Test Report

No.: ETR25903573 Date: 26-Sep-2025

HD MICROSYSTEMS
250 CHEESEQUAKE ROAD-BLDG. 424, PARLIN, NJ 08859-1241

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

Sample Submitted By	:	HD MICROSYSTEMS
Sample Name	:	POLYIMIDE PRECURSOR
Style/Item No.	:	HD4100

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Sample Receiving Date	:	19-Sep-2025
Testing Period	:	19-Sep-2025 to 25-Sep-2025

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) As specified by client, to test PAHs and other item(s).

Test Results : Please refer to following pages.

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

CHECK REPORT
PIN CODE: AB3442C3

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Test Part Description

No.1 : TRANSPARENT BROWN GLUE

Test Result(s)

Test Item(s)	Method	Unit	MDL	Result
				No.1
Cadmium (Cd)	With reference to IEC 62321-5: 2013, analysis was performed by ICP-OES.	mg/kg	2	n.d.
Lead (Pb)	With reference to IEC 62321-5: 2013, analysis was performed by ICP-OES.	mg/kg	2	n.d.
Mercury (Hg)	With reference to IEC 62321-4: 2013+ AMD1: 2017, analysis was performed by ICP-OES.	mg/kg	2	n.d.
Hexavalent Chromium Cr(VI)	With reference to IEC 62321-7-2: 2017, analysis was performed by UV-VIS.	mg/kg	8	n.d.
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.
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.

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Test Item(s)	Method	Unit	MDL	Result No.1
Butyl benzyl phthalate (BBP)	With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.	mg/kg	50	n.d.
Dibutyl phthalate (DBP)		mg/kg	50	n.d.
Di-(2-ethylhexyl) phthalate (DEHP)		mg/kg	50	n.d.
Diisobutyl phthalate (DIBP)		mg/kg	50	n.d.
Diisodecyl phthalate (DIDP) (CAS No.: 26761-40-0, 68515-49-1)		mg/kg	50	n.d.
Diisononyl phthalate (DINP) (CAS No.: 28553-12-0, 68515-48-0)		mg/kg	50	n.d.
Di-n-octyl phthalate (DNOP) (CAS No.: 117-84-0)		mg/kg	50	n.d.
Di-n-pentyl phthalate (DNPP) (CAS No.: 131-18-0)		mg/kg	50	n.d.
Di-n-hexyl phthalate (DNHP) (CAS No.: 84-75-3)		mg/kg	50	n.d.
Bis(2-methoxyethyl) phthalate (DMEP) (CAS No.: 117-82-8)		mg/kg	50	n.d.
Fluorine (F) (CAS No.: 14762-94-8)	With reference to BS EN 14582: 2016, analysis was performed by IC.	mg/kg	50	90.8
Chlorine (Cl) (CAS No.: 22537-15-1)		mg/kg	50	n.d.
Bromine (Br) (CAS No.: 10097-32-2)		mg/kg	50	n.d.
Iodine (I) (CAS No.: 14362-44-8)		mg/kg	50	n.d.
PFHxS and its salts				
Perfluorohexane sulfonate and its salts (PFHxS and its salts) (CAS No.: 355-46-4 and its salts)	Modified EN 17681-1: 2022 & EN 17681-2: 2022, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.
Perfluorooctane sulfonates and its salts (PFOS and its salts) (CAS No.: 1763-23-1 and its salts)	Modified EN 17681-1: 2022 & EN 17681-2: 2022, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.
Perfluorooctanoic acid and its salts (PFOA and its salts) (CAS No.: 335-67-1 and its salts)	Modified EN 17681-1: 2022 & EN 17681-2: 2022, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.
Bisphenol A (CAS No.: 80-05-7)	With reference to RSTS-CHEM-239-1, analysis was performed by LC/MS/MS.	mg/kg	1	n.d.
Polyvinyl chloride (PVC)	With reference to ASTM E1252: 2021, analysis was performed by FT-IR and Flame Test.	**	-	Negative

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Test Item(s)	Method	Unit	MDL	Result No.1
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 62321-9: 2021, analysis was performed by GC/MS.	mg/kg	20	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 ISO 18219-1: 2021, analysis was performed by GC/MS.	mg/kg	50	n.d.
AZO Dyes				
4-aminobiphenyl (CAS No.: 92-67-1)	With reference to EN ISO 14362-1: 2017, analysis was performed by GC/MS and HPLC/DAD.	mg/kg	3	n.d.
Benzidine (CAS No.: 92-87-5)	With reference to EN ISO 14362-1: 2017, analysis was performed by GC/MS and HPLC/DAD.	mg/kg	3	n.d.
4-chloro-o-toluidine (CAS No.: 95-69-2)	With reference to EN ISO 14362-1: 2017, analysis was performed by GC/MS and HPLC/DAD.	mg/kg	3	n.d.
2-naphthylamine (CAS No.: 91-59-8)	With reference to EN ISO 14362-1: 2017, analysis was performed by GC/MS and HPLC/DAD.	mg/kg	3	n.d.
o-aminoazotoluene (CAS No.: 97-56-3)	With reference to EN ISO 14362-1: 2017, analysis was performed by GC/MS and HPLC/DAD.	mg/kg	3	n.d.
5-nitro-o-toluidine (CAS No.: 99-55-8)	With reference to EN ISO 14362-1: 2017, analysis was performed by GC/MS and HPLC/DAD.	mg/kg	3	n.d.

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Test Item(s)	Method	Unit	MDL	Result
				No.1
4-chloroaniline (CAS No.: 106-47-8)	With reference to EN ISO 14362-1: 2017, analysis was performed by GC/MS and HPLC/DAD.	mg/kg	3	n.d.
2,4-diaminoanisole (CAS No.: 615-05-4)	With reference to EN ISO 14362-1: 2017, analysis was performed by GC/MS and HPLC/DAD.	mg/kg	3	n.d.
4,4'-diaminodiphenylmethane (MDA) (CAS No.: 101-77-9)	With reference to EN ISO 14362-1: 2017, analysis was performed by GC/MS and HPLC/DAD.	mg/kg	3	n.d.
3,3'-dichlorobenzidine (CAS No.: 91-94-1)	With reference to EN ISO 14362-1: 2017, analysis was performed by GC/MS and HPLC/DAD.	mg/kg	3	n.d.
3,3'-dimethoxybenzidine (CAS No.: 119-90-4)	With reference to EN ISO 14362-1: 2017, analysis was performed by GC/MS and HPLC/DAD.	mg/kg	3	n.d.
3,3'-dimethylbenzidine (CAS No.: 119-93-7)	With reference to EN ISO 14362-1: 2017, analysis was performed by GC/MS and HPLC/DAD.	mg/kg	3	n.d.
3,3'-dimethyl-4,4'-diaminodiphenylmethane (CAS No.: 838-88-0)	With reference to EN ISO 14362-1: 2017, analysis was performed by GC/MS and HPLC/DAD.	mg/kg	3	n.d.
2-methoxy-5-methylaniline (CAS No.: 120-71-8)	With reference to EN ISO 14362-1: 2017, analysis was performed by GC/MS and HPLC/DAD.	mg/kg	3	n.d.
4,4'-methylene-bis-(2-chloroaniline) (CAS No.: 101-14-4)	With reference to EN ISO 14362-1: 2017, analysis was performed by GC/MS and HPLC/DAD.	mg/kg	3	n.d.
4,4'-oxydianiline (CAS No.: 101-80-4)	With reference to EN ISO 14362-1: 2017, analysis was performed by GC/MS and HPLC/DAD.	mg/kg	3	n.d.
4,4'-thiodianiline (CAS No.: 139-65-1)	With reference to EN ISO 14362-1: 2017, analysis was performed by GC/MS and HPLC/DAD.	mg/kg	3	n.d.
o-toluidine (CAS No.: 95-53-4)	With reference to EN ISO 14362-1: 2017, analysis was performed by GC/MS and HPLC/DAD.	mg/kg	3	n.d.

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Test Item(s)	Method	Unit	MDL	Result No.1
2,4-diaminotoluene (CAS No.: 95-80-7)	With reference to EN ISO 14362-1: 2017, analysis was performed by GC/MS and HPLC/DAD.	mg/kg	3	n.d.
2,4,5-trimethylaniline (CAS No.: 137-17-7)	With reference to EN ISO 14362-1: 2017, analysis was performed by GC/MS and HPLC/DAD.	mg/kg	3	n.d.
o-anisidine (CAS No.: 90-04-0)	With reference to EN ISO 14362-1: 2017, analysis was performed by GC/MS and HPLC/DAD.	mg/kg	3	n.d.
4-aminoazobenzene (CAS No.: 60-09-3)	With reference to EN ISO 14362-1: 2017 or/and EN ISO 14362-3: 2017, analysis was performed by GC/MS & HPLC/DAD.	mg/kg	3	n.d.
2,4-xylidine (CAS No.: 95-68-1)	With reference to EN ISO 14362-1: 2017, analysis was performed by GC/MS and HPLC/DAD.	mg/kg	3	n.d.
2,6-xylidine (CAS No.: 87-62-7)	With reference to EN ISO 14362-1: 2017, analysis was performed by GC/MS and HPLC/DAD.	mg/kg	3	n.d.
Formaldehyde (CAS No.: 50-00-0)	With reference to ISO 17226-1: 2021, analysis was performed by LC/DAD.	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
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.
Chlorofluorocarbons (CFCs)				
CFC-13	With reference to US EPA 5021A: 2014, analysis was performed by GC/MS.	mg/kg	1	n.d.
CFC-111		mg/kg	1	n.d.
CFC-112		mg/kg	1	n.d.

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Test Item(s)	Method	Unit	MDL	Result No.1
CFC-211	With reference to US EPA 5021A: 2014, analysis was performed by GC/MS.	mg/kg	1	n.d.
CFC-212		mg/kg	1	n.d.
CFC-213		mg/kg	1	n.d.
CFC-214		mg/kg	1	n.d.
CFC-215		mg/kg	1	n.d.
CFC-216		mg/kg	1	n.d.
CFC-217		mg/kg	1	n.d.
CFC-12		mg/kg	1	n.d.
CFC-11		mg/kg	1	n.d.
CFC-115		mg/kg	1	n.d.
CFC-114		mg/kg	1	n.d.
CFC-113		mg/kg	1	n.d.
Hydrochlorofluorocarbons (HCFCs)				
HCFC-21	With reference to US EPA 5021A: 2014, analysis was performed by GC/MS.	mg/kg	1	n.d.
HCFC-22		mg/kg	1	n.d.
HCFC-31		mg/kg	1	n.d.
HCFC-121		mg/kg	1	n.d.
HCFC-122		mg/kg	1	n.d.
HCFC-123		mg/kg	1	n.d.
HCFC-124		mg/kg	1	n.d.
HCFC-131		mg/kg	1	n.d.
HCFC-142b		mg/kg	1	n.d.
HCFC-221		mg/kg	1	n.d.
HCFC-222		mg/kg	1	n.d.
HCFC-223		mg/kg	1	n.d.
HCFC-224		mg/kg	1	n.d.
HCFC-225ca		mg/kg	1	n.d.
HCFC-225cb		mg/kg	1	n.d.
HCFC-226		mg/kg	1	n.d.
HCFC-231		mg/kg	1	n.d.
HCFC-232		mg/kg	1	n.d.
HCFC-233		mg/kg	1	n.d.
HCFC-234		mg/kg	1	n.d.
HCFC-235		mg/kg	1	n.d.
HCFC-241		mg/kg	1	n.d.

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Test Item(s)	Method	Unit	MDL	Result No.1
HCFC-242	With reference to US EPA 5021A: 2014, analysis was performed by GC/MS.	mg/kg	1	n.d.
HCFC-244		mg/kg	1	n.d.
HCFC-251		mg/kg	1	n.d.
HCFC-252		mg/kg	1	n.d.
HCFC-261		mg/kg	1	n.d.
HCFC-262		mg/kg	1	n.d.
HCFC-271		mg/kg	1	n.d.
HCFC-141b		mg/kg	1	n.d.
HCFC-243		mg/kg	1	n.d.
HCFC-253		mg/kg	1	n.d.
HCFC-141		mg/kg	1	n.d.
HCFC-142		mg/kg	1	n.d.
HCFC-151		mg/kg	1	n.d.
HCFC-225		mg/kg	1	n.d.
HCFC-133		mg/kg	1	n.d.
HCFC-132		mg/kg	1	n.d.
Halons				
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.
Halon-1202 (CAS No.: 75-61-6)		mg/kg	1	n.d.
Methyl Bromide (CAS No.: 74-83-9)	With reference to US EPA 5021A: 2014, analysis was performed by GC/MS.	mg/kg	1	n.d.
Hydrobromofluorocarbons (HBFCs)				
HBFC-271B1	With reference to US EPA 5021A: 2014, analysis was performed by GC/MS.	mg/kg	1	n.d.
HBFC-262B1		mg/kg	1	n.d.
HBFC-261B2		mg/kg	1	n.d.
HBFC-253B1		mg/kg	1	n.d.
HBFC-252B2		mg/kg	1	n.d.
HBFC-244B1		mg/kg	1	n.d.
HBFC-243B2		mg/kg	1	n.d.
HBFC-242B3		mg/kg	1	n.d.
HBFC-241B4		mg/kg	1	n.d.
HBFC-235B1		mg/kg	1	n.d.
HBFC-234B2		mg/kg	1	n.d.

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Test Item(s)	Method	Unit	MDL	Result No.1
HBFC-233B3	With reference to US EPA 5021A: 2014, analysis was performed by GC/MS.	mg/kg	1	n.d.
HBFC-232B4		mg/kg	1	n.d.
HBFC-231B5		mg/kg	1	n.d.
HBFC-226B1		mg/kg	1	n.d.
HBFC-225B2		mg/kg	1	n.d.
HBFC-224B3		mg/kg	1	n.d.
HBFC-223B4		mg/kg	1	n.d.
HBFC-222B5		mg/kg	1	n.d.
HBFC-221B6		mg/kg	1	n.d.
HBFC-151B1		mg/kg	1	n.d.
HBFC-142B1		mg/kg	1	n.d.
HBFC-141B2		mg/kg	1	n.d.
HBFC-133B1		mg/kg	1	n.d.
HBFC-132B2		mg/kg	1	n.d.
HBFC-131B3		mg/kg	1	n.d.
HBFC-124B1		mg/kg	1	n.d.
HBFC-123B2		mg/kg	1	n.d.
HBFC-122B3		mg/kg	1	n.d.
HBFC-121B4		mg/kg	1	n.d.
HBFC-31B1		mg/kg	1	n.d.
HBFC-22B1		mg/kg	1	n.d.
HBFC-21B2		mg/kg	1	n.d.
HBFC-251B1		mg/kg	1	n.d.
Chlorinate hydrocarbon (CHCs)				
1,1-Dichloropropene (CAS No.: 563-58-6)	With reference to US EPA 5021A: 2014, analysis was performed by GC/MS.	mg/kg	1	n.d.
1,2-Dichloroethane (CAS No.: 107-06-2)		mg/kg	1	n.d.
2,2-Dichloropropane (CAS No.: 594-20-7)		mg/kg	1	n.d.
Carbon tetrachloride (CAS No.: 56-23-5)		mg/kg	1	n.d.
Chloromethane (CAS No.: 74-87-3)		mg/kg	1	n.d.
cis-1,2-Dichloroethene (CAS No.: 156-59-2)		mg/kg	1	n.d.

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Test Item(s)	Method	Unit	MDL	Result No.1
cis-1,3-Dichloropropene (CAS No.: 10061-01-5)	With reference to US EPA 5021A: 2014, analysis was performed by GC/MS.	mg/kg	1	n.d.
Hexachlorobutadiene (CAS No.: 87-68-3)		mg/kg	1	n.d.
trans-1,2-Dichloroethene (CAS No.: 156-60-5)		mg/kg	1	n.d.
trans-1,3-Dichloropropene (CAS No.: 10061-02-6)		mg/kg	1	n.d.
Dichloromethane (CAS No.: 75-09-2)		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.
Chloroform (CAS No.: 67-66-3)		mg/kg	1	n.d.
1,2,3-Trichloropropane (CAS No.: 96-18-4)		mg/kg	1	n.d.
Hydrofluorocarbon (HFCs)				
HFC-23	With reference to US EPA 5021A: 2014, analysis was performed by GC/MS.	mg/kg	1	n.d.
HFC-32		mg/kg	1	n.d.
HFC-41		mg/kg	1	n.d.

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Test Item(s)	Method	Unit	MDL	Result No.1
HFC-43-10mee	With reference to US EPA 5021A: 2014, analysis was performed by GC/MS.	mg/kg	1	n.d.
HFC-125		mg/kg	1	n.d.
HFC-134		mg/kg	1	n.d.
HFC-134a		mg/kg	1	n.d.
HFC-143		mg/kg	1	n.d.
HFC-143a		mg/kg	1	n.d.
HFC-152a		mg/kg	1	n.d.
HFC-227ea		mg/kg	1	n.d.
HFC-236fa		mg/kg	1	n.d.
HFC-245ca		mg/kg	1	n.d.
HFC-245fa		mg/kg	1	n.d.
HFC-365mfc		mg/kg	1	n.d.
HFC-236ea		mg/kg	1	n.d.
HFC-236cb		mg/kg	1	n.d.
HFC-161		mg/kg	1	n.d.
HFC-152		mg/kg	1	n.d.
Perfluorocarbon (PFCs)				
2-Perfluoromethylpentane (CAS No.: 355-04-4)	With reference to US EPA 5021A: 2014, analysis was performed by GC/MS.	mg/kg	1	n.d.
Decafluorobutane (CAS No.: 355-25-9)		mg/kg	1	n.d.
Freon-14 (CAS No.: 75-73-0)		mg/kg	1	n.d.
Fluorocarbon 116 (CAS No.: 76-16-4)		mg/kg	1	n.d.
Freon 218 (CAS No.: 76-19-7)		mg/kg	1	n.d.
Freon C318 (CAS No.: 115-25-3)		mg/kg	1	n.d.
Perfluorohexane (CAS No.: 355-42-0)		mg/kg	1	n.d.
Perfluoro-n-pentane (CAS No.: 678-26-2)		mg/kg	1	n.d.
Perfluorodecalin (CAS No.: 306-94-5)		mg/kg	1	n.d.
Triphenyl tin (TPT)	With reference to ISO 17353: 2004, analysis was performed by GC/FPD.	mg/kg	0.03	n.d.
Tributyl tin (TBT)		mg/kg	0.03	n.d.
Dioctyl tin (DOT)		mg/kg	0.03	n.d.
Dibutyl tin (DBT)		mg/kg	0.03	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.

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Test Item(s)	Method	Unit	MDL	Result
				No.1
Benzene (CAS No.: 71-43-2)	With reference to US EPA 5021A: 2014, analysis was performed by GC/MS.	mg/kg	1	n.d.
Toluene (CAS No.: 108-88-3)	With reference to US EPA 5021A: 2014, analysis was performed by GC/MS.	mg/kg	1	2.24
Phosphine (CAS No.: 7803-51-2)	Analysis was performed by gas detector tube. (Test Condition: 40℃, 30 mins)	ppmV	0.08	n.d.
Polycyclic Aromatic Hydrocarbons (PAHs)				
Benzo[a]pyrene (CAS No.: 50-32-8)	With reference to AfPS GS 2019:01 PAK, analysis was performed by GC/MS.	mg/kg	0.2	n.d.
Benzo[e]pyrene (CAS No.: 192-97-2)		mg/kg	0.2	n.d.
Benzo[a]anthracene (CAS No.: 56-55-3)		mg/kg	0.2	n.d.
Benzo[b]fluoranthene (CAS No.: 205-99-2)		mg/kg	0.2	n.d.
Benzo[j]fluoranthene (CAS No.: 205-82-3)		mg/kg	0.2	n.d.
Benzo[k]fluoranthene (CAS No.: 207-08-9)		mg/kg	0.2	n.d.
Chrysene (CAS No.: 218-01-9)		mg/kg	0.2	n.d.
Dibenzo[a,h]anthracene (CAS No.: 53-70-3)		mg/kg	0.2	n.d.
Benzo[g,h,i]perylene (CAS No.: 191-24-2)		mg/kg	0.2	n.d.
Indeno[1,2,3-c,d]pyrene (CAS No.: 193-39-5)		mg/kg	0.2	n.d.
Anthracene (CAS No.: 120-12-7)		mg/kg	0.2	n.d.
Fluoranthene (CAS No.: 206-44-0)		mg/kg	0.2	n.d.
Phenanthrene (CAS No.: 85-01-8)		mg/kg	0.2	n.d.
Pyrene (CAS No.: 129-00-0)		mg/kg	0.2	n.d.
Naphthalene (CAS No.: 91-20-3)		mg/kg	0.2	n.d.
Sum of 15 PAHs		mg/kg	-	n.d.

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Test Item(s)	Method	Unit	MDL	Result No.1
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.
Tris(1,3-dichloro-2-propyl) phosphate (CAS No.: 13674-87-8)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	5	n.d.
Tris(1-chloro-2-propyl) phosphate (TCPP) (CAS No.: 13674-84-5)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	5	n.d.
Triphenyl phosphate (CAS No.: 115-86-6)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	5	n.d.
Trixylyl phosphate (CAS No.: 25155-23-1)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	25	n.d.
2,2-Bis(chloromethyl) trimethylene bis(bis(2-chloroethyl) phosphate) (CAS No.: 38051-10-4)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	25	n.d.
Tris(4-tert-butylphenyl) phosphate (CAS No.: 78-33-1, 28777-70-0)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	5	n.d.
4-(tert-butyl) phenyl diphenyl phosphate (CAS No.: 56803-37-3)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	5	n.d.
Bis(tert-butylphenyl) phenyl phosphate (DBPP) (CAS No.: 65652-41-7)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	5	n.d.
Tributyl phosphate (TBP) (CAS No.: 126-73-8)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	5	n.d.
Trimethyl phosphate (CAS No.: 512-56-1)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	5	n.d.
Tris-(1-aziridinyl) phosphine oxide (CAS No.: 545-55-1)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	5	n.d.
Tricresyl phosphate and isomers (CAS No.: 1330-78-5)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	5	n.d.
Tri-o-tolyphosphate (CAS No.: 78-30-8)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	5	n.d.
Tris(2-ethylhexyl) phosphate (CAS No.: 78-42-2)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	5	n.d.
Tris(2,3-dichloropropyl) phosphate (CAS No.: 78-43-3)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	5	n.d.

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Test Item(s)	Method	Unit	MDL	Result No.1
Triethyl phosphate (CAS No.: 78-40-0)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	5	n.d.
Tri-m-tolyphosphate (CAS No.: 563-04-2)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	5	n.d.
Tri-p-tolyphosphate (CAS No.: 78-32-0)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	5	n.d.
Tris(2-butoxyethyl) phosphate (CAS No.: 78-51-3)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	5	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.
Sulfur(S) (CAS No.: 7704-34-9)	Analysis was performed by Element Analyzer.	% (w/w)	0.1	n.d.
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.
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.
Cobalt (Co) (CAS No.: 7440-48-4)	With reference to US EPA 3052: 1996, analysis was performed by ICP-OES.	mg/kg	2	n.d.
Cobalt dichloride ($CoCl_2$) (CAS No.: 7646-79-9)	With reference to RSTS-EE-SVHC-007, analysis was performed by ICP-OES, IC.	mg/kg	50 ▲	n.d.
1H,1H,2H,2H-Perfluorodecanesulfonic acid and its salts (8:2 FTS and its salts) (CAS No.: 39108-34-4 and its salts)	Modified EN 17681-1: 2022 & EN 17681-2: 2022, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.
1H,1H,2H,2H-Perfluoro-1-decanol (8:2 FTOH) (CAS No.: 678-39-7)	Modified EN 17681-1: 2022 & EN 17681-2: 2022, analysis was performed by GC/MS and LC/MS/MS.	mg/kg	0.1	n.d.
1H,1H,2H,2H-Perfluorodecyl acrylate (8:2 FTA) (CAS No.: 27905-45-9)	Modified EN 17681-1: 2022 & EN 17681-2: 2022, analysis was performed by GC/MS.	mg/kg	0.1	n.d.
1H,1H,2H,2H-Perfluorodecyl methacrylate (8:2 FTMA) (CAS No.: 1996-88-9)	Modified EN 17681-1: 2022 & EN 17681-2: 2022, analysis was performed by GC/MS.	mg/kg	0.1	n.d.

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Test Item(s)	Method	Unit	MDL	Result No.1
2H,2H-Perfluorodecane acid and its salts (H2PFDA and its salts) (CAS No.: 27854-31-5 and its salts)	Modified EN 17681-1: 2022 & EN 17681-2: 2022, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.
1H,1H,2H,2H-Perfluorodecyl iodide (8_2 FTI) (CAS No.: 2043-53-0)	Modified EN 17681-1: 2022 & EN 17681-2: 2022, analysis was performed by GC/MS.	mg/kg	0.1	n.d.
1H,1H,2H,2H-Perfluorodecyltriethoxysilane (8:2 FTSi(OC2H5)3) (CAS No.: 101947-16-4)	Modified EN 17681-1: 2022 & EN 17681-2: 2022, analysis was performed by GC/MS.	mg/kg	0.1	n.d.
2H,2H,3H,3H-Perfluoroundecanoic Acid and its salts (4HPFUnA and its salts) (CAS No.: 34598-33-9 and its salts)	Modified EN 17681-1: 2022 & EN 17681-2: 2022, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.
1H,1H,2H-Heptadecafluoro-1-decene (PFDE) (CAS No.: 21652-58-4)	Modified EN 17681-1: 2022 & EN 17681-2: 2022, analysis was performed by GC/MS.	mg/kg	0.1	n.d.
Bis(1H,1H,2H,2H-Perfluorodecyl)phosphate and its salts (8_2diPAP and its salts) (CAS No.: 678-41-1 and its salts)	Modified EN 17681-1: 2022 & EN 17681-2: 2022, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.
Perfluorononan-1-oic acid and its salts (PFNA and its salts) (CAS No.: 375-95-1 and its salts)	Modified EN 17681-1: 2022 & EN 17681-2: 2022, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.
Perfluoro-3,7-dimethyloctanoic Acid (PF-3,7-DMOA) (CAS No.: 172155-07-6)	Modified EN 17681-1: 2022 & EN 17681-2: 2022, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.
Perfluorodecane acid and its salts (PFDA and its salts) (CAS No.: 335-76-2 and its salts)	Modified EN 17681-1: 2022 & EN 17681-2: 2022, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.
Perfluoroundecanoic acid and its salts (PFUnDA and its salts) (CAS No.: 2058-94-8 and its salts)	Modified EN 17681-1: 2022 & EN 17681-2: 2022, 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
Perfluorododecanoic acid and its salts (PFDoDA and its salts) (CAS No.: 307-55-1 and its salts)	Modified EN 17681-1: 2022 & EN 17681-2: 2022, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.
Perfluorodecane sulfonate and its salts (PFDS and its salts) (CAS No.: 335-77-3 and its salts)	Modified EN 17681-1: 2022 & EN 17681-2: 2022, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.
Pentacosafluorotridecanoic acid and its salts (PFTrDA and its salts) (CAS No.: 72629-94-8 and its salts)	Modified EN 17681-1: 2022 & EN 17681-2: 2022, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.
Perfluorotetradecanoic acid and its salts (PFTDA and its salts) (CAS No.: 376-06-7 and its salts)	Modified EN 17681-1: 2022 & EN 17681-2: 2022, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.
1H,1H,2H,2H-Perfluoro-1-dodecanol (10:2FTOH) (CAS No.: 865-86-1)	Modified EN 17681-1: 2022 & EN 17681-2: 2022, analysis was performed by GC/MS and LC/MS/MS.	mg/kg	0.1	n.d.
1H,1H,2H,2H-Perfluorododecylacrylate (10:2FTA) (CAS No.: 17741-60-5)	Modified EN 17681-1: 2022 & EN 17681-2: 2022, analysis was performed by GC/MS.	mg/kg	0.1	n.d.
1H,1H,2H,2H-Perfluorododecyl methacrylate (10:2 FTMA) (CAS No.: 2144-54-9)	Modified EN 17681-1: 2022 & EN 17681-2: 2022, analysis was performed by GC/MS.	mg/kg	0.1	n.d.
1H,1H,2H,2H-perfluorotetradecan-1-ol (12:2 FTOH) (CAS No.: 39239-77-5)	Modified EN 17681-1: 2022 & EN 17681-2: 2022, analysis was performed by GC/MS and LC/MS/MS.	mg/kg	0.1	n.d.
1H,1H,2H,2H-Perfluorododecane sulfonic acid and its salts (10:2 FTS and its salts) (CAS No.: 120226-60-0 and its salts)	Modified EN 17681-1: 2022 & EN 17681-2: 2022, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.
1H,1H,2H,2H-Perfluorododecyl iodide (10:2 FTI) (CAS No.: 2043-54-1)	Modified EN 17681-1: 2022 & EN 17681-2: 2022, analysis was performed by GC/MS.	mg/kg	0.1	n.d.
1H,1H,2H,2H-Perfluorotetradecyl iodide (12:2 FTI) (CAS No.: 30046-31-2)	Modified EN 17681-1: 2022 & EN 17681-2: 2022, analysis was performed by GC/MS.	mg/kg	0.1	n.d.

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Test Item(s)	Method	Unit	MDL	Result No.1
Perfluorononane sulfonic acid and its salts (PFNS and its salts) (CAS No.: 68259-12-1 and its salts)	Modified EN 17681-1: 2022 & EN 17681-2: 2022, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.
Perfluoroundecane sulfonic acid and its salts (PFUnDS and its salts) (CAS No.: 749786-16-1 and its salts)	Modified EN 17681-1: 2022 & EN 17681-2: 2022, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.
Perfluorododecane sulfonic acid and its salts (PFDoDS and its salts) (CAS No.: 79780-39-5 and its salts)	Modified EN 17681-1: 2022 & EN 17681-2: 2022, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.
Perfluorotridecane sulfonic acid and its salts (PFTrDS and its salts) (CAS No.: 791563-89-8 and its salts)	Modified EN 17681-1: 2022 & EN 17681-2: 2022, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.
10:2 Fluortelomerphosphatediester and its salts (10:2 diPAP and its salts) (CAS No.: 1895-26-7 and its salts)	Modified EN 17681-1: 2022 & EN 17681-2: 2022, analysis was performed by LC/MS/MS.	mg/kg	0.1	n.d.
Perfluorododecyl iodide (PFDoDI) (CAS No.: 307-60-8)	Modified EN 17681-1: 2022 & EN 17681-2: 2022, analysis was performed by GC/MS.	mg/kg	0.1	n.d.
Perfluorodecyl iodide (PFDI) (CAS No.: 423-62-1)	Modified EN 17681-1: 2022 & EN 17681-2: 2022, analysis was performed by GC/MS.	mg/kg	0.1	n.d.
Perfluoropentadecanoic acid and its salts (PFPeDA and its salts, C15) (CAS No.: 141074-63-7 and its salts)	Modified EN 17681-1: 2022 & EN 17681-2: 2022, analysis was performed by LC/MS/MS.	mg/kg	0.1	n.d.
Perfluorohexadecanoic acid and its salts (PFHxDA and its salts, C16) (CAS No.: 67905-19-5 and its salts)	Modified EN 17681-1: 2022 & EN 17681-2: 2022, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.
Perfluorooctadecanoic acid and its salts (PFODA and its salts, C18) (CAS No.: 16517-11-6 and its salts)	Modified EN 17681-1: 2022 & EN 17681-2: 2022, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.

Note :

1. mg/kg = ppm ; 0.1wt% = 0.1% = 1000ppm
2. MDL = Method Detection Limit
3. n.d. = Not Detected (Less than MDL)
4. "-" = Not Regulated

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5. **= Qualitative analysis (No Unit)
6. Negative = Undetectable ; Positive = Detectable
7. Testing range of asbestos qualitative analysis is from less than 0.1% to 100%. The judgment criterion: asbestos fibers being found is shown as "Positive"; asbestos fibers not being found is shown as "Negative".
8. ▲ : The MDL was evaluated for element / tested substance.
   Conversion Formula：AX = A × F

AX	A	F
Bis(tributyltin)oxide (TBTO)	Tributyl Tin (TBT)	1.0276

   Parameter Conversion Table： https://eecloud.sgs.com/Region_TW/DocDownload.aspx?name=Others
9. ppmV = Part Per Million by Volume
10. Tedlar bag size / Sampling Volume：

Phosphine	5 L / 0.5 L

11. Gas detecting tube test can be interfered by certain substances especially;
    Phosphine - Arsine, etc.
12. Unless otherwise stated , the decision rule for conformity reporting is based on Binary Statement for Simple Acceptance Rule (w=0) stated in ILAC-G8:09/2019. According to this rule, the judgement of conformity is based on the comparing test results with limits.

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PAHs Remark：

Δ AfPS (German commission for Product Safety): GS PAHs requirements

Parameter	Category 1	Category 2		Category 3	
	Materials intended to be placed in the mouth, or materials in toys (Directive 2009/48/EC) or articles for children up to 3 years of age with intended long-term skin contact (> 30 seconds).	Materials that are not in Category 1, with intended or foreseeable long-term skin contact (> 30 seconds) or short-term repetitive contact with the skin.		Materials not covered by Category 1 or 2, with intended or foreseeable short-term skin contact (≦30 seconds).	
		a. Use by children under 14	b. Other consumer products	a. Use by children under 14	b. Other consumer products
Naphthalene	< 1	< 2		< 10	
Phenanthrene	< 1 Sum	< 5 Sum	< 10 Sum	< 20 Sum	< 50 Sum
Anthracene					
Fluoranthene					
Pyrene					
Benzo[a]anthracene	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Chrysene	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo[b]fluoranthene	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo[j]fluoranthene	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo[k]fluoranthene	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo[a]pyrene	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo[e]pyrene	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Indeno[1,2,3-c,d] pyrene	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Dibenzo[a,h]anthracene	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo[g,h,i]perylene	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Sum of 15 PAH	< 1	< 5	< 10	< 20	< 50

Unit：mg/kg

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PFAS Remark：

The quantitative technology of PFAS is to analyze the specific structure of PFAS substances. However, PFAS acid and its salts with the same carbon number group have the same specific structure that can be identified. The tested results of the analyzed specific structure cannot be distinguished to identify the contribution from PFAS acid or its salts. Therefore, the tested results display the sum of concentrations of PFAS acids and its salts with the same carbon number group. The concentration of PFAS substances in the below table have been included in the tested results, please refer to the table for relevant information: (The listed PFAS substances are examples only, it do not include all PFAS salts with the same carbon number group.)

Group Name	Substance Name	CAS No.
PFHxS, its salts & derivatives	Perfluorohexane sulfonate (PFHxS)	355-46-4
	Perfluorohexanesulfonate Na-salt (PFHxS-Na)	82382-12-5
	Perfluorohexanesulfonate K-salt (PFHxS-K)	3871-99-6
	Ammonium perfluorohexanesulfonate (PFHxS-NH_4)	68259-08-5
	Perfluorohexanesulfonate Li-salt (PFHxS-Li)	55120-77-9
	Perfluorohexanesulfonate Zn-salt (PFHxS-Zn)	70136-72-0
	Perflurohexane sulphonyl fluoride (PFHxS-F)	423-50-7
	Phosphonium, triphenyl(phenylmethyl)-, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-1-hexanesulfonate (1:1)	1000597-52-3
	N,N,N-tributylbutan-1-aminium tridecafluorohexane-1-sulfonate	108427-54-9
	N,N,N-triethylethanaminium tridecafluorohexane-1-sulfonate (1:1)	108427-55-0
	1-Hexanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-, compd. With pyrrolidine (1:1)	1187817-57-7
	Ethanaminium, N-[4-[[4-(diethylamino)phenyl][4-(ethylamino)-1-naphthalenyl]methylene]-2,5-cyclohexadien-1-ylidene]-N-ethyl-, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-1-hexanesulfonate (1:1)	1310480-24-0
	Methanaminium, N-[4-[[4-(dimethylamino)phenyl][4-(ethylamino)-1-naphthalenyl]methylene]-2,5-cyclohexadien-1-ylidene]-N-methyl-, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-1-hexanesulfonate (1:1)	1310480-27-3
	Methanaminium, N-[4-[[4-(dimethylamino)phenyl][4-(phenylamino)-1-naphthalenyl]methylene]-2,5-cyclohexadien-1-ylidene]-N-methyl-, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-1-hexanesulfonate (1:1)	1310480-28-4
	Beta-Cyclodextrin, compd. with 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-1-hexanesulfonic acid ion(1-) (1:1)	1329995-45-0
	Gamma-Cyclodextrin, compd. with 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-1-hexanesulfonic acid ion(1-) (1:1)	1329995-69-8
	Sulfonium, triphenyl-, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-1-hexanesulfonate (1:1)	144116-10-9

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Group Name	Substance Name	CAS No.
PFHxS, its salts & derivatives	Quinolinium, 1-(carboxymethyl)-4-[2-[4-[4-(2,2-diphenylethenyl)phenyl]-1,2,3,3a,4,8b-hexahydrocyclopent[b]indol-7-yl]ethenyl]-, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-1-hexanesulfonate (1:1)	1462414-59-0
	Iodonium, diphenyl-, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-1-hexanesulfonate (1:1)	153443-35-7
	Methanaminium, N,N,N-trimethyl-, salt with 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-1-hexanesulfonic acid (1:1)	189274-31-5
	1-Hexanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-, compd.with 2-methyl-2-propanamine (1:1)	202189-84-2
	Iodonium, bis[4-(1,1-dimethylethyl)phenyl]-, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-1-hexanesulfonate (1:1)	213740-81-9
	1-Hexanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-, gallium salt (9CI)	341035-71-0
	Sulfonium, bis(4-methylphenyl)phenyl-, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-1-hexanesulfonate (1:1)	341548-85-4
	1-Hexanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-, scandium(3+) salt (3:1) (PFHxS-Sc)	350836-93-0
	1-Hexanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-, neodymium(3+) salt (3:1) (PFHxS-Nd)	41184-65-0
	1-Hexanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-, yttrium(3+) salt (3:1) (PFHxS-Y)	41242-12-0
	Sulfonium, (thiodi-4,1-phenylene)bis[diphenyl-, salt with 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-1-hexanesulfonic acid (1:2)	421555-73-9
	Iodonium, bis[4-(1,1-dimethylpropyl)phenyl]-, salt with 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-1-hexanesulfonic acid	421555-74-0
	Sulfonium, tris[4-(1,1-dimethylethyl)phenyl]-, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-1-hexanesulfonate (1:1)	425670-70-8
	Tridecafluorohexanesulphonic acid, compound with 2,2'-iminodiethanol (1:1)	70225-16-0
	1-Hexanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-, compd. with N,N-diethylethanamine (1:1)	72033-41-1
	Iodonium, bis[(1,1-dimethylethyl)phenyl]-, salt with 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-1-hexanesulfonic acid (1:1) (9CI)	866621-50-3
	Sulfonium, (4-methylphenyl)diphenyl-, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-1-hexanesulfonate (1:1)	910606-39-2
	Sulfonium, [4-[(2-methyl-1-oxo-2-propen-1-yl)oxy]phenyl]diphenyl-, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-1-hexanesulfonate (1:1)	911027-68-4
	1-Hexanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-, cesium salt (1:1) (PFHxS-CsH)	92011-17-1

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Group Name	Substance Name	CAS No.
PFHxS, its salts & derivatives	Dibenzo[k,n][1,4,7,10,13]tetraoxathiacyclopentadecinium, 19-[4-(1,1-dimethylethyl)phenyl]-6,7,9,10,12,13-hexahydro-, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-1-hexanesulfonate (1:1)	928049-42-7
	Perfluorohexylsulfonyl chloride (PFHxS-Cl)	55591-23-6
	Sulfonium, [4-[(2-methyl-1-oxo-2-propenyl)oxy]phenyl]diphenyl-, salt with1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-1-hexanesulfonic acid (1:1), polymer with 2-ethyltricyclo[3.3.1.13,7]dec-2-yl 2-methyl-2-propenoate, 3-hydroxytricyclo[3.3.1.13,7]dec-1-yl 2-methyl-2-propenoate and tetrahydro-2-oxo-3-furanyl 2-methyl-2-propenoate	911027-69-5
	Perfluorohexane sulfonate (anion)	108427-53-8
	Tetrabutylphosphonium tridecafluorohexane-1-sulfonate (PFHxS-P (C4H9)4))	2310194-12-6
PFOS, its salts & derivatives	Perfluorooctane sulfonates (PFOS)	1763-23-1
	Potassium perfluorooctanesulfonate (PFOS-K)	2795-39-3
	Perfluorooctanesulfonic acid, lithium salt (PFOS-Li)	29457-72-5
	Perfluorooctanesulfonic acid, ammonium salt (PFOS-NH_4)	29081-56-9
	Perfluorooctane sulfonate diethanolamine salt (PFOS-NH(C2H4OH)2)	70225-14-8
	Perfluorooctanesulfonic acid,tetraethylammonium salt (PFOS-$N(C_2H_5)_4$)	56773-42-3
	N-decyl-N,N-dimethyldecan-1-aminium 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluorooctane-1-sulfonate (PFOS-DDA)	251099-16-8
	TetrabutylAmmonium perfluorooctanesulfonate (PFOS-$N(C_4H_9)_4$)	111873-33-7
	Perfluorooctane sulfonyl fluoride (POSF)	307-35-7
	Perfluorooctanesulfonic acid, magnesium salt (PFOS-Mg)	91036-71-4
	Perfluorooctanesulfonic acid, sodium salt (PFOS-Na)	4021-47-0
	Piperidine 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluorooctanesulfonate	71463-74-6
	Perfluorooctanesulfonate (anion)	45298-90-6
	1-Octanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-, compd. with N,N-diethylethanamine (1:1) (PFOS-$N(C_2H_5)_3$)	54439-46-2

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Group Name	Substance Name	CAS No.
PFOS, its salts & derivatives	Methanaminium, N,N,N-trimethyl-, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-1-octanesulfonate (1:1) (PFOS-N(CH_3)$_4$)	56773-44-5
	1-Pentanaminium, N,N,N-tripropyl-, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-1-octanesulfonate (1:1) (PFOS-N(C_3H_7)$_3$(C_5H_{11}))	56773-56-9
	1-Butanaminium, N,N-dibutyl-N-methyl-, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-1-octanesulfonate (1:1) (PFOS-N(C_4H_9)$_3$(CH_3))	124472-68-0
	Iodonium, bis[4-(1,1-dimethylethyl)phenyl]-, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-1-octanesulfonate (1:1)	213740-80-8
	Sulfonium, diphenyl(2,4,6-trimethylphenyl)-, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-1-octanesulfonate (1:1)	258341-99-0
	Pyridinium, 1-hexadecyl-, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-1-octanesulfonate (1:1)	334529-63-4
	1-Decanaminium, N,N,N-triethyl-, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-1-octanesulfonate (1:1)	773895-92-4
	Tetrabutylphosphonium perfluorooctane sulfonate (PFOS-P(C_4H_9)$_4$))	2185049-59-4
	Perfluorooctanesulfonic acid diethylamine salt (PFOS-$C_4H_{11}N$)	2205029-08-7
	Heptyldimethyl{2-[(2-methylprop-2-enoyl)oxy]ethyl}azanium perfluorooctanesulfonate (PFOS-$C_{15}H_{30}NO_2$)	1203998-97-3
	1-Octanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-, 1,1'-anhydride (PFOSAN)	423-92-7
	Perfluoro-1-octanesulfonyl chloride (PFOS-Cl)	423-60-9
PFOA, its salts & derivatives	Perfluorooctanoic acid (PFOA)	335-67-1
	Sodium perfluorooctanoate (PFOA-Na)	335-95-5
	Potassium perfluorooctanoate (PFOA-K)	2395-00-8
	Silver perfluorooctanote (PFOA-Ag)	335-93-3

HD MICROSYSTEMS
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Group Name	Substance Name	CAS No.
PFOA, its salts & derivatives	Perfluorooctanoyl fluoride (PFOA-F)	335-66-0
	Ammonium pentadecafluorooctanoate (APFO)	3825-26-1
	Lithium perfluorooctanoate (PFOA-Li)	17125-58-5
	Cobalt perfluorooctanoate (PFOA-Co)	35965-01-6
	Cesium perfluorooctanoate (PFOA-Cs)	17125-60-9
	Octanoic acid, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-pentadecafluoro-, chromium(3+) (PFOA-$Cr(3^+)$)	68141-02-6
	Pentadecafluorooctanoic acid--piperazine (2/1)PFOA-$NH(C_4H_{10}N)$	423-52-9
	Pentadecafluorooctanoate (anion)	45285-51-6
	Perfluorooctanoic Anhydride	33496-48-9
	Ethanaminium, N,N,N-triethyl-, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-pentadecafluorooctanoate (1:1)	98241-25-9
	Tetramethylammoniumperfluoroctanoat	32609-65-7
	1-Propanaminium, N,N,N-tripropyl-, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-pentadecafluorooctanoate (1:1)	277749-00-5
	Octanoic acid, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-pentadecafluoro-, potassium salt, hydrate (1:1:2) (PFOA-$K(H_2O)_2$)	98065-31-7
	Octanoic acid, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-pentadecafluoro-, compd. with ethanamine (1:1) (PFOA-C_2H_7N)	1376936-03-6
	Octanoic acid, pentadecafluoro-, compd. with pyridine (1:1) (9CI) (PFOA-C_5H_5N)	95658-47-2
	Pentadecafluorooctanoic acid- 1-phenylpiperazine(1:1) (PFOA-$C_{10}H_{14}N_2$)	1514-68-7
	1-Octanaminium, N,N,N-trimethyl-, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-pentadecafluorooctanoate (1:1) (PFOA- $C_{11}H_{26}N$)	927835-01-6
	Pentadecafluorooctanoyl chloride (PFOA-Cl)	335-64-8
8:2 FTS, its salts	1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	39108-34-4
	1H,1H,2H,2H-Perfluorodencane sulfonate acid Potassium salt (8:2 FTS-K)	438237-73-1
	1H,1H,2H,2H-Perfluorodencane sulfonate acid Ammonium salt (8:2 FTS-NH_4)	149724-40-3

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Group Name	Substance Name	CAS No.
8:2 FTS, its salts	1H,1H,2H,2H-Perfluorodencane sulfonate acid Sodium salt (8:2 FTS-Na)	27619-96-1
	8: 2 Fluorotelomer sulfonate (anion) (8:2 FTS(anion))	481071-78-7
	2-(Perfluorooctyl)ethanesulfonyl chloride (8:2 FTS-Cl)	27619-90-5
H2PFDA, its salts	2H,2H-Perfluorodecane acid (H2PFDA)	27854-31-5
	Tetrabutylphosphonium 2H,2H-Perfluorodecanoate	882489-14-7
4HPFUnA, its salts	2H,2H,3H,3H-Perfluoroundecanoic Acid (4HPFUnA)	34598-33-9
	Potassium 2H,2H,3H,3H-Perfluoroundecanoate (H4PFUnA-K)	83310-58-1
	Lithium 3-(perfluorooctyl)propanoate (H4PFUnA-Li)	67304-23-8
8:2diPAP, its salts	Bis(1H,1H,2H,2H-Perfluorodecyl)phosphate (8:2diPAP)	678-41-1
	Sodium bis(1H,1H,2H,2H-perfluorodecyl)phosphate (8:2diPAP-Na)	114519-85-6
	Bis(2-hydroxyethyl)ammonium bis((perfluorooctyl)ethyl) hydrogen phosphate	57677-97-1
	Bis[2-(perfluorooctyl)ethyl] phosphate ammonium salt (8:2diPAP-NH_4)	93776-20-6
	8:2 Fluorotelomer phosphate diester ion	1411713-91-1
PFNA, its salts	Perfluorononan-1-oic acid (PFNA)	375-95-1
	Perfluorononanoate Na-salt (PFNA-Na)	21049-39-8
	Perfluorononanoate ammounium salt (APFN)	4149-60-4
	Potassium perfluorononanoate (PFNA-K)	21049-38-7
	Perfluorononanoate Li-Salt (PFNA-Li)	60871-92-3
	Silver perfluorononanoate (PFNA-Ag)	7358-16-9
	Methanaminium perfluorononanoate (PFNA-$NH_3(CH_3)$)	77032-23-6
	Nonanoic acid, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,9-heptadecafluoro-, compd. with N-ethylethanamine (1:1)	77032-27-0
	Nonanoic acid, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,9-heptadecafluoro-, compd. with N-methylmethanamine (1:1)	77032-24-7
	Nonanoic acid, heptadecafluoro-, compd. with N,N-diethylethanamine (1:1) (9Cl) (PFNA-$NH(C_2H_5)_3$)	327176-80-7
	Nonanoic acid, heptadecafluoro-, compd. with piperidine (1:1) (9Cl) (PFNA-$NH_2(C_5H_{10})$)	95682-66-9
	Nonanoic acid, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,9-heptadecafluoro-, compd. with benzenamine (1:1) (PFNA-$NH_3(C_6H_5)$)	95682-67-0
	Nonanoic acid, heptadecafluoro-, compd. with cyclohexanamine (1:1) (9Cl) (PFNA-$NH_3(C_6H_{11})$)	328531-06-2
	Perfluorononanoate (anion)	72007-68-2
	4-[(6-Methoxy-3-pyridazinyl)sulfamoyl]anilinium heptadecafluorononanoate (PFNA-$C_{11}H_{12}N_4O_3S$)	298703-33-0
	Perfluorononanoic anhydride (PFNAA)	228407-54-3

HD MICROSYSTEMS
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Group Name	Substance Name	CAS No.
PFNA, its salts	Perfluorononanoyl chloride (PFNA-Cl)	52447-23-1
	Perfluorononanoyl fluoride (PFNA-F)	558-95-2
PFDA, its salts	Perfluorodecane acid (PFDA)	335-76-2
	Perfluorodecanoate Na-salt (PFDA-Na)	3830-45-3
	Perfluorodecanoate ammonium salt (APFDA)	3108-42-7
	Potassium perfluorodecanoate (PFDA-K*)	51604-85-4
	Silver perfluorodecanoate (PFDA-Ag)	5784-82-7
	Lithium perfluorodecanoate (PFDA-Li)	84743-32-8
	Perfluorodecanoate (anion)	73829-36-4
	Perfluorodecanoic anhydride (PFDAA)	942199-24-8
	Nonadecafluorodecanoyl chloride (PFDA-Cl)	307-38-0
	Nonadecafluorodecanoyl Fluoride (PFDA-F)	-
PFUnDA, its salts	Perfluoroundecanoic acid (PFUnDA)	2058-94-8
	Ammonium perfluoroundecanoate (PFUnDA-NH_4)	4234-23-5
	Perfluoroundecanoic acid sodium salt (PFUnDA-Na)	60871-96-7
	Potassium perfluoroundecanoate (PFUnDA-K)	30377-53-8
	Calcium perfluoroundecanoate (PFUnDA-Ca)	97163-17-2
	Perfluoroundecanoate (anion)	196859-54-8
PFDoDA, its salts	Perfluorododecanoic acid (PFDoDA)	307-55-1
	Ammonium perfluorododecanoate (APFDoDA)	3793-74-6
	Perfluorododecanoate (anion)	171978-95-3
PFDS, its salts	Perfluorodecane sulfonate (PFDS)	335-77-3
	Perfluorodecanesulfonate Na-salt (PFDS-Na)	2806-15-7
	Perfluorodecanesulfonate K-salt (PFDS-K)	2806-16-8
	Perfluoroaliphatic dean-sulfonate salt of NH_4 (PFDS-NH_4)	67906-42-7
	Perfluorodecane sulfonate (anion)	126105-34-8
	Perfluorodecane sulfonic anhydride (PFDSA)	51667-62-0
	Perfluorodecanesulphonyl fluoride (PFDS-F)	307-51-7
	Perfluorodecanesulphonyl chloride (PFDS-Cl)	32779-61-6
PFTrDA, its salts	Pentacosafluorotridecanoic acid (PFTrDA)	72629-94-8
	Ammonium perfluorotridecanoate (PFTrDA-NH_4)	4288-72-6
	Sodium perfluorotridecanoate (PFTrDA-Na)	60872-01-7
	Perfluorotridecanoate (anion)	862374-87-6

HD MICROSYSTEMS
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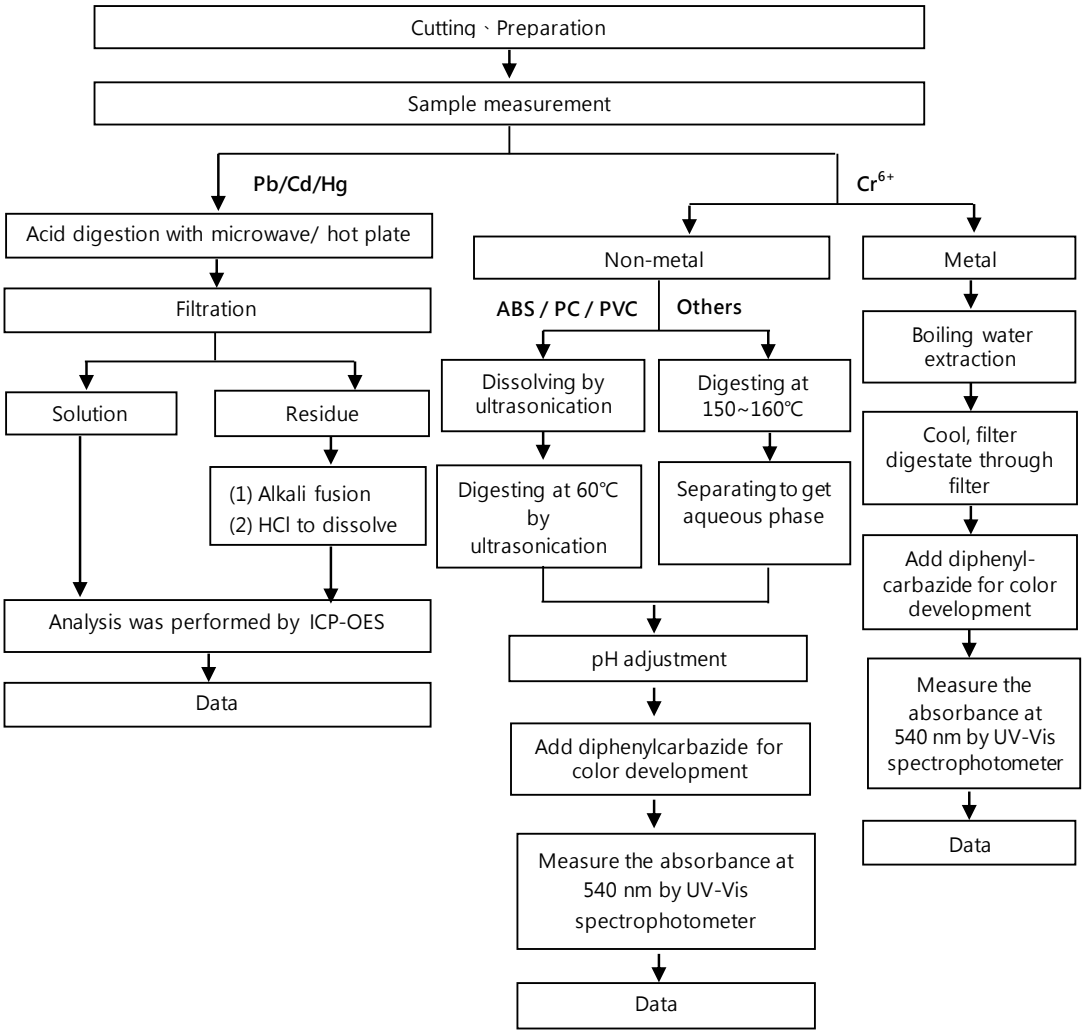
Group Name	Substance Name	CAS No.
PFTDA, its salts	Perfluorotetradecanoic acid (PFTDA)	376-06-7
	Perfluorotetradecanoate (anion)	365971-87-5
10:2 FTS, its salts	1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0
	1H,1H,2H,2H-Perfluorododecane sulfonic acid Sodium Salt (10:2 FTS-Na)	108026-35-3
	2-(Perfluorodecyl)ethane-1-sulfonyl chloride (10:2 FTS-Cl)	27619-91-6
PFNS, its salts	Perfluorononane sulfonic acid (PFNS)	68259-12-1
	Sodium perfluoro-1-nonanesulfonate (PFNS-Na*)	98789-57-2
	Ammonium nonadecafluorononanesulphonate (PFNS-NH_4)	17202-41-4
	Potassium perfluorononanesulfonate (PFNS-K*)	29359-39-5
	Perfluorononane sulfonate (anion)	474511-07-4
	Perfluorononanesulfonyl fluoride (PFNS-F)	68259-06-3
PFUnDS, its salts	Perfluoroundecane sulfonic acid (PFUnDS)	749786-16-1
	Perfluoroundecanesulfonate (anion)	441296-91-9
PFDoDS, its salts	Perfluorododecane sulfonic acid (PFDoDS)	79780-39-5
	Sodium perfluoro-1-dodecanesulfonate (PFDoDS-Na*)	1260224-54-1
	Potassium perfluorododecanesulfonate (PFDoDS-K)	85187-17-3
	Perfluorododecane sulfonate (anion)	343629-43-6
PFTrDS, its salts	Perfluorotridecane sulfonic acid (PFTrDS)	791563-89-8
	Sodium perfluoro-1-tridecanesulfonate (PFTrDS-Na*)	174675-49-1
10:2 diPAP, its salts	10:2 Fluortelomerphosphatediester (10:2 diPAP)	1895-26-7
	bis[3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,12-henicosafluorododecyl] hydrogen phosphate, compound with 2,2'-iminodiethanol (1:1) (10:2 diPAP-$C_4H_{11}O_2$)	57677-98-2
PFPeDA, its salts	Perfluoropentadecanoic acid (PFPeDA, C15)	141074-63-7
	Nonacosafluoropentadecanoate (PFPeDA (anion))	1214264-29-5
PFHxDA, its salts	Perfluorohexadecanoic acid (PFHxDA, C16)	67905-19-5
	Hentriacontafluorohexadecanoate anion (PFHxDA (anion))	1214264-30-8
PFODA, its salts	Perfluorooctadecanoic acid (PFODA, C18))	16517-11-6
	Perfluorooctadecanoate anion (PFODA (anion))	798556-82-8

HD MICROSYSTEMS
250 CHEESEQUAKE ROAD-BLDG. 424, PARLIN, NJ 08859-1241

Analytical flow chart of heavy metal

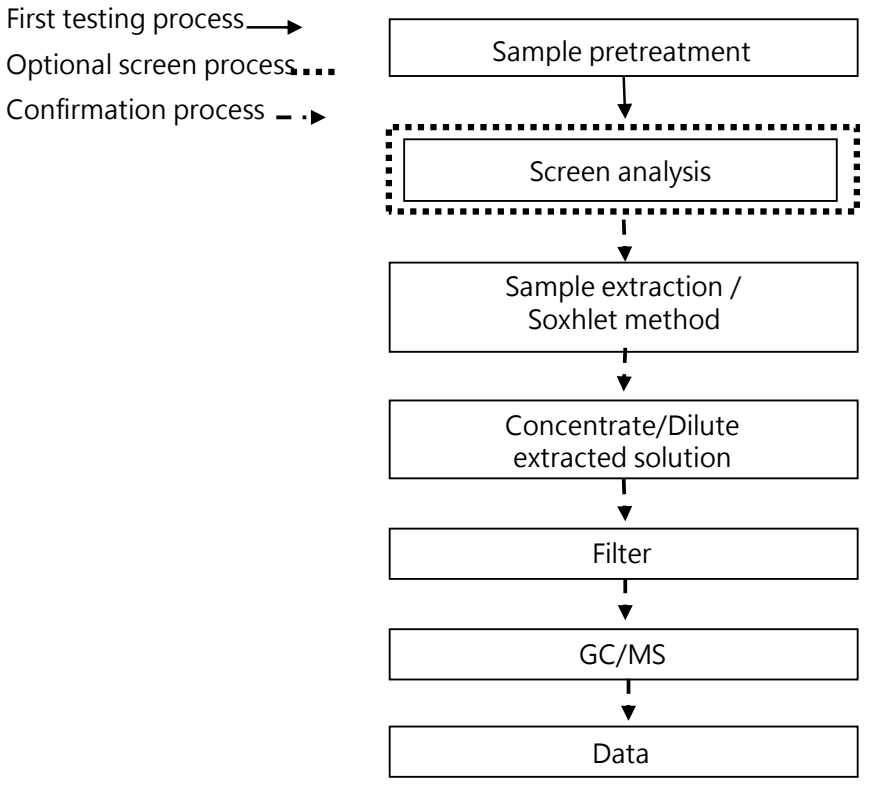
These samples were dissolved totally by pre-conditioning method according to below flow chart.

(Cr^{6+} test method excluded)



HD MICROSYSTEMS
250 CHEESEQUAKE ROAD-BLDG. 424, PARLIN, NJ 08859-1241

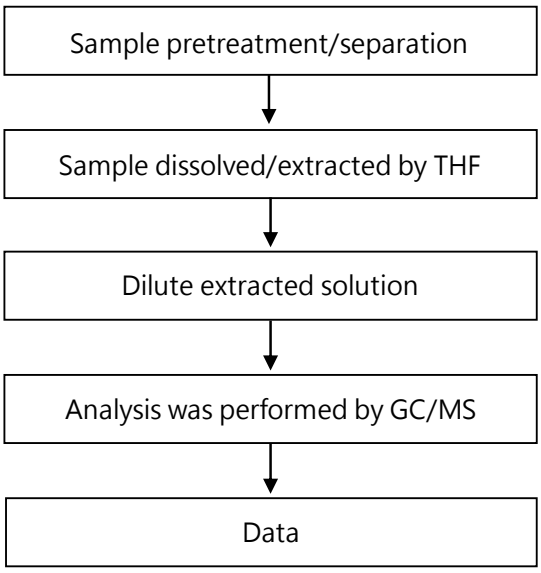
Analytical flow chart – PBBs / PBDEs



HD MICROSYSTEMS
250 CHEESEQUAKE ROAD-BLDG. 424, PARLIN, NJ 08859-1241

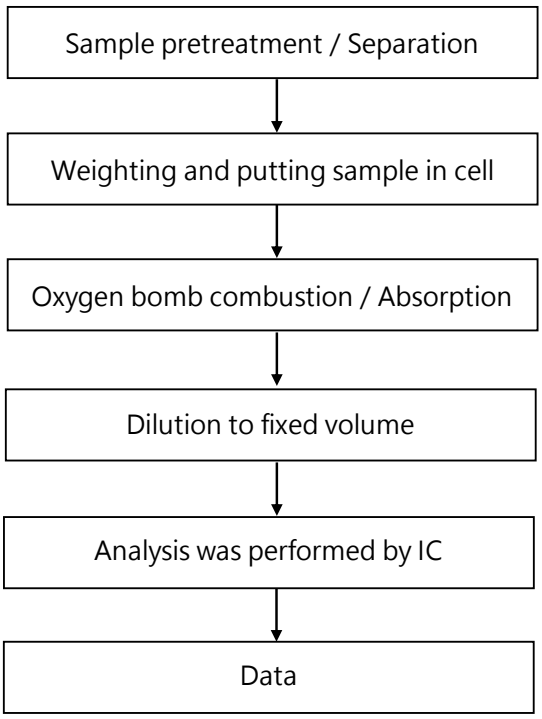
Analytical flow chart - Phthalate

【Test method: IEC 62321-8】



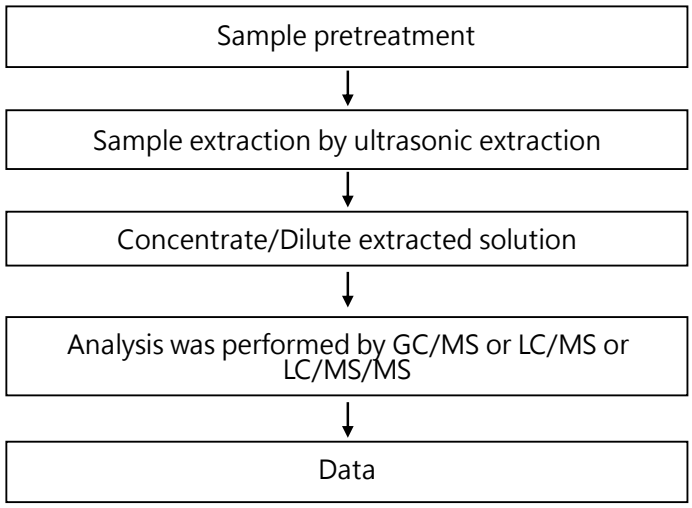
HD MICROSYSTEMS
250 CHEESEQUAKE ROAD-BLDG. 424, PARLIN, NJ 08859-1241

Analytical flow chart - Halogen



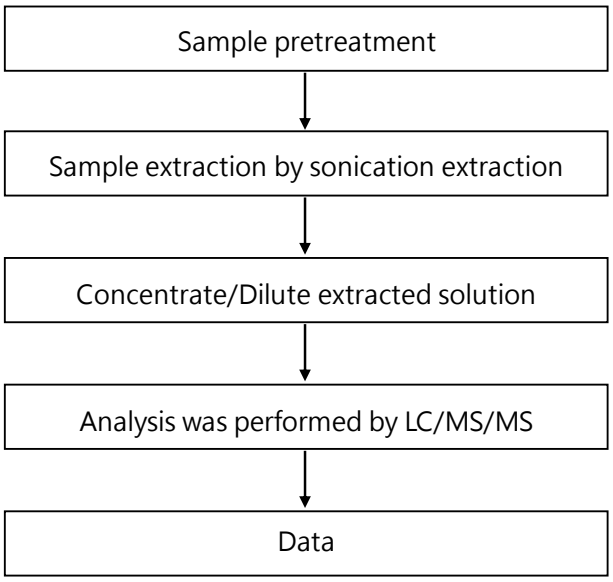
HD MICROSYSTEMS
250 CHEESEQUAKE ROAD-BLDG. 424, PARLIN, NJ 08859-1241

Analytical flow chart – PFAS (including PFOA/PFOS/its related compound, etc.)



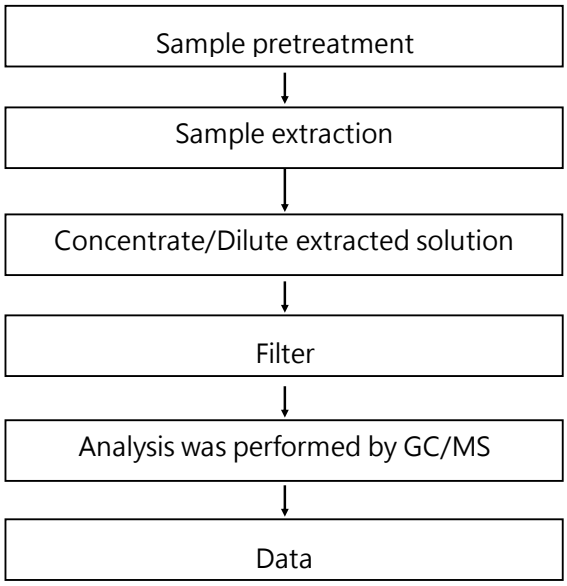
HD MICROSYSTEMS
250 CHEESEQUAKE ROAD-BLDG. 424, PARLIN, NJ 08859-1241

Analytical flow chart - Bisphenol A



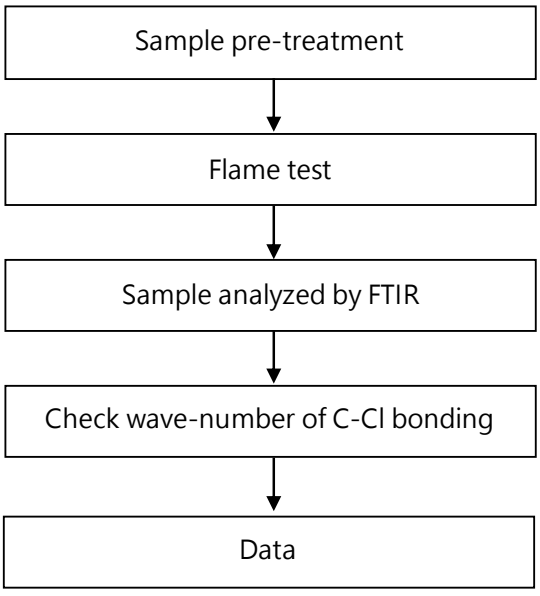
HD MICROSYSTEMS
250 CHEESEQUAKE ROAD-BLDG. 424, PARLIN, NJ 08859-1241

Analytical flow chart - HBCDD



HD MICROSYSTEMS
250 CHEESEQUAKE ROAD-BLDG. 424, PARLIN, NJ 08859-1241

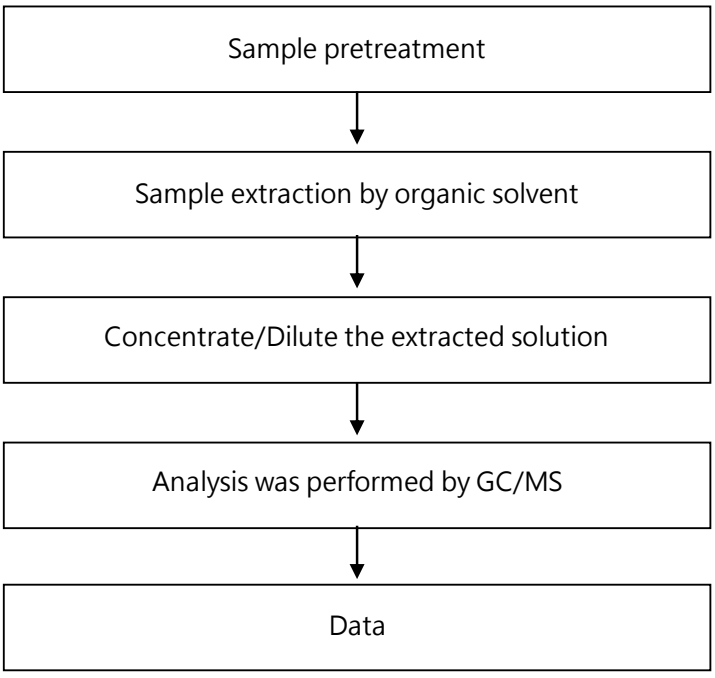
Analysis flow chart - PVC



HD MICROSYSTEMS
250 CHEESEQUAKE ROAD-BLDG. 424, PARLIN, NJ 08859-1241

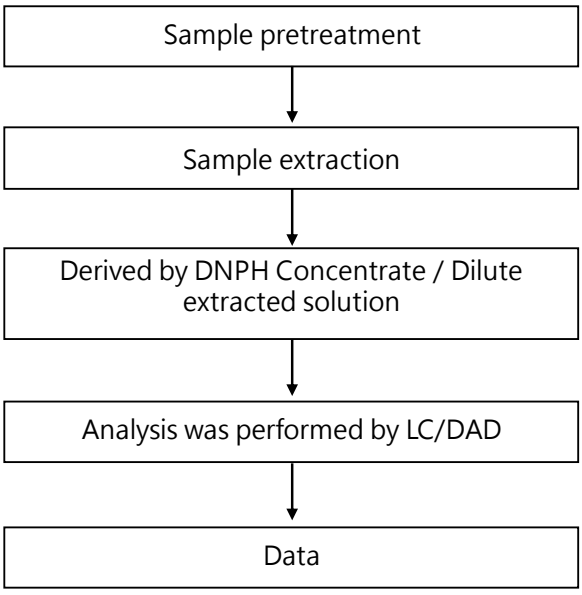
Analytical flow chart

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



HD MICROSYSTEMS
250 CHEESEQUAKE ROAD-BLDG. 424, PARLIN, NJ 08859-1241

Analytical flow chart - Formaldehyde



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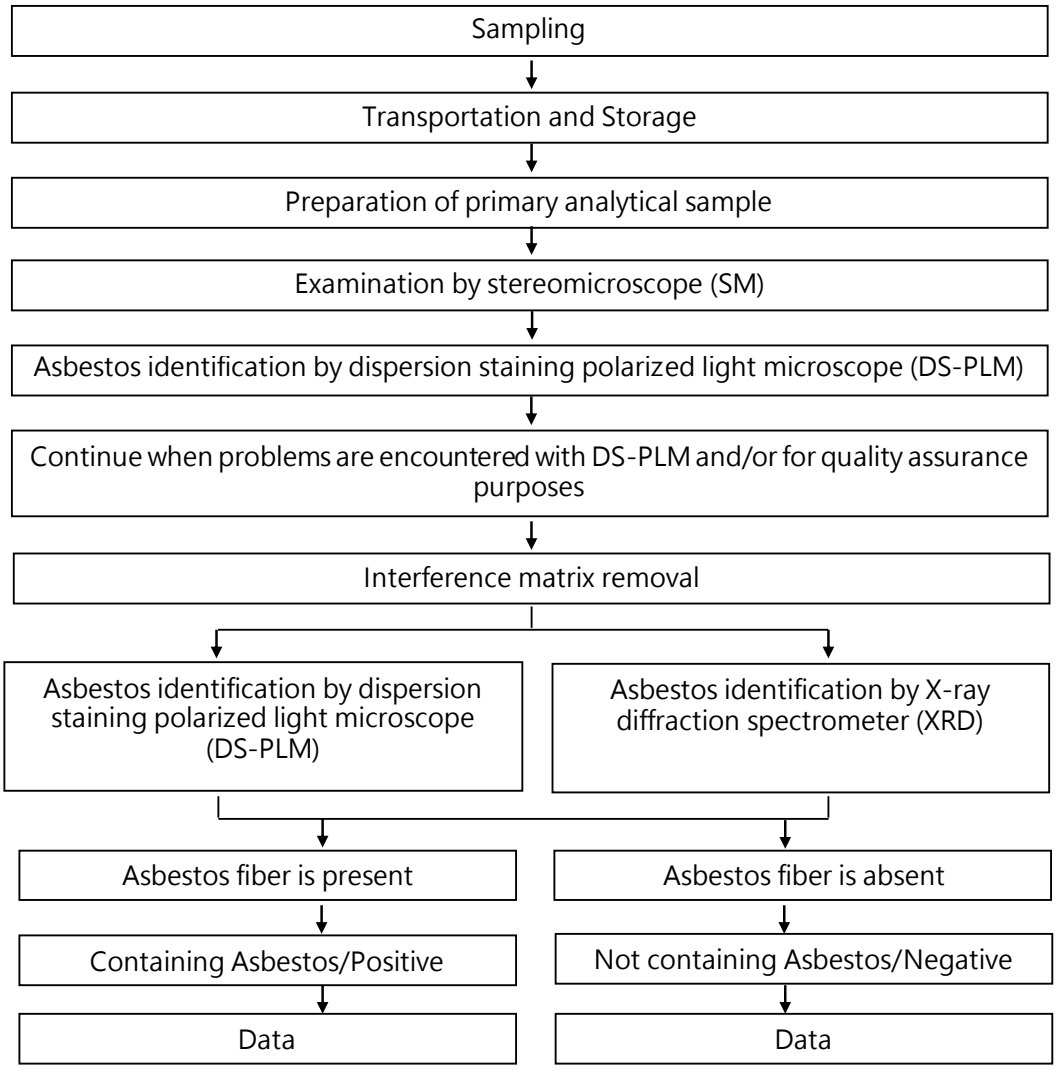
Analysis flow chart for determination of Asbestos

【Reference method: EPA 600/R-93/116】



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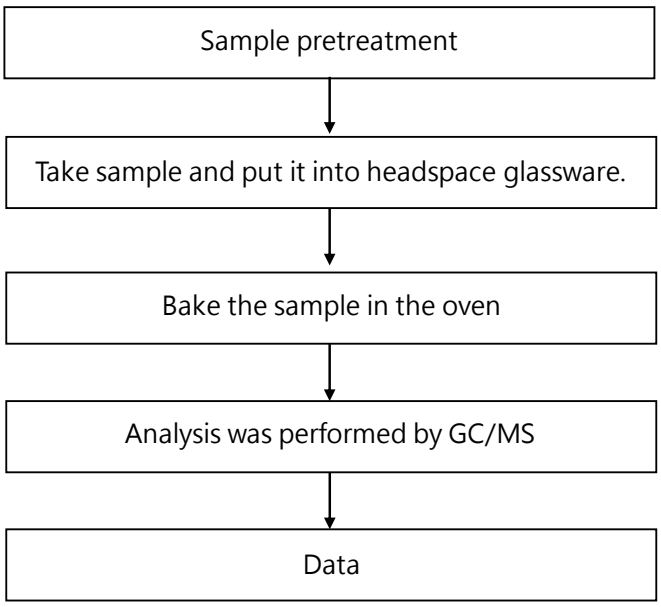
Analytical flow chart of volatile organic compounds (VOCs)

【Reference method：US EPA 5021A】



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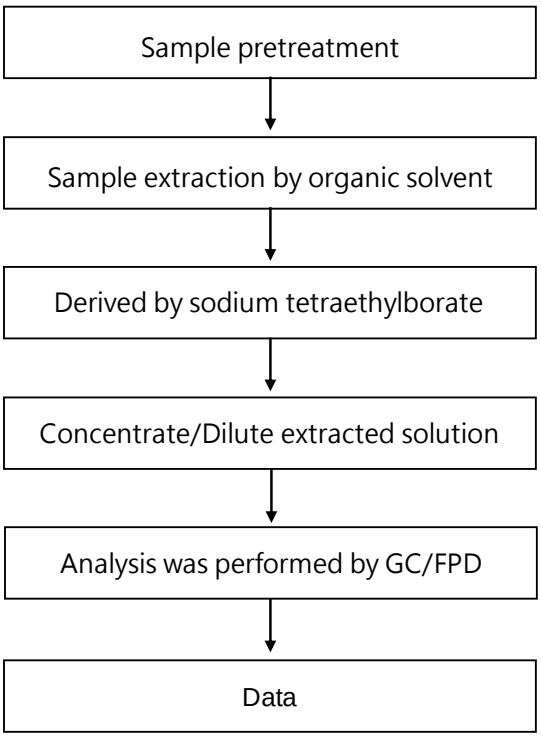
Analytical flow chart - Organic-Tin



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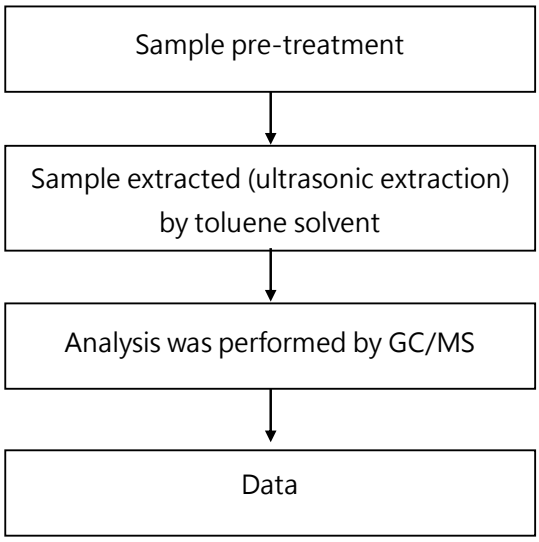
Analytical flow chart - PAHs (Polycyclic Aromatic Hydrocarbons)



HD MICROSYSTEMS
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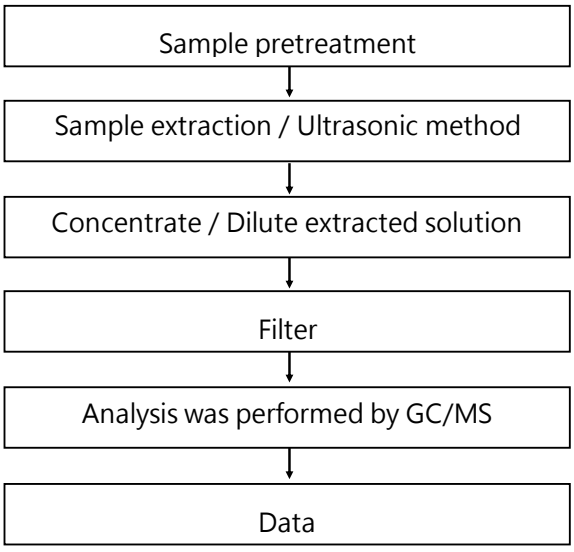
Analytical flow chart - Organic phosphorus compounds



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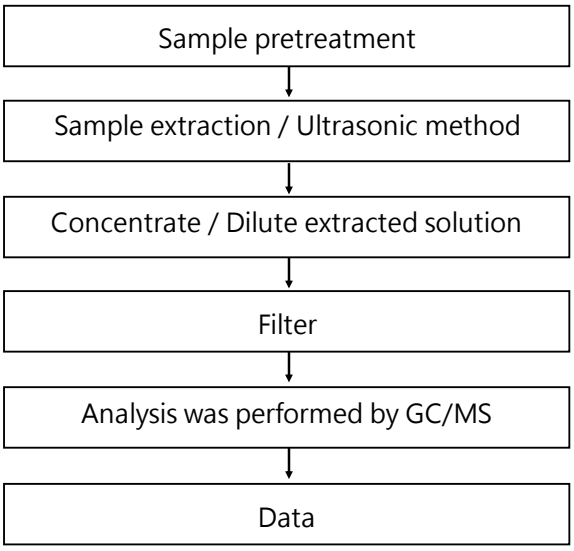
Analytical flow chart - Organic phosphorus compounds



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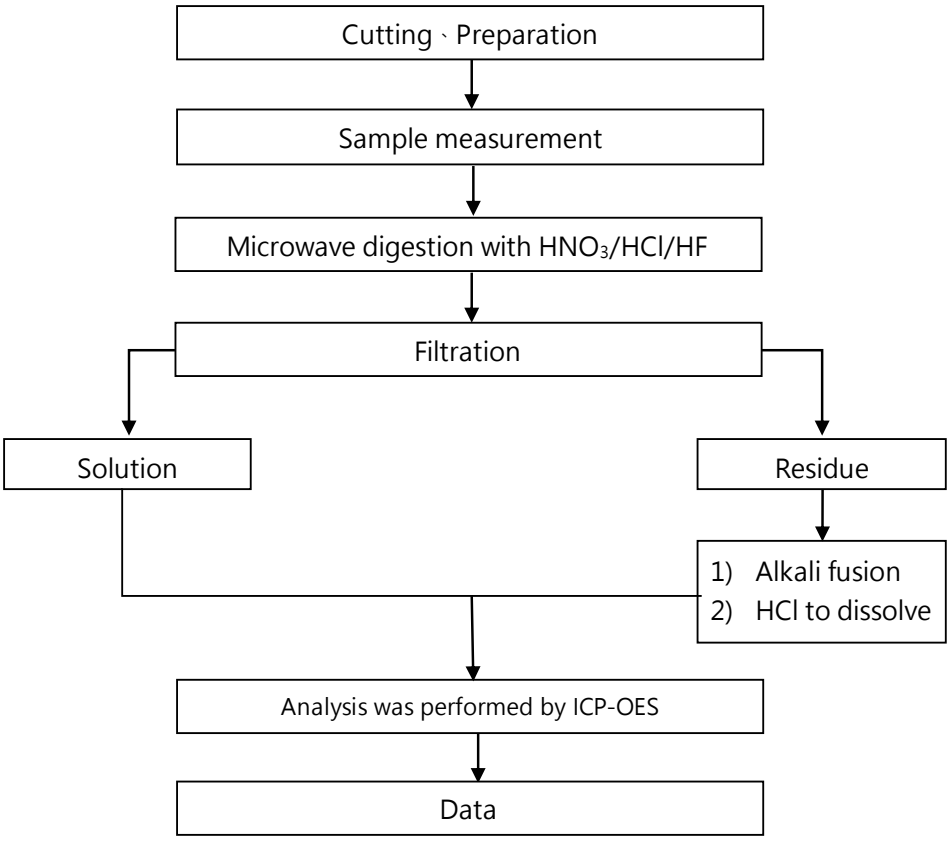
Analytical flow chart of elements (Heavy metal included)

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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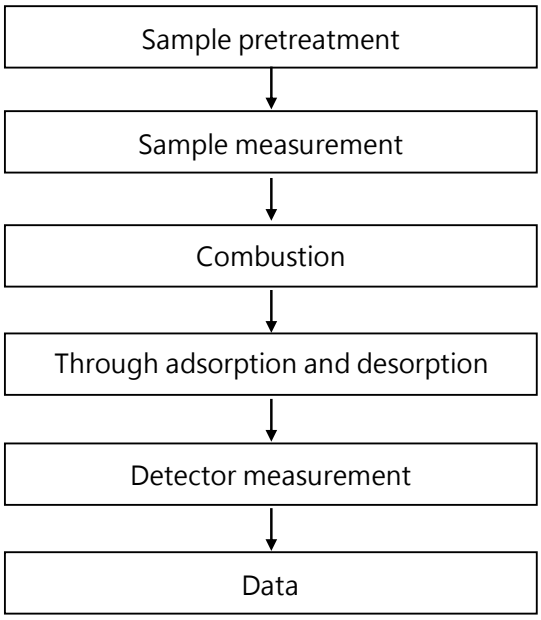
Analytical flow chart - Elements analyzer



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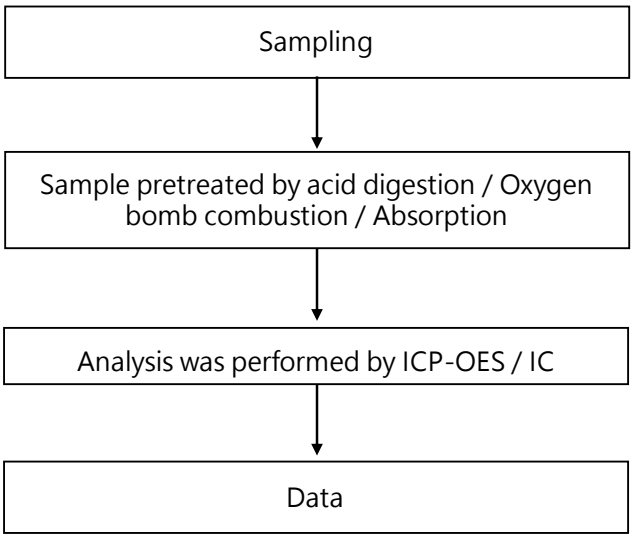
Analytical flow chart - Cobalt dichloride



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

ETR25903573

** End of Report **