

No.: ETR20C07133 Date: 07-Jan-2021

TOWER SEMI CONDUCTOR LTD.
20 SHAUL AMOR AVE. MIGDAL HAEMEK ISRAEL PO BOX 619 2310502

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

Sample Submitted By	:	TOWER SEMI CONDUCTOR LTD.
Sample Name	:	SILICON WAFERS
Style/Item No.	:	0.18µ 8" TOWER SEMICONDUCTOR MH FAB2

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Sample Receiving Date	:	28-Dec-2020
Testing Period	:	28-Dec-2020 to 07-Jan-2021

Test Requested :

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

(2) Please refer to next pages for the other item(s).

Test Results : Please refer to following pages.

Conclusion :

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

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

PIN CODE: A47E3860

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Test Part Description

No.1 : SILICON WAFERS

Test Result(s)

Test Item(s)	Method	Unit	MDL	Result	Limit
				No.1	
Cadmium (Cd) (CAS No.: 7440-43-9)	With reference to IEC 62321-5: 2013, analysis was performed by ICP-OES.	mg/kg	2	n.d.	100
Lead (Pb) (CAS No.: 7439-92-1)	With reference to IEC 62321-5: 2013, analysis was performed by ICP-OES.	mg/kg	2	n.d.	1000
Mercury (Hg) (CAS No.: 7439-97-6)	With reference to IEC 62321-4: 2013+ AMD1: 2017, analysis was performed by ICP-OES.	mg/kg	2	n.d.	1000
Hexavalent Chromium Cr(VI) (CAS No.: 18540-29-9)	With reference to IEC 62321-7-2: 2017, analysis was performed by UV-VIS.	mg/kg	8	n.d.	1000
Monobromobiphenyl	With reference to IEC 62321-6: 2015, analysis was performed by GC/MS.	mg/kg	5	n.d.	-
Dibromobiphenyl		mg/kg	5	n.d.	-
Tribromobiphenyl		mg/kg	5	n.d.	-
Tetrabromobiphenyl		mg/kg	5	n.d.	-
Pentabromobiphenyl		mg/kg	5	n.d.	-
Hexabromobiphenyl		mg/kg	5	n.d.	-
Heptabromobiphenyl		mg/kg	5	n.d.	-
Octabromobiphenyl		mg/kg	5	n.d.	-
Nonabromobiphenyl		mg/kg	5	n.d.	-
Decabromobiphenyl		mg/kg	5	n.d.	-
Sum of PBBs		mg/kg	-	n.d.	1000
Monobromodiphenyl ether		mg/kg	5	n.d.	-
Dibromodiphenyl ether		mg/kg	5	n.d.	-
Tribromodiphenyl ether		mg/kg	5	n.d.	-
Tetrabromodiphenyl ether		mg/kg	5	n.d.	-
Pentabromodiphenyl ether		mg/kg	5	n.d.	-
Hexabromodiphenyl ether		mg/kg	5	n.d.	-
Heptabromodiphenyl ether		mg/kg	5	n.d.	-
Octabromodiphenyl ether		mg/kg	5	n.d.	-
Nonabromodiphenyl ether		mg/kg	5	n.d.	-
Decabromodiphenyl ether		mg/kg	5	n.d.	-
Sum of PBDEs		mg/kg	-	n.d.	1000

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Test Item(s)	Method	Unit	MDL	Result	Limit
				No.1	
Butyl benzyl phthalate (BBP) (CAS No.: 85-68-7)	With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.	mg/kg	50	n.d.	1000
Dibutyl phthalate (DBP) (CAS No.: 84-74-2)	With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.	mg/kg	50	n.d.	1000
Di-(2-ethylhexyl) phthalate (DEHP) (CAS No.: 117-81-7)	With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.	mg/kg	50	n.d.	1000
Diisobutyl phthalate (DIBP) (CAS No.: 84-69-5)	With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.	mg/kg	50	n.d.	1000
Diisodecyl phthalate (DIDP) (CAS No.: 26761-40-0, 68515-49-1)	With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.	mg/kg	50	n.d.	-
Diisononyl phthalate (DINP) (CAS No.: 28553-12-0, 68515-48-0)	With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.	mg/kg	50	n.d.	-
Di-n-octyl phthalate (DNOP) (CAS No.: 117-84-0)	With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.	mg/kg	50	n.d.	-
Bis(2-methoxyethyl) phthalate (DMEP) (CAS No.: 117-82-8)	With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.	mg/kg	50	n.d.	-
1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters (DHNUP) (CAS No.: 68515-42-4)	With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.	mg/kg	50	n.d.	-
1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich (DIHP) (CAS No.: 71888-89-6)	With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.	mg/kg	50	n.d.	-
Polychlorinated biphenyls (PCBs)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	0.5	n.d.	-
Polychlorinated naphthalene (PCNs)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	5	n.d.	-
Polychlorinated terphenyls (PCTs)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	0.5	n.d.	-
Short Chain Chlorinated Paraffins(C10-C13) (SCCP) (CAS No.: 85535-84-8)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	100	n.d.	-

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Test Item(s)	Method	Unit	MDL	Result No.1	Limit
AZO					
2,4,5-trimethylaniline (CAS No.: 137-17-7)	With reference to LFGB 82.02-2: 2013, analysis was performed by GC/MS.	mg/kg	3	n.d.	-
2,4-diaminoanisole (CAS No.: 615-05-4)	With reference to LFGB 82.02-2: 2013, analysis was performed by GC/MS.	mg/kg	3	n.d.	-
2,4-diaminotoluene (CAS No.: 95-80-7)	With reference to LFGB 82.02-2: 2013, analysis was performed by GC/MS.	mg/kg	3	n.d.	-
2,4-xylidine (CAS No.: 95-68-1)	With reference to LFGB 82.02-2: 2013, analysis was performed by GC/MS.	mg/kg	3	n.d.	-
2,6-xylidine (CAS No.: 87-62-7)	With reference to LFGB 82.02-2: 2013, analysis was performed by GC/MS.	mg/kg	3	n.d.	-
2-naphthylamine (CAS No.: 91-59-8)	With reference to LFGB 82.02-2: 2013, analysis was performed by GC/MS.	mg/kg	3	n.d.	-
3,3'-dichlorobenzidine (CAS No.: 91-94-1)	With reference to LFGB 82.02-2: 2013, analysis was performed by GC/MS.	mg/kg	3	n.d.	-
3,3'-dimethoxybenzidine (CAS No.: 119-90-4)	With reference to LFGB 82.02-2: 2013, analysis was performed by GC/MS.	mg/kg	3	n.d.	-
3,3'-dimethyl-4,4'-diaminodiphenylmethane (CAS No.: 838-88-0)	With reference to LFGB 82.02-2: 2013, analysis was performed by GC/MS.	mg/kg	3	n.d.	-
3,3'-dimethylbenzidine (CAS No.: 119-93-7)	With reference to LFGB 82.02-2: 2013, analysis was performed by GC/MS.	mg/kg	3	n.d.	-
4,4'-diaminodiphenylmethane (MDA) (CAS No.: 101-77-9)	With reference to LFGB 82.02-2: 2013, analysis was performed by GC/MS.	mg/kg	3	n.d.	-

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Test Item(s)	Method	Unit	MDL	Result No.1	Limit
4,4'-methylene-bis-(2-chloroaniline) (CAS No.: 101-14-4)	With reference to LFGB 82.02-2: 2013, analysis was performed by GC/MS.	mg/kg	3	n.d.	-
4,4'-oxydianiline (CAS No.: 101-80-4)	With reference to LFGB 82.02-2: 2013, analysis was performed by GC/MS.	mg/kg	3	n.d.	-
4,4'-thiodianiline (CAS No.: 139-65-1)	With reference to LFGB 82.02-2: 2013, analysis was performed by GC/MS.	mg/kg	3	n.d.	-
4-aminoazobenzene (CAS No.: 60-09-3)	With reference to LFGB 82.02-2: 2013, analysis was performed by GC/MS.	mg/kg	3	n.d.	-
4-aminodiphenyl (CAS No.: 92-67-1)	With reference to LFGB 82.02-2: 2013, analysis was performed by GC/MS.	mg/kg	3	n.d.	-
4-chloroaniline (CAS No.: 106-47-8)	With reference to LFGB 82.02-2: 2013, analysis was performed by GC/MS.	mg/kg	3	n.d.	-
4-chloro-o-toluidine (CAS No.: 95-69-2)	With reference to LFGB 82.02-2: 2013, analysis was performed by GC/MS.	mg/kg	3	n.d.	-
2-methoxy-5-methylaniline (CAS No.: 120-71-8)	With reference to LFGB 82.02-2: 2013, analysis was performed by GC/MS.	mg/kg	3	n.d.	-
5-nitro-o-toluidine (CAS No.: 99-55-8)	With reference to LFGB 82.02-2: 2013, analysis was performed by GC/MS.	mg/kg	3	n.d.	-
Benzidine (CAS No.: 92-87-5)	With reference to LFGB 82.02-2: 2013, analysis was performed by GC/MS.	mg/kg	3	n.d.	-
o-aminoazotoluene (CAS No.: 97-56-3)	With reference to LFGB 82.02-2: 2013, analysis was performed by GC/MS.	mg/kg	3	n.d.	-
o-anisidine (CAS No.: 90-04-0)	With reference to LFGB 82.02-2: 2013, analysis was performed by GC/MS.	mg/kg	3	n.d.	-

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Test Item(s)	Method	Unit	MDL	Result No.1	Limit
o-toluidine (CAS No.: 95-53-4)	With reference to LFGB 82.02-2: 2013, analysis was performed by GC/MS.	mg/kg	3	n.d.	-
Asbestos					
Actinolite (CAS No.: 77536-66-4)	With reference to EPA 600/R-93/116: 1993, analysis was performed by Stereo Microscope (SM), Dispersion Staining Polarized Light Microscope (DS-PLM) and X-ray Diffraction Spectrometer (XRD).	%	-	Negative	-
Amosite (CAS No.: 12172-73-5)		%	-	Negative	-
Anthophyllite (CAS No.: 77536-67-5)		%	-	Negative	-
Chrysotile (CAS No.: 12001-29-5)		%	-	Negative	-
Crocidolite (CAS No.: 12001-28-4)		%	-	Negative	-
Tremolite (CAS No.: 77536-68-6)		%	-	Negative	-
Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified (α- HBCDD, β- HBCDD, γ- HBCDD) (CAS No.: 25637-99-4, 3194-55-6 (134237-51-7, 134237-50-6, 134237-52-8))	With reference to IEC 62321: 2008, analysis was performed by GC/MS.	mg/kg	5	n.d.	-
Formaldehyde (CAS No.: 50-00-0)	With reference to ISO 17226-1: 2018, analysis was performed by LC/DAD.	mg/kg	3	n.d.	-
Perchlorates (CAS No.: 7601-90-3)	Analysis was performed by IC.	μg/g	0.1	n.d.	-
2-benzotriazol-2-yl-4,6-di-tert-butylphenol (UV-320) (CAS No.: 3846-71-7)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	5	n.d.	-
PFOS and its salts (CAS No.: 1763-23-1 and its salts)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-

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Test Item(s)	Method	Unit	MDL	Result No.1	Limit
Arsenic (As) (CAS No.: 7440-38-2)	With reference to US EPA 3052: 1996, analysis was performed by ICP-OES.	mg/kg	2	n.d.	-
Diarsenic trioxide (As_2O_3) (CAS No.: 1327-53-3)	Calculated from the result of Arsenic.	mg/kg	2▲	n.d.	-
Diarsenic pentaoxide (As_2O_5) (CAS No.: 1303-28-2)	Calculated from the result of Arsenic.	mg/kg	2▲	n.d.	-
Tributyl tin (TBT)	With reference to ISO 17353: 2004, analysis was performed by GC/FPD.	mg/kg	0.03	n.d.	-
Triphenyl tin (TPhT)	With reference to ISO 17353: 2004, analysis was performed by GC/FPD.	mg/kg	0.03	n.d.	-
Dibutyl tin (DBT)	With reference to ISO 17353: 2004, analysis was performed by GC/FPD.	mg/kg	0.03	n.d.	-
Dioctyl tin (DOT)	With reference to ISO 17353: 2004, analysis was performed by GC/FPD.	mg/kg	0.03	n.d.	-
Tris(2-chloroethyl) phosphate (TCEP) (CAS No.: 115-96-8)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	5	n.d.	-
N,N-Dimethylacetamide (DMAC) (CAS No.: 127-19-5)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	10	n.d.	-
4-tert-Octylphenol; 1,1,3,3-Tetramethyl-4-butylphenol (CAS No.: 140-66-9)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	10	n.d.	-
Hexabromobenzene (CAS No.: 87-82-1)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	5	n.d.	-
Brominated styrene	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	5	n.d.	-
TBBP-A-bis (CAS No.: 21850-44-2)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	5	n.d.	-
Tetrabromobisphenol A (TBBP-A) (CAS No.: 79-94-7)	With reference to RSTS-E&E-121, analysis was performed by LC/MS.	mg/kg	10	n.d.	-

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Test Item(s)	Method	Unit	MDL	Result	Limit
				No.1	
Monomethyl dibromodiphenyl methane (DBBT) (CAS No.: 99688-47-8)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	0.5	n.d.	-
Monomethyl dichlorodiphenyl methane (Ugilec121) (CAS No.: 81161-70-8)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	0.5	n.d.	-
Monomethyl tetrachlorodiphenyl methane (Ugilec141) (CAS No.: 76253-60-6)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	0.5	n.d.	-
Polyvinyl chloride (PVC)	With reference to ASTM E1252: 2013, analysis was performed by FT-IR and Flame Test.	**	-	Negative	-
Beryllium (Be) (CAS No.: 7440-41-7)	With reference to US EPA 3052: 1996, analysis was performed by ICP-OES.	mg/kg	2	n.d.	-
Fluorine (F) (CAS No.: 14762-94-8)	With reference to BS EN 14582: 2016, analysis was performed by IC.	mg/kg	50	n.d.	-
Chlorine (Cl) (CAS No.: 22537-15-1)	With reference to BS EN 14582: 2016, analysis was performed by IC.	mg/kg	50	n.d.	-
Bromine (Br) (CAS No.: 10097-32-2)	With reference to BS EN 14582: 2016, analysis was performed by IC.	mg/kg	50	n.d.	-
Iodine (I) (CAS No.: 14362-44-8)	With reference to BS EN 14582: 2016, analysis was performed by IC.	mg/kg	50	n.d.	-
Halon-1211 (CAS No.: 353-59-3)	With reference to US EPA 5021A: 2014, analysis was performed by GC/MS.	mg/kg	1	n.d.	-
Halon-1301 (CAS No.: 75-63-8)		mg/kg	1	n.d.	-
Halon-2402 (CAS No.: 124-73-2)		mg/kg	1	n.d.	-
Bromomethane (CAS No.: 74-83-9)	With reference to US EPA 5021A: 2014, analysis was performed by GC/MS.	mg/kg	1	n.d.	-

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Test Item(s)	Method	Unit	MDL	Result No.1	Limit
HCFC-21 (CAS No.: 75-43-4)	With reference to US EPA 5021A: 2014, analysis was performed by GC/MS.	mg/kg	1	n.d.	-
HCFC-22 (CAS No.: 75-45-6)		mg/kg	1	n.d.	-
HCFC-31 (CAS No.: 593-70-4)		mg/kg	1	n.d.	-
HCFC-121 (CAS No.: 354-14-3)		mg/kg	1	n.d.	-
HCFC-122 (CAS No.: 354-21-2)		mg/kg	1	n.d.	-
HCFC-123 (CAS No.: 306-83-2)		mg/kg	1	n.d.	-
HCFC-124 (CAS No.: 2837-89-0)		mg/kg	1	n.d.	-
HCFC-131 (CAS No.: 359-28-4)		mg/kg	1	n.d.	-
HCFC-132b (CAS No.: 1649-08-7)		mg/kg	1	n.d.	-
HCFC-133a (CAS No.: 75-88-7)		mg/kg	1	n.d.	-
HCFC-142b (CAS No.: 75-68-3)		mg/kg	1	n.d.	-
HCFC-221 (CAS No.: 422-26-4)		mg/kg	1	n.d.	-
HCFC-222 (CAS No.: 422-49-1)		mg/kg	1	n.d.	-
HCFC-223 (CAS No.: 422-52-6)		mg/kg	1	n.d.	-
HCFC-224 (CAS No.: 422-54-8)		mg/kg	1	n.d.	-
HCFC-225ca (CAS No.: 422-56-0)		mg/kg	1	n.d.	-
HCFC-225cb (CAS No.: 507-55-1)		mg/kg	1	n.d.	-
HCFC-226 (CAS No.: 431-87-8)		mg/kg	1	n.d.	-
HCFC-231 (CAS No.: 421-94-3)		mg/kg	1	n.d.	-
HCFC-232 (CAS No.: 460-89-9)		mg/kg	1	n.d.	-
HCFC-233 (CAS No.: 7125-84-0)		mg/kg	1	n.d.	-
HCFC-234 (CAS No.: 425-94-5)		mg/kg	1	n.d.	-
HCFC-235 (CAS No.: 460-92-4)		mg/kg	1	n.d.	-
HCFC-241 (CAS No.: 666-27-3)		mg/kg	1	n.d.	-
HCFC-242 (CAS No.: 460-63-9)		mg/kg	1	n.d.	-
HCFC-244		mg/kg	1	n.d.	-
HCFC-251 (CAS No.: 421-41-0)		mg/kg	1	n.d.	-
HCFC-252 (CAS No.: 819-00-1)		mg/kg	1	n.d.	-
HCFC-261 (CAS No.: 420-97-3)		mg/kg	1	n.d.	-
HCFC-262 (CAS No.: 421-02-03)		mg/kg	1	n.d.	-
HCFC-271 (CAS No.: 430-55-7)		mg/kg	1	n.d.	-

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Test Item(s)	Method	Unit	MDL	Result No.1	Limit
HCFC-141b (CAS No.: 1717-00-6)	With reference to US EPA 5021A: 2014, analysis was performed by GC/MS.	mg/kg	1	n.d.	-
HCFC-243 (CAS No.: 460-69-5)		mg/kg	1	n.d.	-
HCFC-253 (CAS No.: 460-35-5)		mg/kg	1	n.d.	-
CFC-13 (CAS No.: 75-72-9)		mg/kg	1	n.d.	-
CFC-111 (CAS No.: 354-56-3)		mg/kg	1	n.d.	-
CFC-112 (CAS No.: 76-12-0)		mg/kg	1	n.d.	-
CFC-211 (CAS No.: 422-78-6)		mg/kg	1	n.d.	-
CFC-212 (CAS No.: 3182-26-1)		mg/kg	1	n.d.	-
CFC-213 (CAS No.: 2354-06-5)		mg/kg	1	n.d.	-
CFC-214 (CAS No.: 29255-31-0)		mg/kg	1	n.d.	-
CFC-215 (CAS No.: 4259-43-2)		mg/kg	1	n.d.	-
CFC-216 (CAS No.: 661-97-2)		mg/kg	1	n.d.	-
CFC-217 (CAS No.: 422-86-6)		mg/kg	1	n.d.	-
CFC-12 (CAS No.: 75-71-8)		mg/kg	1	n.d.	-
CFC-11 (CAS No.: 75-69-4)		mg/kg	1	n.d.	-
CFC-115 (CAS No.: 76-15-3)		mg/kg	1	n.d.	-
CFC-114 (CAS No.: 76-14-2)		mg/kg	1	n.d.	-
CFC-113 (CAS No.: 76-13-1)		mg/kg	1	n.d.	-
Perfluorohexane (CAS No.: 355-42-0)	With reference to US EPA 5021A: 2014, analysis was performed by GC/MS.	mg/kg	1	n.d.	-
2-Perfluoromethylpentane (CAS No.: 355-04-4)		mg/kg	1	n.d.	-
Perfluoro-n-pentane (CAS No.: 678-26-2)		mg/kg	1	n.d.	-
Nonafluor-2- (trifluoromethyl)butane (CAS No.: 594-91-2)		mg/kg	1	n.d.	-
1,4-dihydrooctafluorobutane (CAS No.: 377-36-6)		mg/kg	1	n.d.	-
Perfluorisobutene (CAS No.: 382-21-8)		mg/kg	1	n.d.	-
Freon C318 (CAS No.: 115-25-3)		mg/kg	1	n.d.	-
Decafluorobutane (CAS No.: 355-25-9)		mg/kg	1	n.d.	-
Freon 218 (CAS No.: 76-19-7)		mg/kg	1	n.d.	-
Fluorocarbon 116 (CAS No.: 76-16-4)		mg/kg	1	n.d.	-
F14 (CAS No.: 75-73-0)		mg/kg	1	n.d.	-
Perfluor-1-butene (CAS No.: 357-26-6)		mg/kg	1	n.d.	-

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Test Item(s)	Method	Unit	MDL	Result No.1	Limit
HBFC-271B1 (C3H6FBr)	With reference to US EPA 5021A: 2014, analysis was performed by GC/MS.	mg/kg	1	n.d.	-
HBFC-262B1 (C3H5F2Br)		mg/kg	1	n.d.	-
HBFC-261B2 (C3H5FBr2)		mg/kg	1	n.d.	-
HBFC-253B1 (C3H4F3Br)		mg/kg	1	n.d.	-
HBFC-252B2 (C3H4F2Br2)		mg/kg	1	n.d.	-
HBFC-251B3 (C3H4FBr3)		mg/kg	1	n.d.	-
HBFC-244B1 (C3H3F4Br)		mg/kg	1	n.d.	-
HBFC-243B2 (C3H3F3Br2)		mg/kg	1	n.d.	-
HBFC-242B3 (C3H3F2Br3)		mg/kg	1	n.d.	-
HBFC-241B4 (C3H3FBr4)		mg/kg	1	n.d.	-
HBFC-235B1 (C3H2F5Br)		mg/kg	1	n.d.	-
HBFC-234B2 (C3H2F4Br2)		mg/kg	1	n.d.	-
HBFC-233B3 (C3H2F3Br3)		mg/kg	1	n.d.	-
HBFC-232B4 (C3H2F2Br4)		mg/kg	1	n.d.	-
HBFC-231B5 (C3H2FBr5)		mg/kg	1	n.d.	-
HBFC-226B1 (C3HF6Br)		mg/kg	1	n.d.	-
HBFC-225B2 (C3HF5Br2)		mg/kg	1	n.d.	-
HBFC-224B3 (C3HF4Br3)		mg/kg	1	n.d.	-
HBFC-223B4 (C3HF3Br4)		mg/kg	1	n.d.	-
HBFC-222B5 (C3HF2Br5)		mg/kg	1	n.d.	-
HBFC-221B6 (C3HFBr6)		mg/kg	1	n.d.	-
HBFC-151B1 (C2H4FBr)		mg/kg	1	n.d.	-
HBFC-142B1 (C2H3F2Br)		mg/kg	1	n.d.	-
HBFC-141B2 (C2H3FBr2)		mg/kg	1	n.d.	-
HBFC-133B1 (C2H2F3Br)		mg/kg	1	n.d.	-
HBFC-132B2 (C2H2F2Br2)		mg/kg	1	n.d.	-
HBFC-131B3 (C2H2FBr3)		mg/kg	1	n.d.	-
HBFC-124B1 (C2HF4Br)		mg/kg	1	n.d.	-
HBFC-123B2 (C2HF3Br2)		mg/kg	1	n.d.	-
HBFC-122B3 (C2HF2Br3)		mg/kg	1	n.d.	-
HBFC-121B4 (C2HFBr4)		mg/kg	1	n.d.	-
HBFC-31B1 (CH2FBr) (CAS No.: 373-52-4)		mg/kg	1	n.d.	-
HBFC-22B1 (CHF2Br) (CAS No.: 1511-62-2)		mg/kg	1	n.d.	-
HBFC-21B2 (CHFBr2) (CAS No.: 1868-53-7)		mg/kg	1	n.d.	-

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Test Item(s)	Method	Unit	MDL	Result No.1	Limit
HFC-23 (CHF3) (CAS No.: 75-46-7)	With reference to US EPA 5021A: 2014, analysis was performed by GC/MS.	mg/kg	1	n.d.	-
HFC-32 (CH2F2) (CAS No.: 75-10-5)		mg/kg	1	n.d.	-
HFC-41 (CH3F) (CAS No.: 593-53-3)		mg/kg	1	n.d.	-
HFC-43-10mee (C5H2F10)		mg/kg	1	n.d.	-
HFC-125 (C2HF5)		mg/kg	1	n.d.	-
HFC-134 (C2H2F4)		mg/kg	1	n.d.	-
HFC-134a (CH2FCF3) (CAS No.: 811-97-2)		mg/kg	1	n.d.	-
HFC-143 (CH3F3)		mg/kg	1	n.d.	-
HFC-143a (CH3F3)		mg/kg	1	n.d.	-
HFC-152a (C2H4F2) (CAS No.: 75-37-6)		mg/kg	1	n.d.	-
HFC-227ea (C3HF7) (CAS No.: 431-89-0)		mg/kg	1	n.d.	-
HFC-236fa (CAS No.: 431-63-0)		mg/kg	1	n.d.	-
HFC-245ca (C3H3F5)		mg/kg	1	n.d.	-
HFC-245fa (C3H3F5)		mg/kg	1	n.d.	-
HFC-365mfc (C4H5F5)		mg/kg	1	n.d.	-
HFC-236ea (C3H2F6) (CAS No.: 431-63-0)		mg/kg	1	n.d.	-
trans-1,3-Dichloropropene (CAS No.: 10061-02-6)	With reference to US EPA 5021A: 2014, analysis was performed by GC/MS.	mg/kg	1	n.d.	-
trans-1,2-Dichloroethene (CAS No.: 156-60-5)		mg/kg	1	n.d.	-
Dichloromethane, Methylene chloride (CAS No.: 75-09-2)		mg/kg	1	n.d.	-
Hexachlorobutadiene (CAS No.: 87-68-3)		mg/kg	1	n.d.	-
cis-1,3-Dichloropropene (CAS No.: 10061-01-5)		mg/kg	1	n.d.	-
cis-1,2-Dichloroethene (CAS No.: 156-59-2)		mg/kg	1	n.d.	-
Chloromethane (CAS No.: 74-87-3)		mg/kg	1	n.d.	-

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Test Item(s)	Method	Unit	MDL	Result No.1	Limit
Carbon tetrachloride (CAS No.: 56-23-5)	With reference to US EPA 5021A: 2014, analysis was performed by GC/MS.	mg/kg	1	n.d.	-
2,2-Dichloropropane (CAS No.: 594-20-7)		mg/kg	1	n.d.	-
1,2-Dichloroethane (CAS No.: 107-06-2)		mg/kg	1	n.d.	-
1,1-Dichloropropene (CAS No.: 563-58-6)		mg/kg	1	n.d.	-
1,2,3-Trichloropropane (CAS No.: 96-18-4)		mg/kg	1	n.d.	-
Chloroform (CAS No.: 67-66-3)		mg/kg	1	n.d.	-
1,2-Dichloropropane (CAS No.: 78-87-5)		mg/kg	1	n.d.	-
1,1,1,2-Tetrachloroethane (CAS No.: 630-20-6)		mg/kg	1	n.d.	-
1,1,1-Trichloroethane (CAS No.: 71-55-6)		mg/kg	1	n.d.	-
1,1,2-Trichloroethane (CAS No.: 79-00-5)		mg/kg	1	n.d.	-
1,1,2,2-Tetrachloroethane (CAS No.: 79-34-5)		mg/kg	1	n.d.	-
1,1-Dichloroethylene (CAS No.: 75-35-4)		mg/kg	1	n.d.	-
1,1-Dichloroethane (CAS No.: 75-34-3)		mg/kg	1	n.d.	-
Chloroethane (CAS No.: 75-00-3)		mg/kg	1	n.d.	-
Tetrachloroethene (CAS No.: 127-18-4)		mg/kg	1	n.d.	-
Trichloroethylene (CAS No.: 79-01-6)		mg/kg	1	n.d.	-
1,3-Dichloropropane (CAS No.: 142-28-9)		mg/kg	1	n.d.	-

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Test Item(s)	Method	Unit	MDL	Result No.1	Limit
Bromochloromethan (CAS No.: 74-97-5)	With reference to US EPA 5021A: 2014, analysis was performed by GC/MS.	mg/kg	1	n.d.	-
Sulfur hexafluoride (CAS No.: 2551-62-4)	With reference to US EPA 5021A: 2014, analysis was performed by GC/MS.	mg/kg	1	n.d.	-
Red Phosphorus	Analysis was performed by Pyrolyzer-GC/MS.	**	-	Negative	-
Uranium (U) (Radioactive element) (CAS No.: 7440-61-1)	With reference to US EPA 3052: 1996 & 6020B: 2014, analysis was performed by ICP-MS.	mg/kg	1	n.d.	-
Thorium (Th) (Radioactive element) (CAS No.: 7440-29-1)	With reference to US EPA 3052: 1996 & 6020B: 2014, analysis was performed by ICP-MS.	mg/kg	1	n.d.	-
Strontium (Sr) (Radioactive element) (CAS No.: 7440-24-6)	With reference to US EPA 3052: 1996 & 6020B: 2014, analysis was performed by ICP-MS.	mg/kg	1	n.d.	-
Caesium (Cs) (Radioactive element) (CAS No.: 7440-46-2)	With reference to US EPA 3052: 1996 & 6020B: 2014, analysis was performed by ICP-MS.	mg/kg	1	n.d.	-
Dimethyl fumarate (DMFu) (CAS No.: 624-49-7)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	0.1	n.d.	-
Bis(tributyltin) oxide (TBTO) (CAS No.: 56-35-9)	Calculated from the result of Tributyl Tin (TBT).	mg/kg	0.03▲	n.d.	-
Antimony (Sb) (CAS No.: 7440-36-0)	With reference to US EPA 3052: 1996, analysis was performed by ICP-OES.	mg/kg	2	n.d.	-

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Note：

1. mg/kg = ppm ; 0.1wt% = 1000ppm
2. MDL = Method Detection Limit
3. n.d. = Not Detected (Less than MDL)
4. "-" = Not Regulated
5. **= Qualitative analysis (No Unit)
6. Negative = Undetectable ; Positive = Detectable
7. Testing range of asbestos qualitative analysis is from less than 0.1% to 100%. The judgment criterion: asbestos fibers being found is shown as "Positive"; asbestos fibers not being found is shown as "Negative".
8. PFOS and its salts including :
   CAS No.: 29081-56-9, 2795-39-3, 29457-72-5, 70225-14-8, 56773-42-3, 251099-16-8, 307-35-7.
9. ▲ : The MDL was evaluated for element / tested substance.
   Conversion Formula：AX = A × F

AX	A	F
Diarsenic pentaoxide	Arsenic	1.5339
Diarsenic trioxide	Arsenic	1.3203
Bis(tributyltin)oxide (TBTO)	Tributyl Tin (TBT)	1.024

   Parameter Conversion Table： https://eecloud.sgs.com/Region_TW/DocDownload.aspx#otherDoc
10. The statement of compliance conformity is based on comparison of testing results and limits.

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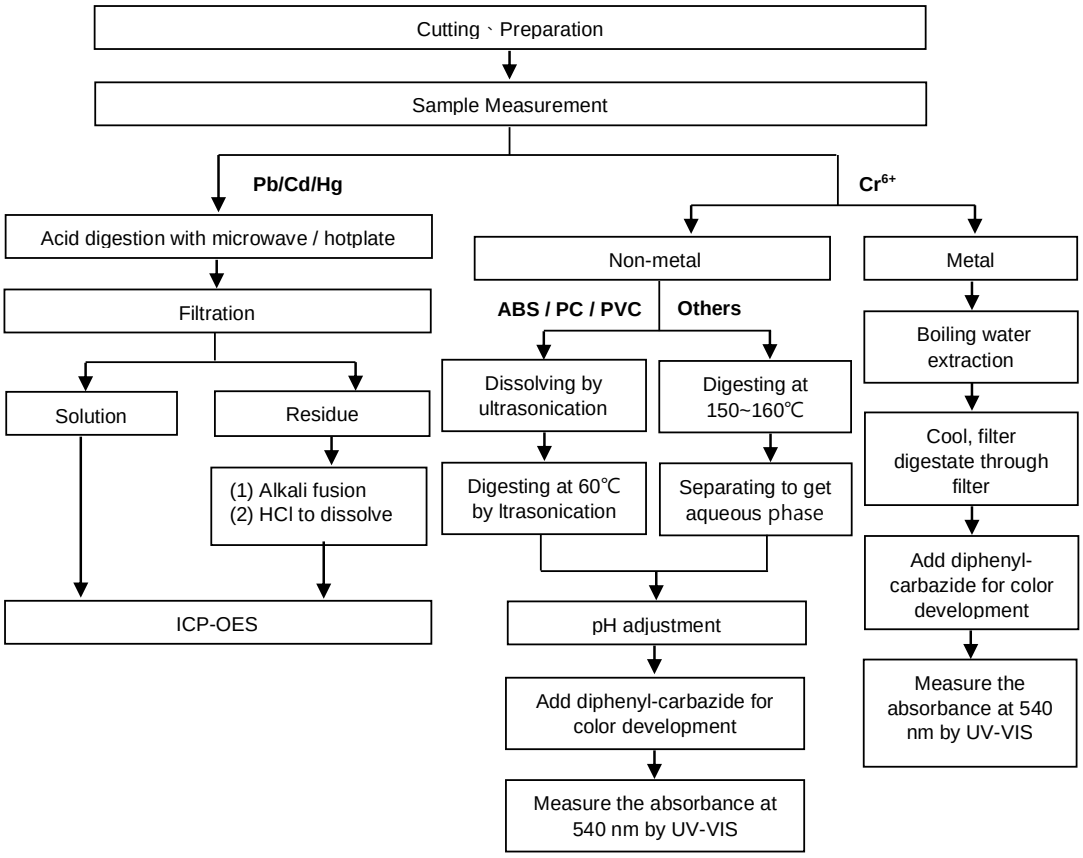
Analytical flow chart of Heavy Metal

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

(Cr^{6+} test method excluded)



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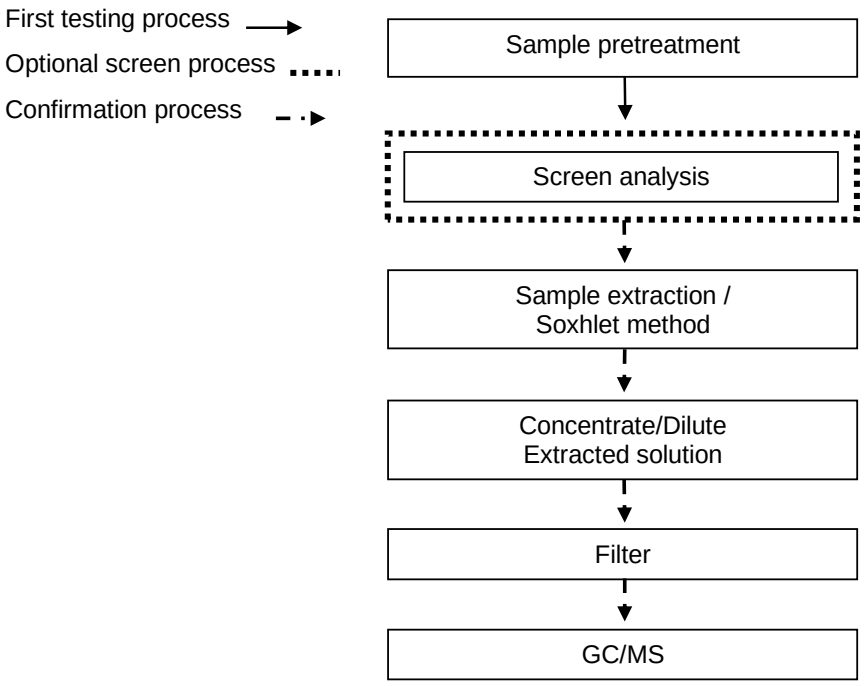
Analytical flow chart – PBBs / PBDEs



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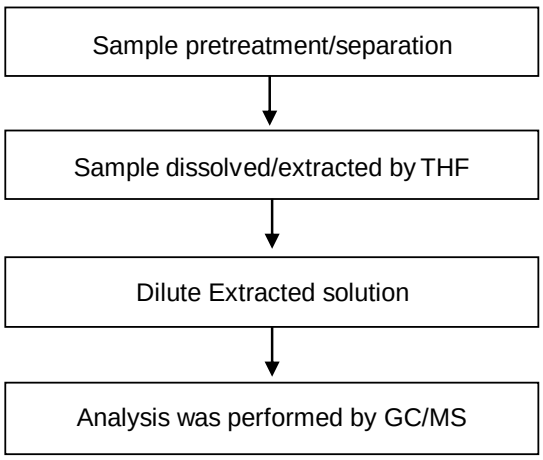
Analytical flow chart - Phthalate

【Test method: IEC 62321-8】



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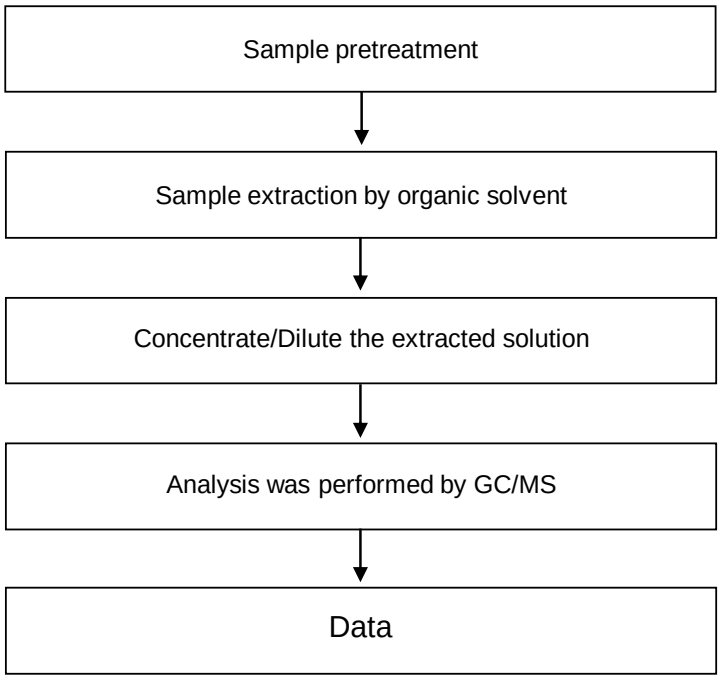
Analytical flow chart

* Apply to: PCBs, PCNs, PCTs, Mirex, Chlorinated Paraffins, DBBT



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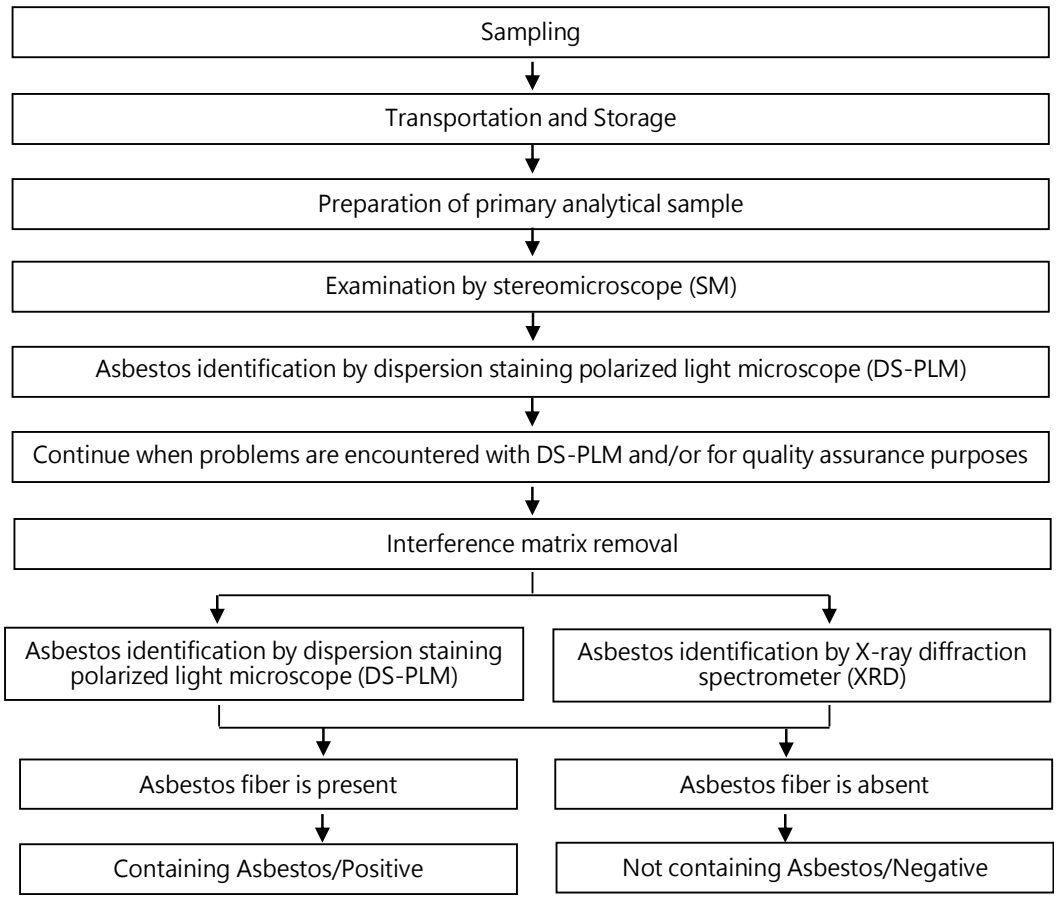
Analysis flow chart for determination of Asbestos

【Reference method: EPA 600/R-93/116】



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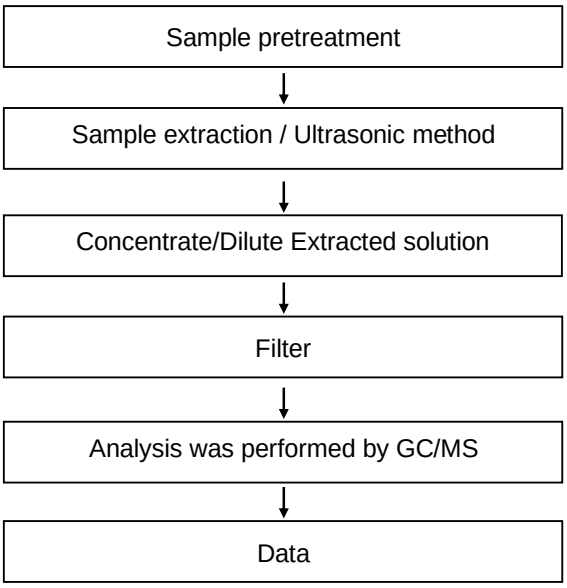
Analytical flow chart - HBCDD



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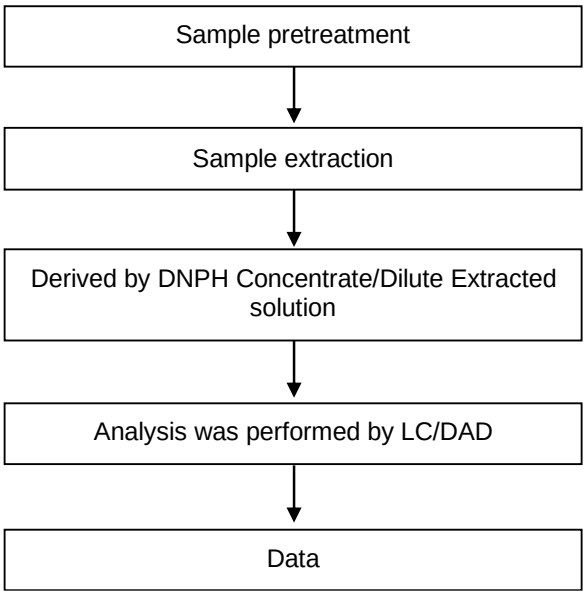
Analytical flow chart - Formaldehyde



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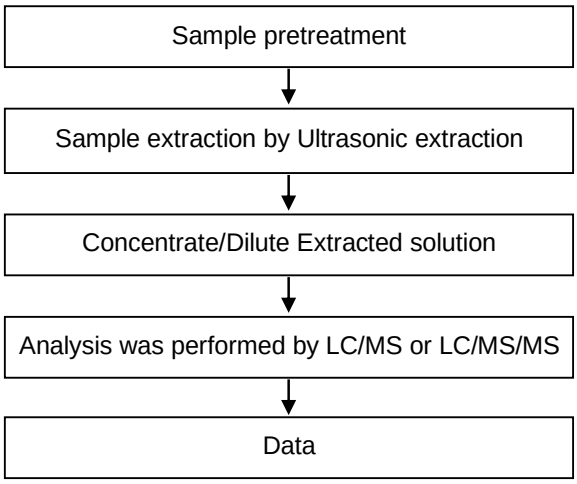
Analytical flow chart - PFOA/PFOS



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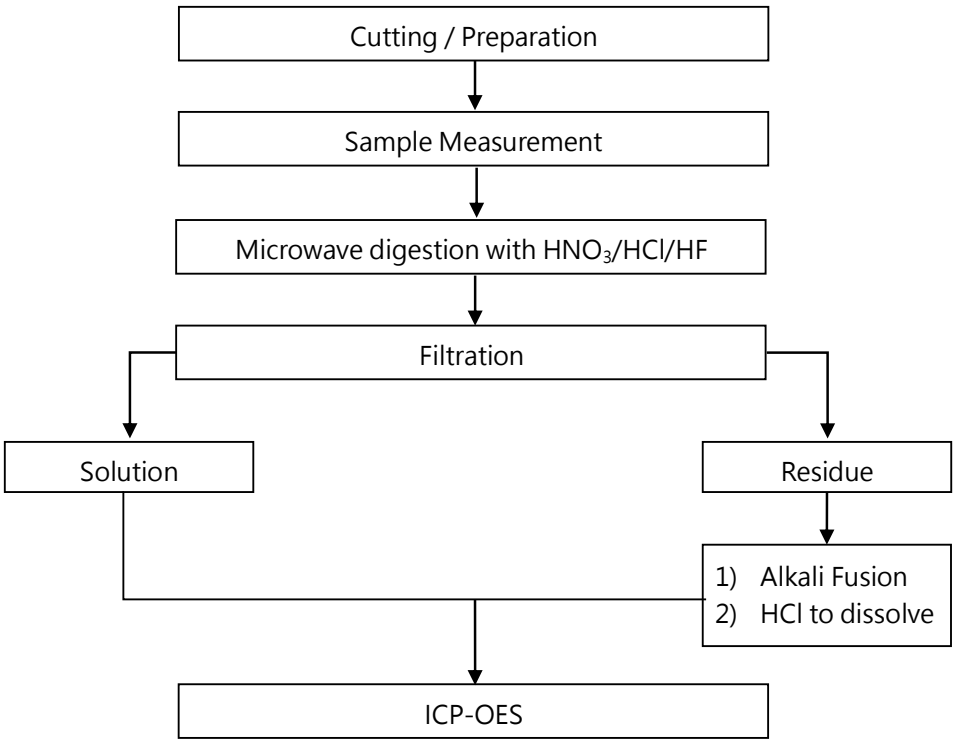
Analytical flow chart of Heavy Metal

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

【Reference method：US EPA 3051A、US EPA 3052】



* US EPA 3051A method does not add HF.

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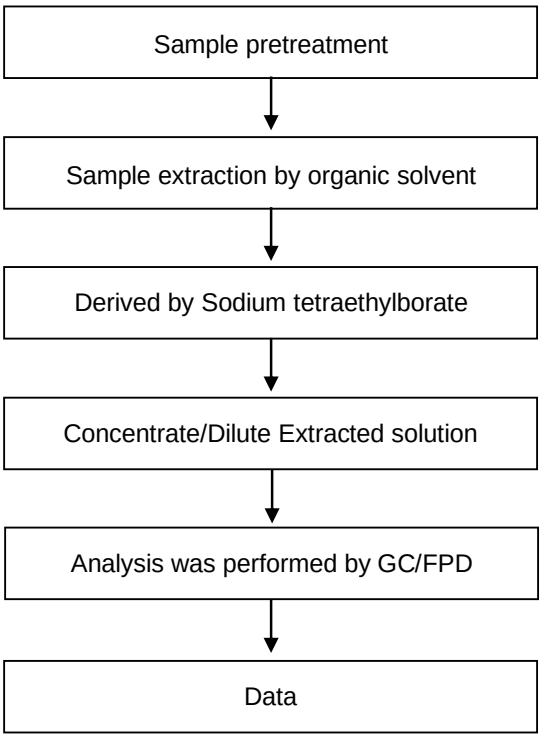
Analytical flow chart - Organic-Tin



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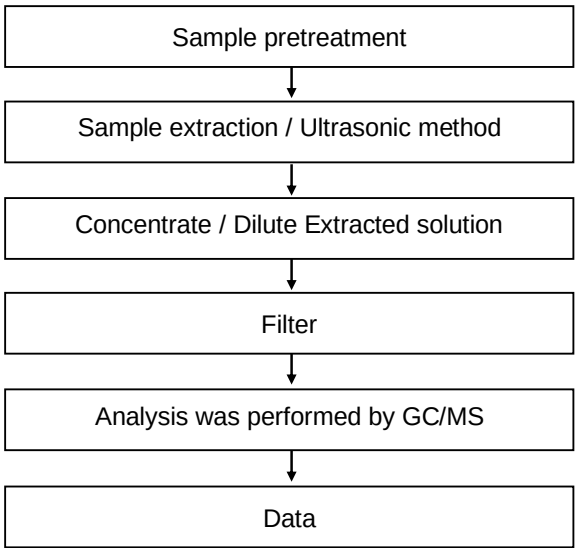
Analytical flow chart - Organic phosphorus compounds



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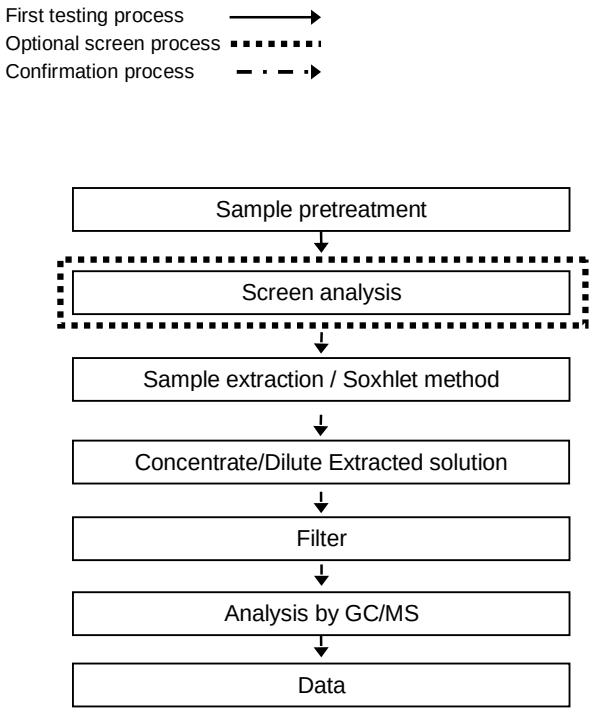
Analytical flow chart - TBBP-A-bis



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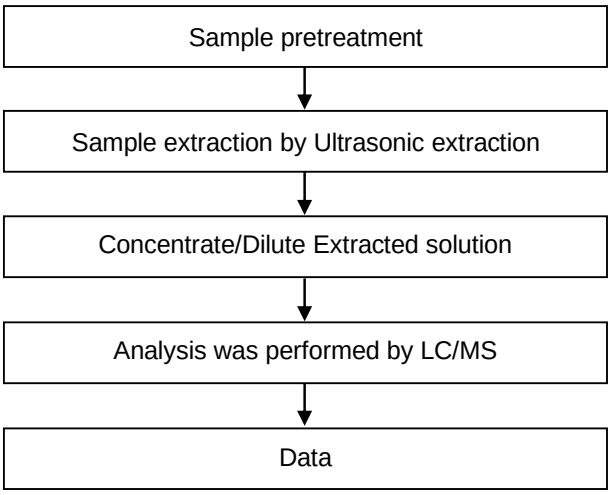
Analytical flow chart - TBBP-A



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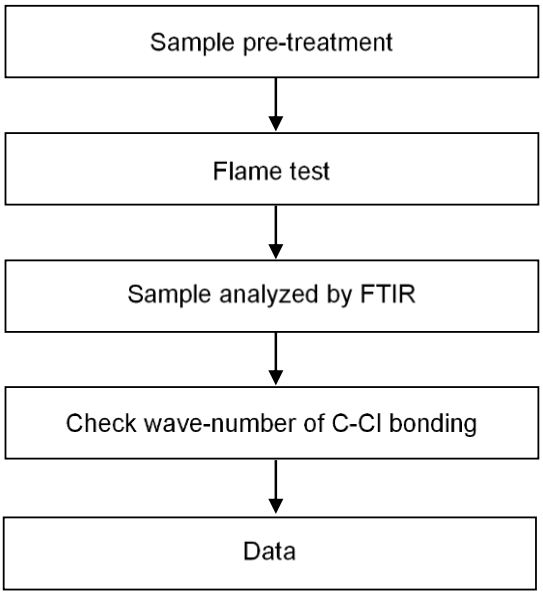
Analysis flow chart - PVC



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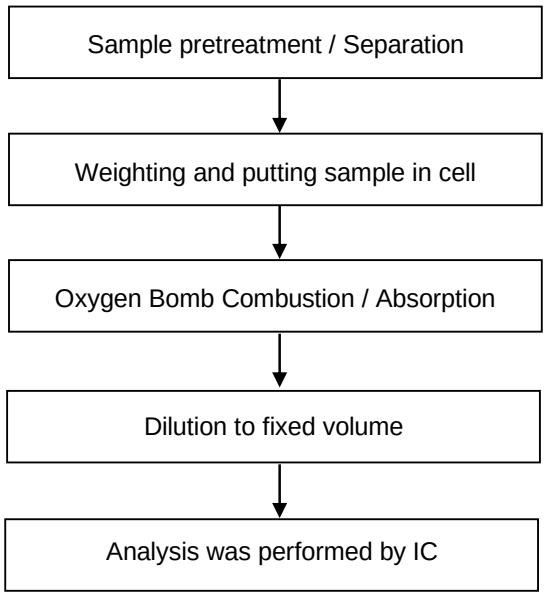
Analytical flow chart - Halogen



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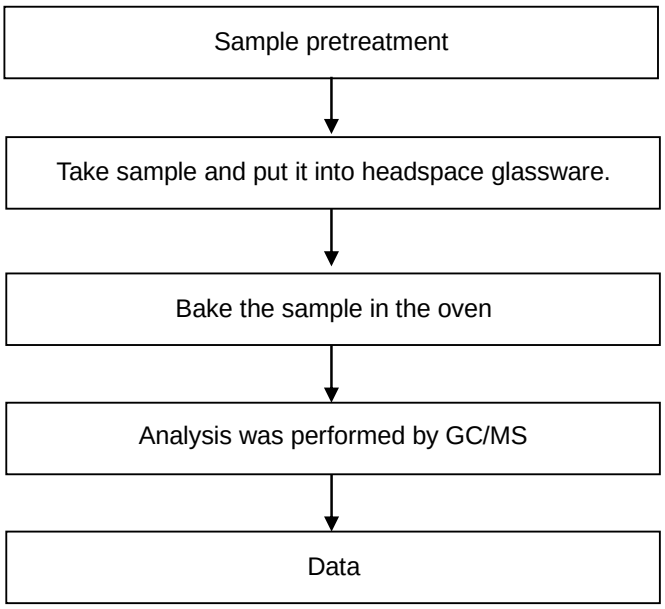
Analytical flow chart of volatile organic compounds (VOCs)

【Reference method：US EPA 5021A】



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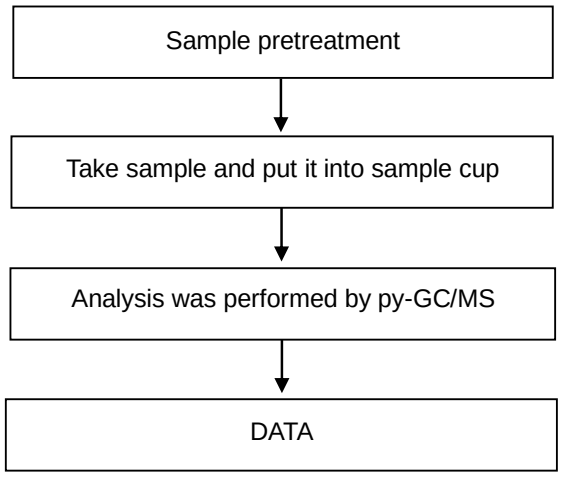
Analytical flow chart - Red phosphorus



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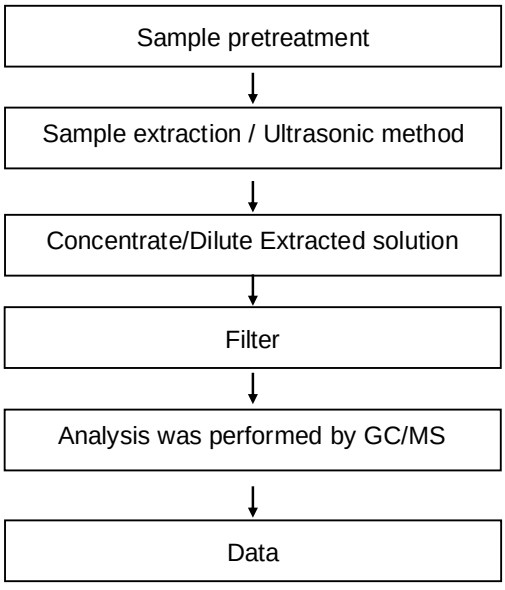
Analytical flow chart - Dimethyl Fumarate



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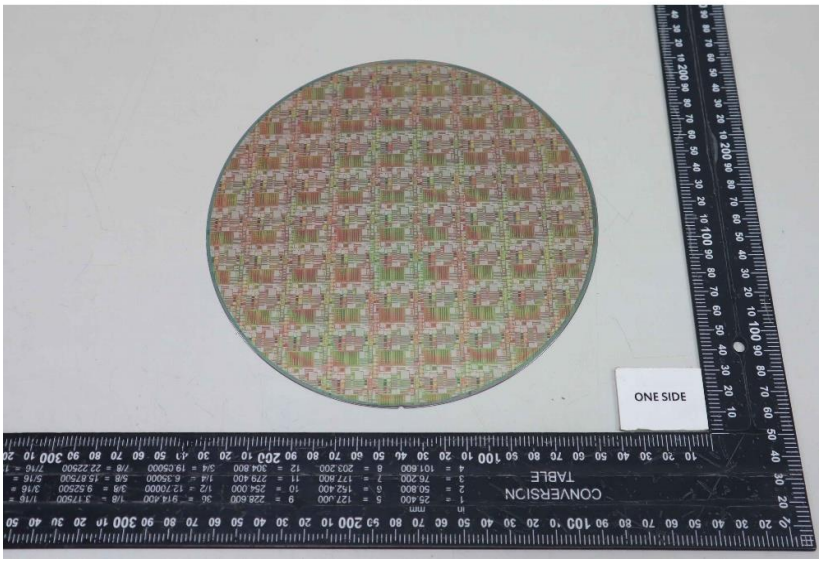
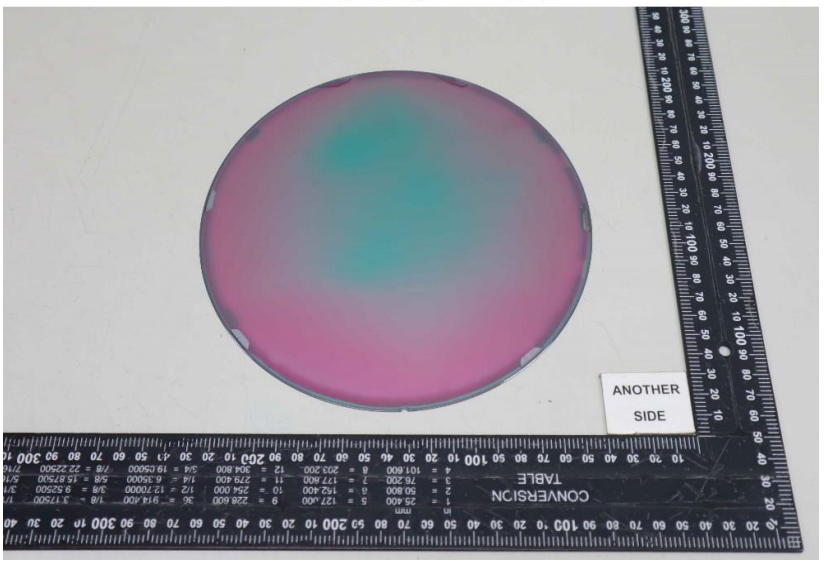
*** The tested sample / part is marked by an arrow if it's shown on the photo. ***

ETR20C07133



ETR20C07133



** End of Report **