



# Test Report

No.: ETR21A05160

Date: 02-Nov-2021

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WAFERTECH LLC (TSMC F11)  
5509 NW PARKER STREET, CAMAS, WA 98607, USA

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

Sample Submitted By : WAFERTECH LLC (TSMC F11)  
 Sample Name : TSMC FAB 11 ALUMINUM 8" FINISHED WAFER  
 Style/Item No. : W32892.03  
 Other Info. : DURING SAMPLE PREPARATIONS, THE INTEGRITY OF THE IC WAFER PROVIDED WAS FULLY DESTROYED.  
 Total Sample Weight (WAFER) : 53.9g

=====  
 Sample Receiving Date : 25-Oct-2021  
 Testing Period : 25-Oct-2021 to 01-Nov-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) As specified by client, to test PAHs and 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.  
 (2) Based upon the performed tests on the submitted sample(s), the test results of PAHs (15 items) comply with the limits of PAHs requirement (Category 3) 「Use by children under 14」 as set by German Committee on Product Safety (AfPS) GS PAHs.

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




PIN CODE: B4E40C79

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## Test Part Description

No.1 : WAFER

## 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.	-
<b>Sum of PBBs</b>		mg/kg	-	n.d.	1000
Monobromodiphenyl ether		mg/kg	5	n.d.	-
Dibromodiphenyl ether		mg/kg	5	n.d.	-
Tribromodiphenyl ether		mg/kg	5	n.d.	-
Tetrabromodiphenyl ether		mg/kg	5	n.d.	-
Pentabromodiphenyl ether		mg/kg	5	n.d.	-
Hexabromodiphenyl ether		mg/kg	5	n.d.	-
Heptabromodiphenyl ether		mg/kg	5	n.d.	-
Octabromodiphenyl ether		mg/kg	5	n.d.	-
Nonabromodiphenyl ether		mg/kg	5	n.d.	-
Decabromodiphenyl ether	mg/kg	5	n.d.	-	
<b>Sum of PBDEs</b>	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.	-
Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified ( $\alpha$ - HBCDD, $\beta$ - HBCDD, $\gamma$ - 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.	-
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.	-
Radioactive substances	Geiger counter.	$\mu$ Sv/hour	-	Negative*	-
<b>Chlorofluorocarbons (CFCs)</b>					
CFC-13 (CAS No.: 75-72-9)	With reference to US EPA 5021A: 2014, analysis was performed by GC/MS.	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.	-

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Test Item(s)	Method	Unit	MDL	Result	Limit
				No.1	
CFC-213 (CAS No.: 2354-06-5)	With reference to US EPA 5021A: 2014, analysis was performed by GC/MS.	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.	-
<b>Hydrochlorofluorocarbons (HCFCs)</b>					
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.	-	

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Test Item(s)	Method	Unit	MDL	Result	Limit
				No.1	
HCFC-242 (CAS No.: 460-63-9)	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 (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.	-
HCFC-141b (CAS No.: 1717-00-6)		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.	-
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.	-
<b>Halons</b>					
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.	-
<b>Hydrobromofluorocarbons (HBFCs)</b>					
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.	-

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Test Item(s)	Method	Unit	MDL	Result	Limit
				No.1	
HBFC-232B4 (C3H2F2Br4)	With reference to US EPA 5021A: 2014, analysis was performed by GC/MS.	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.	-	
<b>Hydrofluorocarbon (HFCs)</b>					
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.	-

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HFC-143a (CH3F3)	With reference to US EPA 5021A: 2014, analysis was performed by GC/MS.	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.	-
<b>Perfluorocarbon (PFCs)</b>					
1,4-dihydrooctafluorobutane (CAS No.: 377-36-6)	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.	-
Decafluorobutane (CAS No.: 355-25-9)		mg/kg	1	n.d.	-
F14 (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.	-
Nonafluor-2- (trifluoromethyl)butane (CAS No.: 594-91-2)		mg/kg	1	n.d.	-
Perfluorisobutene (CAS No.: 382-21-8)		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.	-
Perfluor-1-butene (CAS No.: 357-26-6)		mg/kg	1	n.d.	-
<b>Chlorinate hydrocarbon (CHCs)</b>					
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.	-

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WAFERTECH LLC (TSMC F11)  
5509 NW PARKER STREET, CAMAS, WA 98607, USA

Test Item(s)	Method	Unit	MDL	Result	Limit
				No.1	
Chloromethane (CAS No.: 74-87-3)	With reference to US EPA 5021A: 2014, analysis was performed by GC/MS.	mg/kg	1	n.d.	-
cis-1,2-Dichloroethene (CAS No.: 156-59-2)		mg/kg	1	n.d.	-
cis-1,3-Dichloropropene (CAS No.: 10061-01-5)		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, Methylene chloride (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.	-

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Test Item(s)	Method	Unit	MDL	Result	Limit
				No.1	
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.	-
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.	-
Phosphorus (P) (CAS No.: 7723-14-0)		mg/kg	2	n.d.	-
Beryllium (Be) (CAS No.: 7440-41-7)		mg/kg	2	n.d.	-
Arsenic (As) (CAS No.: 7440-38-2)		mg/kg	2	n.d.	-
Ethylene glycol monomethyl ether (CAS No.: 109-86-4)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	10	n.d.	-
2-Ethoxyethanol (CAS No.: 110-80-5)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	10	n.d.	-
Ethylene glycol monomethyl ether acetate (CAS No.: 110-49-6)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	10	n.d.	-
2-methoxyethyl acetate (CAS No.: 111-15-9)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	10	n.d.	-
Diethylene glycol dimethyl ether (DEGDME) (CAS No.: 111-96-6)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	10	n.d.	-
Ethylene glycol monobutyl ether (CAS No.: 111-76-2)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	10	n.d.	-
Diethylene glycol monomethyl ether (CAS No.: 111-77-3)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	10	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)		mg/kg	5	n.d.	-
Polychlorinated terphenyls (PCTs)		mg/kg	0.5	n.d.	-
Short Chain Chlorinated Paraffins(C10-C13) (SCCP) (CAS No.: 85535-84-8)		mg/kg	50	n.d.	-

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Test Item(s)	Method	Unit	MDL	Result	Limit
				No.1	
<b>Polycyclic Aromatic Hydrocarbons (PAHs)</b>					
Benzo[a]pyrene (CAS No.: 50-32-8)		mg/kg	0.2	n.d.	Δ
Benzo[e]pyrene (CAS No.: 192-97-2)		mg/kg	0.2	n.d.	Δ
Benzo[a]anthracene (CAS No.: 56-55-3)		mg/kg	0.2	n.d.	Δ
Benzo[b]fluoranthene (CAS No.: 205-99-2)		mg/kg	0.2	n.d.	Δ
Benzo[j]fluoranthene (CAS No.: 205-82-3)		mg/kg	0.2	n.d.	Δ
Benzo[k]fluoranthene (CAS No.: 207-08-9)		mg/kg	0.2	n.d.	Δ
Chrysene (CAS No.: 218-01-9)		mg/kg	0.2	n.d.	Δ
Dibenzo[a,h]anthracene (CAS No.: 53-70-3)		mg/kg	0.2	n.d.	Δ
Benzo[g,h,i]perylene (CAS No.: 191-24-2)		mg/kg	0.2	n.d.	Δ
Indeno[1,2,3-c,d]pyrene (CAS No.: 193-39-5)		mg/kg	0.2	n.d.	Δ
Anthracene (CAS No.: 120-12-7)		mg/kg	0.2	n.d.	Δ
Fluoranthene (CAS No.: 206-44-0)		mg/kg	0.2	n.d.	Δ
Phenanthrene (CAS No.: 85-01-8)		mg/kg	0.2	n.d.	Δ
Pyrene (CAS No.: 129-00-0)		mg/kg	0.2	n.d.	Δ
Naphthalene (CAS No.: 91-20-3)		mg/kg	0.2	n.d.	Δ
<b>Sum of 15 PAHs</b>		mg/kg	-	n.d.	Δ
<b>Asbestos</b>					
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	-

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Test Item(s)	Method	Unit	MDL	Result	Limit
				No.1	
<b>AZO Dyes</b>					
4-aminodiphenyl (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)		mg/kg	3	n.d.	-
4-chloro-o-toluidine (CAS No.: 95-69-2)		mg/kg	3	n.d.	-
2-naphthylamine (CAS No.: 91-59-8)		mg/kg	3	n.d.	-
o-aminoazotoluene (CAS No.: 97-56-3)		mg/kg	3	n.d.	-
5-nitro-o-toluidine (CAS No.: 99-55-8)		mg/kg	3	n.d.	-
4-chloroaniline (CAS No.: 106-47-8)		mg/kg	3	n.d.	-
2,4-diaminoanisole (CAS No.: 615-05-4)		mg/kg	3	n.d.	-
4,4'-diaminodiphenylmethane (MDA) (CAS No.: 101-77-9)		mg/kg	3	n.d.	-
3,3'-dichlorobenzidine (CAS No.: 91-94-1)		mg/kg	3	n.d.	-
3,3'-dimethoxybenzidine (CAS No.: 119-90-4)		mg/kg	3	n.d.	-
3,3'-dimethylbenzidine (CAS No.: 119-93-7)		mg/kg	3	n.d.	-
3,3'-dimethyl-4,4'-diaminodiphenylmethane (CAS No.: 838-88-0)		mg/kg	3	n.d.	-
2-methoxy-5-methylaniline (CAS No.: 120-71-8)		mg/kg	3	n.d.	-
4,4'-methylene-bis-(2-chloroaniline) (CAS No.: 101-14-4)		mg/kg	3	n.d.	-
4,4'-oxydianiline (CAS No.: 101-80-4)		mg/kg	3	n.d.	-
4,4'-thiodianiline (CAS No.: 139-65-1)		mg/kg	3	n.d.	-
o-toluidine (CAS No.: 95-53-4)		mg/kg	3	n.d.	-
2,4-diaminotoluene (CAS No.: 95-80-7)		mg/kg	3	n.d.	-
2,4,5-trimethylaniline (CAS No.: 137-17-7)		mg/kg	3	n.d.	-

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Test Item(s)	Method	Unit	MDL	Result	Limit
				No.1	
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)		mg/kg	3	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.	-
PFOA and its salts (CAS No.: 335-67-1 and its salts)		mg/kg	0.01	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 (TPT)		mg/kg	0.03	n.d.	-
Dibutyl tin (DBT)		mg/kg	0.03	n.d.	-
Diocetyl tin (DOT)		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.

## 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. 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".
6. 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.
7. PFOA and its salts including :  
CAS No.: 3825-26-1, 335-95-5, 2395-00-8, 335-93-3, 335-66-0.

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8. ▲ : The MDL was evaluated for element / tested substance.

Conversion Formula :  $AX = A \times F$

AX	A	F
Bis(tributyltin)oxide (TBTO)	Tributyl Tin (TBT)	1.024

Parameter Conversion Table : [https://eecloud.sgs.com/Region\\_TW/DocDownload.aspx#otherDoc](https://eecloud.sgs.com/Region_TW/DocDownload.aspx#otherDoc)

9. Negative\*/Positive\*: The test result of Geiger counter is from comparison between test outcome and environment background. In general, there is little radiation dose existing in environment. (Radiation dose from environment background usually less than or equal to 0.2μSv/hr)

The test result less than environment background was shown as Negative\*; the result greater than environment background was shown as Positive\*.

10. The statement of compliance conformity is based on comparison of testing results and limits.

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**Remark :**

**△ 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

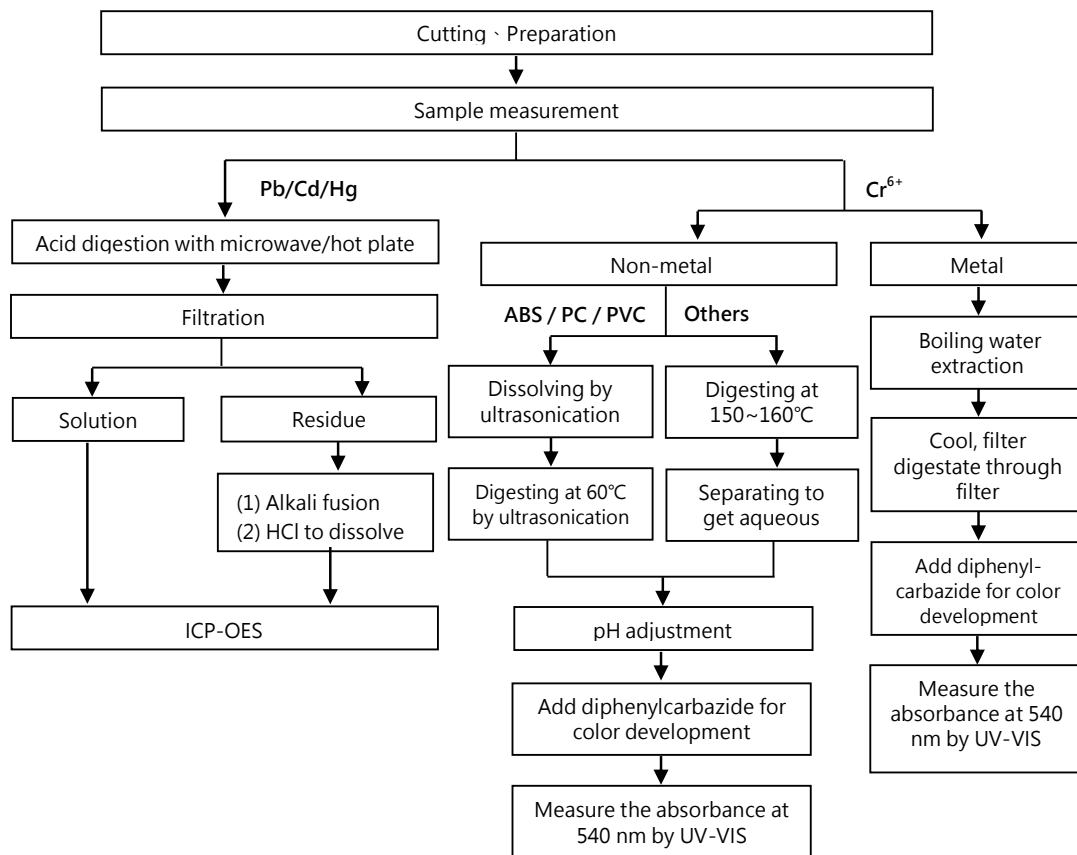
Unit : mg/kg

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## Analytical flow chart of Heavy Metal

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

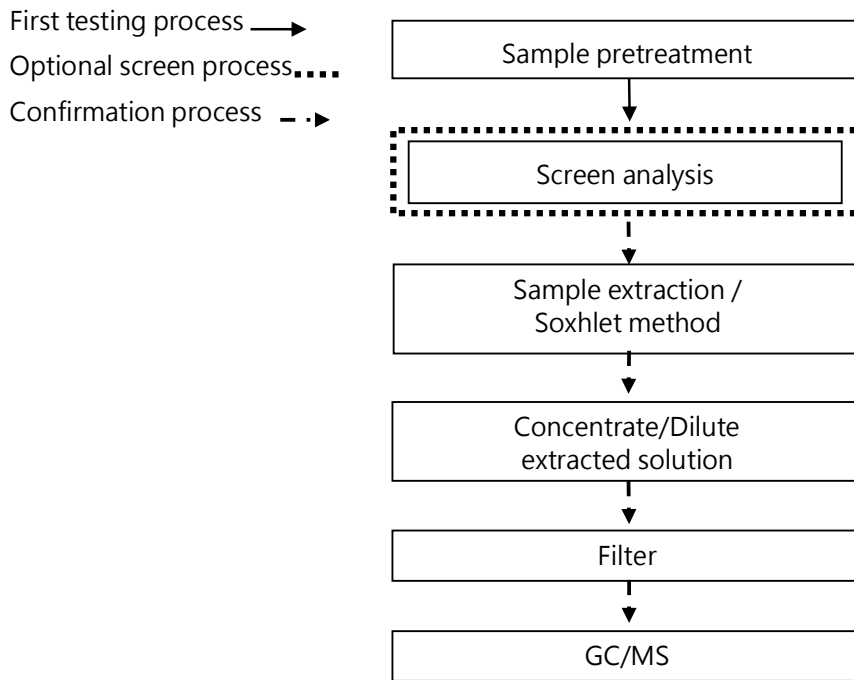
( Cr<sup>6+</sup> test method excluded )



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### Analytical flow chart – PBBs / PBDEs



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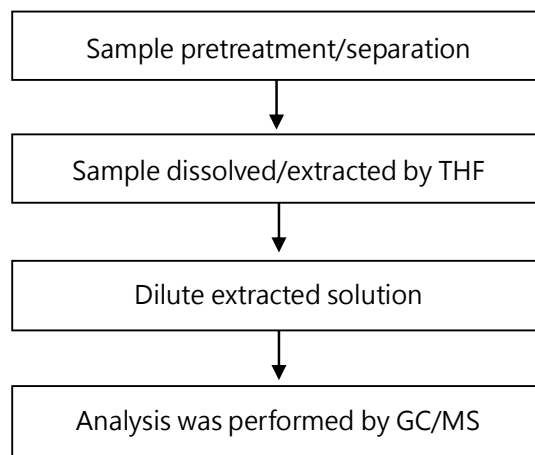


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## Analytical flow chart - Phthalate

【 Test method: IEC 62321-8 】

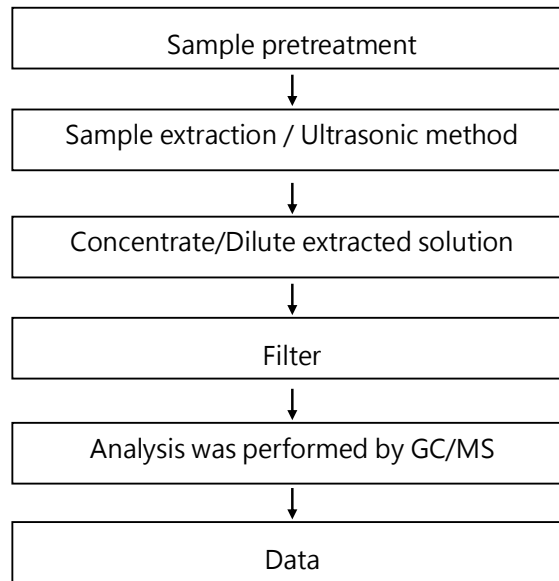


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### Analytical flow chart - HBCDD

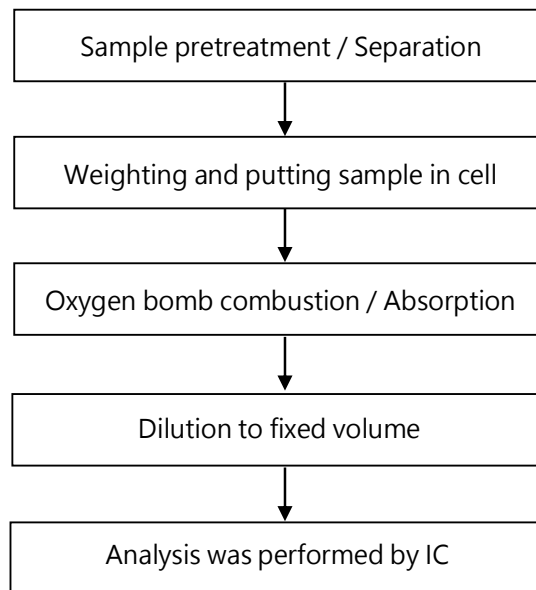


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### Analytical flow chart - Halogen



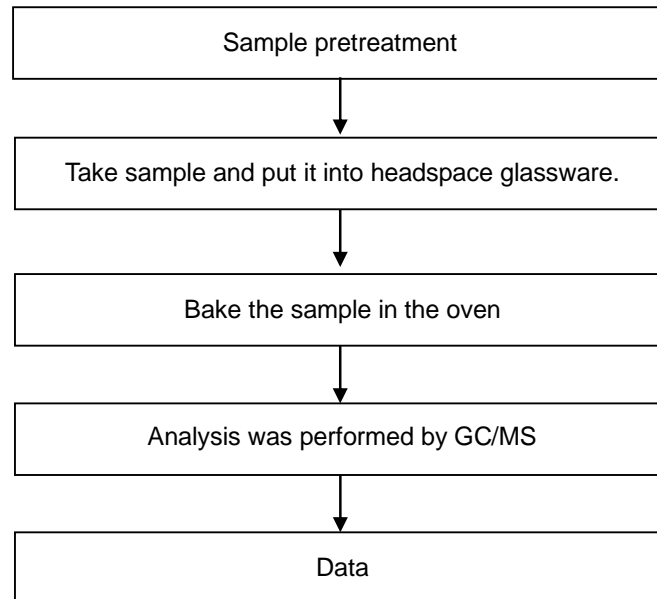
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### Analytical flow chart of volatile organic compounds (VOCs)

【Reference method : US EPA 5021A】



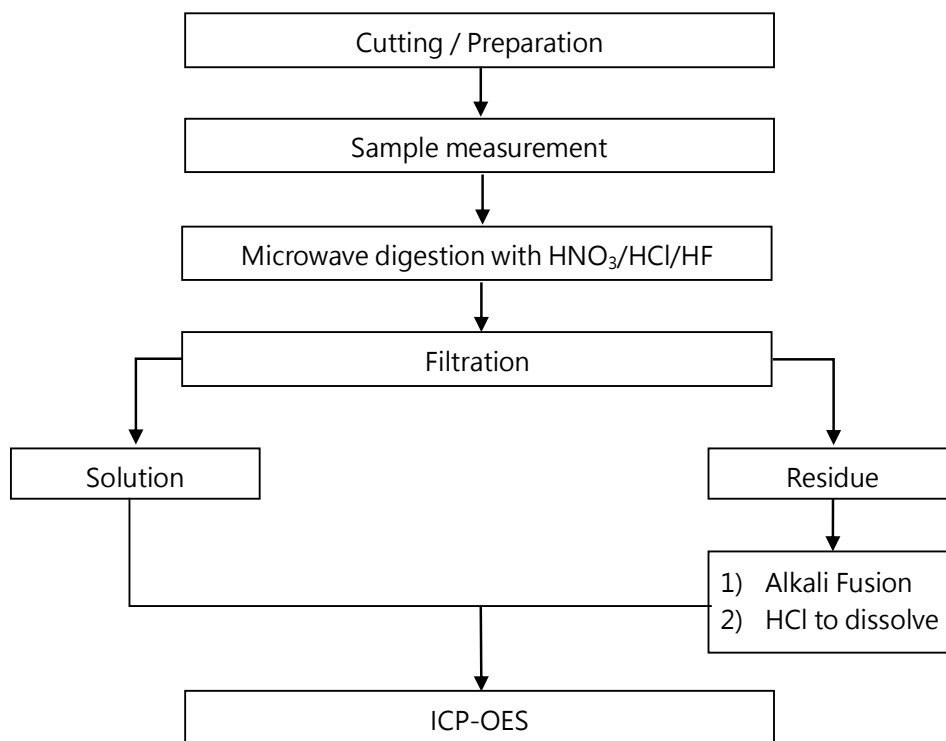
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### Analytical flow chart of Elements (Heavy Metal included)

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

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



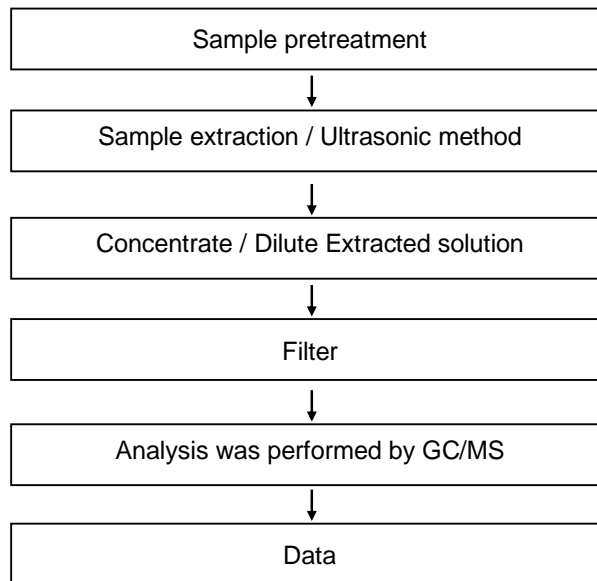
\* US EPA 3051A method does not add HF.

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### Analytical flow chart - Ethylene glycol ether

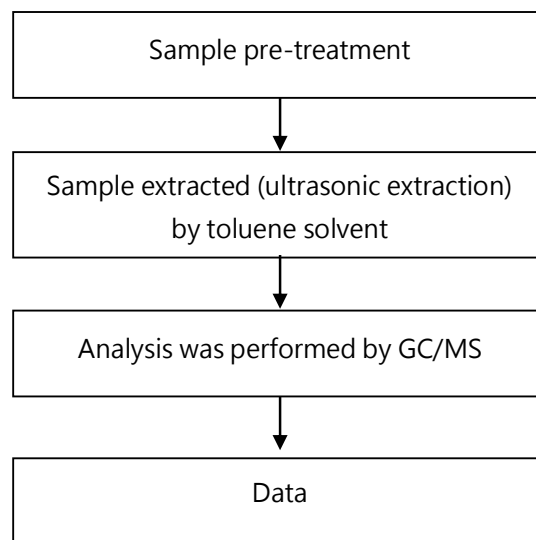


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## Analytical flow chart - PAHs (Polycyclic Aromatic Hydrocarbons)



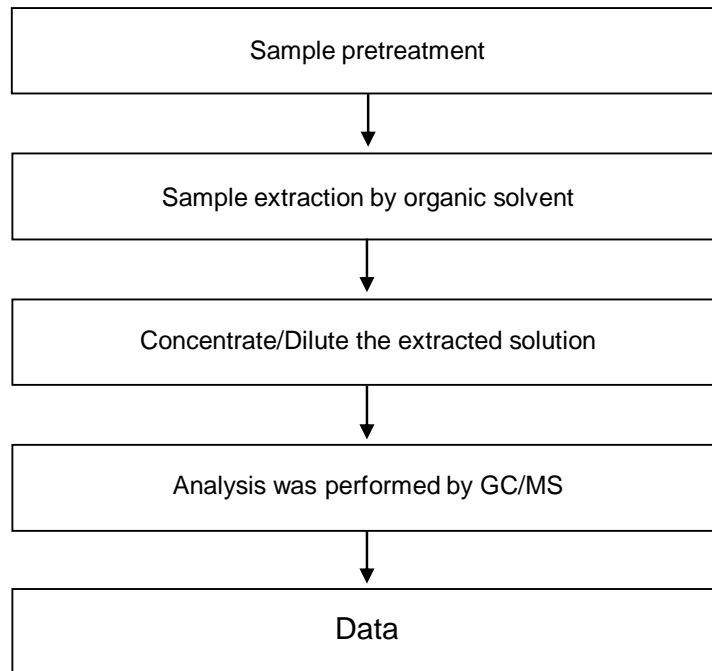
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### Analytical flow chart

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

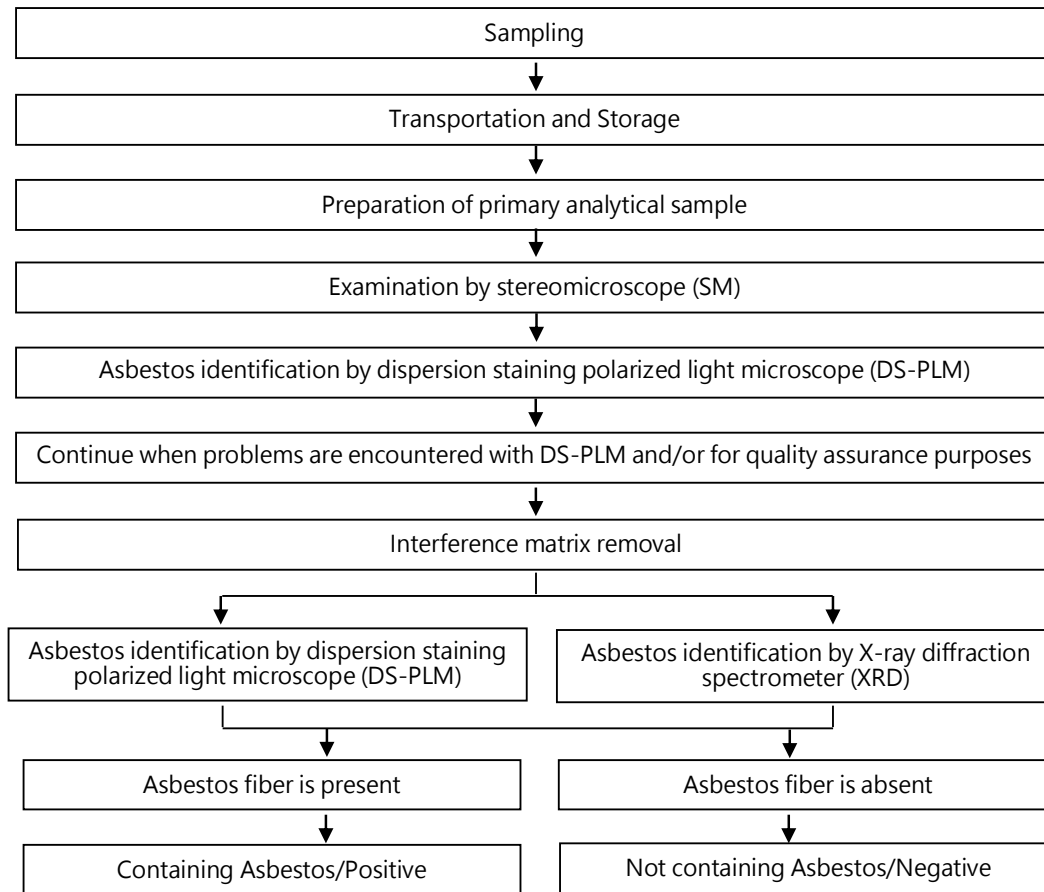


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## Analysis flow chart for determination of Asbestos

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

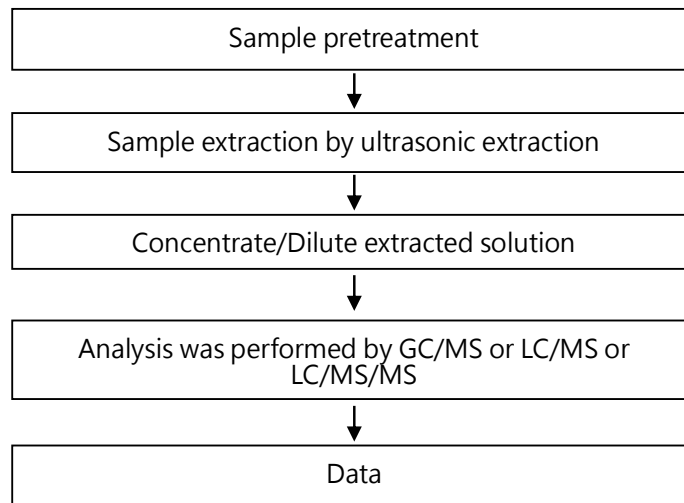


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### Analytical flow chart – PFAS (including PFOA/PFOS/its related compound, etc.)

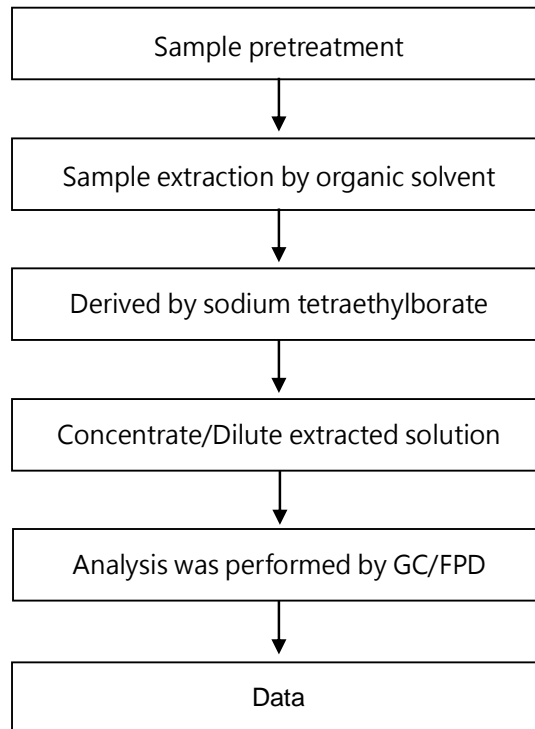


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### Analytical flow chart - Organic-Tin



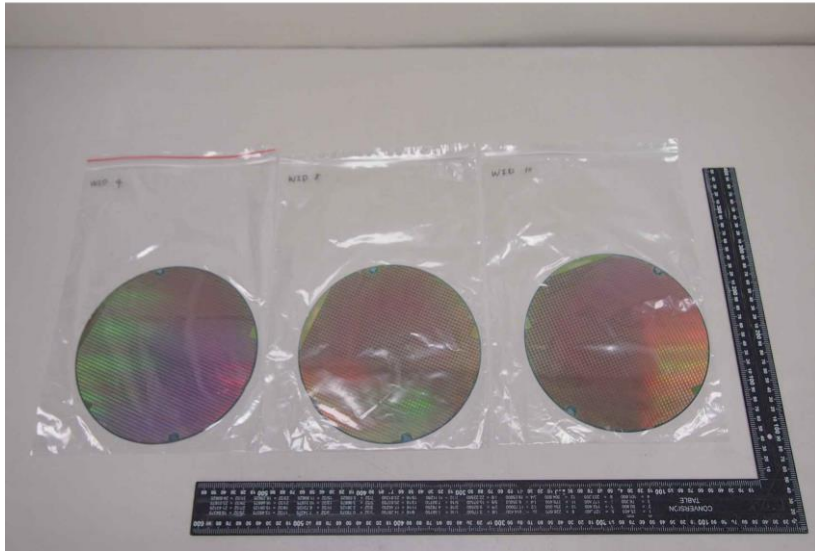
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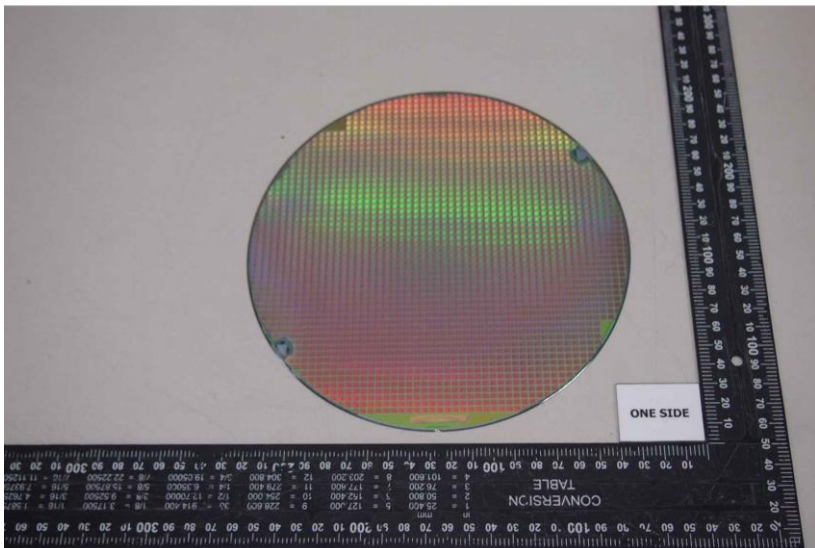
5509 NW PARKER STREET, CAMAS, WA 98607, USA

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

### ETR21A05160



### ETR21A05160

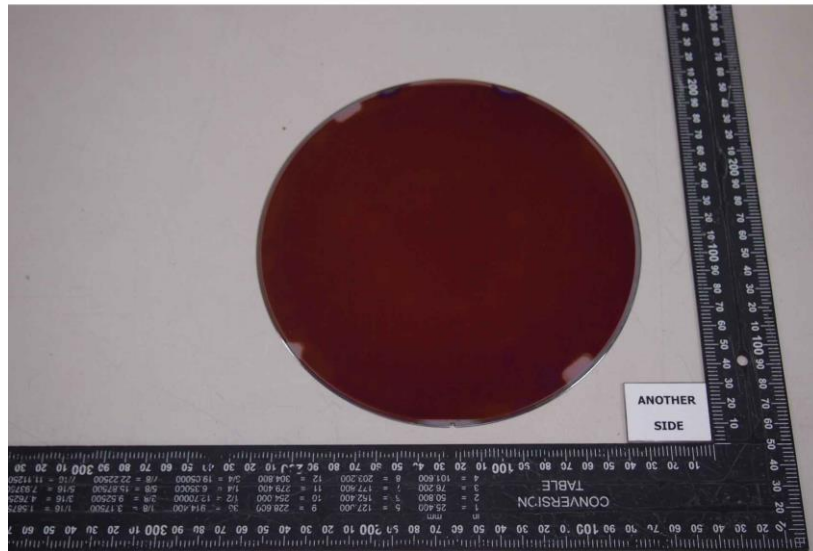


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## Test Report

No.: ETR21A05160

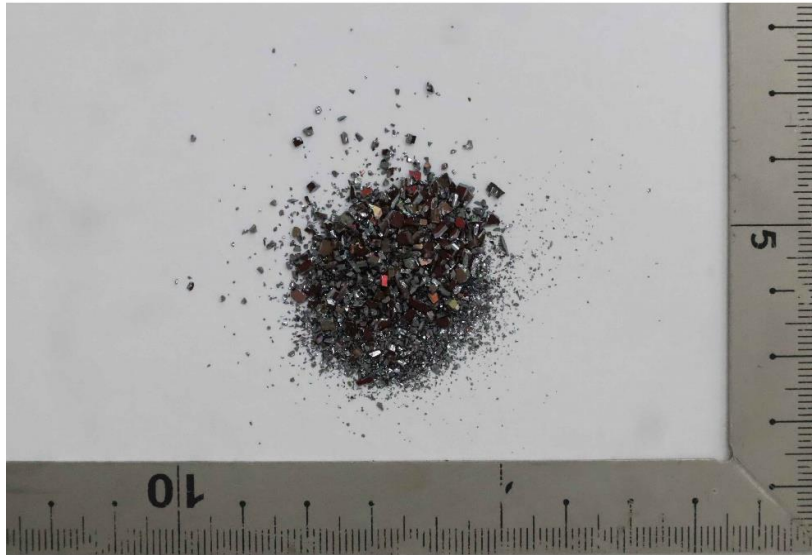
Date: 02-Nov-2021

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### ETR21A05160



\*\* End of Report \*\*

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