承　認　書

SPECIFICATION FOR APPROVAL

鈺緯科技開發股份有限公司

零件編號：QS3VH257QG8

廠　　牌：Renesas

品　　名：IC (QS3VH257QG8,QSOP16, SMD,RENESAS)

客戶料號：3A3VH257010 (A0567)

承認日期：2025/08/5

設計驗證
工程課
2025 -08- 20
發行
鈺緯科技開發股份有限公司

測試人簽章	公司承認章
	Macnica 2025.08.13 MandyChang

茂 綸 股 份 有 限 公 司

新北市新店區北新路三段 207-5 號 14 樓

TEL：886-2-8913-2200　FAX：886-2-8913-2277

業務員：張曼玉 Date：2025/08/05

QUICKSWITCH® PRODUCTS 2.5V/3.3V QUAD 2:1 MUX/DEMUX HIGH BANDWIDTH BUS SWITCH

FEATURES:

- **N channel FET switches with no parasitic diode to V_{CC}**
  - *Isolation under power-off conditions*
  - *No DC path to V_{CC} or GND*
  - *5V tolerant in OFF and ON state*
- **5V tolerant I/Os**
- **Low R_{ON} - 4Ω typical**
- **Flat R_{ON} characteristics over operating range**
- **Rail-to-rail switching 0 - 5V**
- **Bidirectional dataflow with near-zero delay: no added ground bounce**
- **Excellent R_{ON} matching between channels**
- **V_{CC} operation: 2.3V to 3.6V**
- **High bandwidth - up to 500MHz**
- **LVTTL-compatible control Inputs**
- **Undershoot Clamp Diodes on all switch and control Inputs**
- **Low I/O capacitance, 4pF typical**
- **Available in QSOP, SOIC, and TSSOP packages**

APPLICATIONS:

- **Hot-swapping**
- **Multiplexing/demultiplexing**
- **Low distortion analog switch**
- **Replaces mechanical relay**
- **ATM 25/155 switching**

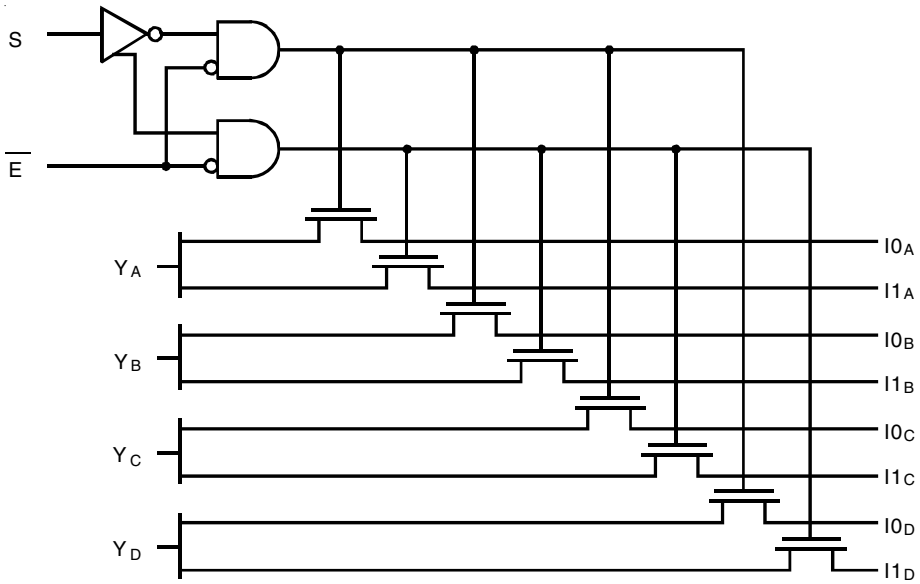
DESCRIPTION:

The QS3VH257 HotSwitch Quad 2:1 multiplexer/demultiplexer is a high bandwidth bus switch. The QS3VH257 has very low ON resistance, resulting in under 250ps propagation delay through the switch. The Select (S) input controls the data flow. The multiplexers/demultiplexers are enabled when the Enable ($\overline{E}$) input is low. In the ON state, the switches can pass signals up to 5V. In the OFF state, the switches offer very high impedence at the terminals.

The combination of near-zero propagation delay, high OFF impedance, and over-voltage tolerance makes the QS3VH257 ideal for high performance communication applications.

The QS3VH257 is characterized for operation from -40°C to +85°C.

FUNCTIONAL BLOCK DIAGRAM



The IDT logo is a registered trademark of Integrated Device Technology, Inc.

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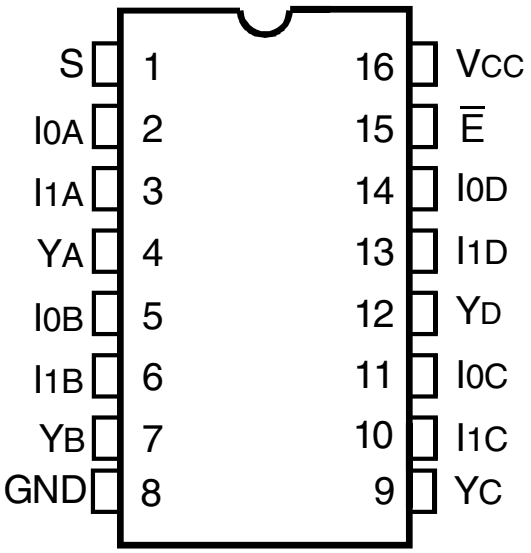
PIN CONFIGURATION



QSOP/ SOIC/ TSSOP
TOP VIEW

ABSOLUTE MAXIMUM RATINGS(1)

Symbol	Description	Max	Unit
V_{TERM}(2)	SupplyVoltage to Ground	–0.5 to +4.6	V
V_{TERM}(3)	DC Switch Voltage V_S	–0.5 to +5.5	V
V_{TERM}(3)	DC Input Voltage V_{IN}	–0.5 to +5.5	V
V_{AC}	AC Input Voltage (pulse width ≤20ns)	–3	V
I_{OUT}	DC Output Current (max. sink current/pin)	120	mA
T_{STG}	Storage Temperature	–65 to +150	°C

NOTES:
1. Stresses greater than those listed under ABSOLUTE MAXIMUM RATINGS may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect reliability.
2. V_{CC} terminals.
3. All terminals except V_{CC} .

CAPACITANCE (T_A = +25°C, F = 1MHz, V_{IN} = 0V, V_{OUT} = 0V)

Symbol	Parameter(1)		Typ.	Max.	Unit
C_{IN}	Control Inputs		3	5	pF
$C_{I/O}$	Quickswitch Channels (Switch OFF)	Demux	4	6	pF
		Mux	7	9	
$C_{I/O}$	Quickswitch Channels (Switch ON)	Demux	10	15	pF
		Mux	10	15	

NOTE:
1. This parameter is guaranteed but not production tested.

PIN DESCRIPTION

Pin Names	I/O	Description
Ixx	I	Data Inputs
S	I	Select Input
$\overline{E}$	I	Enable Input
Y_A - Y_D	O	Data Outputs

FUNCTION TABLE(1)

Inputs		Outputs				
$\overline{E}$	S	Y_A	Y_B	Y_C	Y_D	Function
H	X	Z	Z	Z	Z	Disable
L	L	$I0_A$	$I0_B$	$I0_C$	$I0_D$	Select 0
L	H	$I1_A$	$I1_B$	$I1_C$	$I1_D$	Select 1

NOTE:
1. H = HIGH Voltage Level
   L = LOW Voltage Level
   X = Don't Care
   Z = High-Impedence

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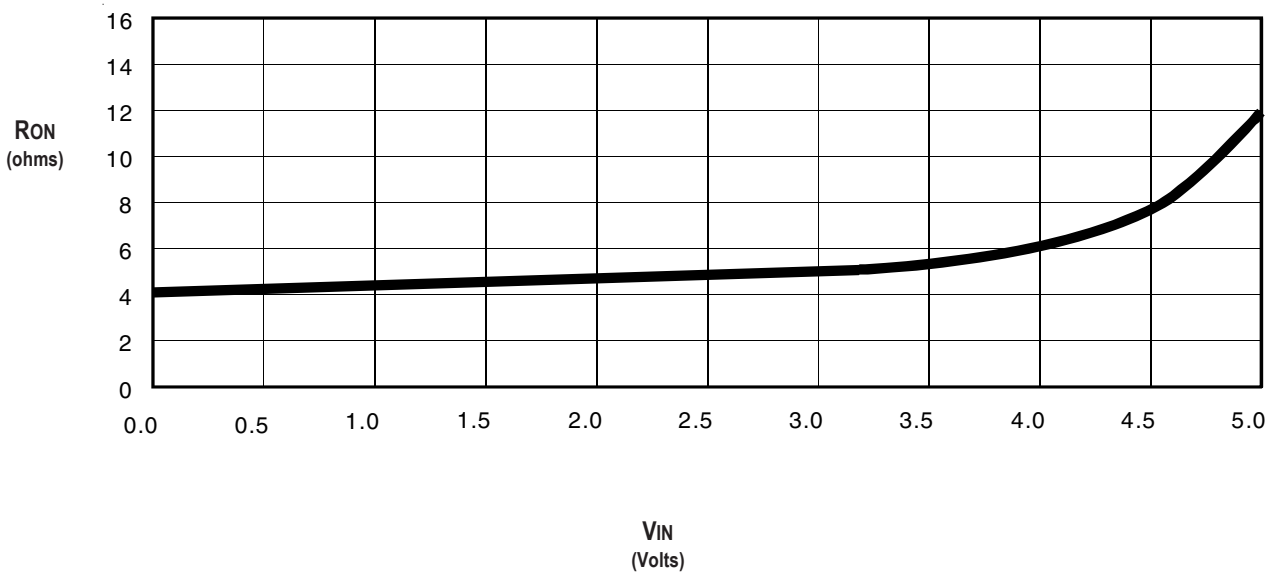
DC ELECTRICAL CHARACTERISTICS OVER OPERATING RANGE

Following Conditions Apply Unless Otherwise Specified:
Industrial: T_A = –40°C to +85°C, V_{CC} = 3.3V ±0.3V

Symbol	Parameter	Test Conditions			Min.	Typ.(1)	Max.	Unit
V_{IH}	Input HIGH Voltage	Guaranteed Logic HIGH	V_{CC} = 2.3V to 2.7V		1.7	—	—	V
		for Control Inputs	V_{CC} = 2.7V to 3.6V		2	—	—	
V_{IL}	Input LOW Voltage	Guaranteed Logic LOW	V_{CC} = 2.3V to 2.7V		—	—	0.7	V
		for Control Inputs	V_{CC} = 2.7V to 3.6V		—	—	0.8	
I_{IN}	Input Leakage Current (Control Inputs)	0V ≤ V_{IN} ≤ V_{CC}			—	—	±1	µA
I_{OZ}	Off-State Current (Hi-Z)	0V ≤ V_{OUT} ≤ 5V, Switches OFF			—	—	±1	µA
I_{OFF}	Data Input/Output Power Off Leakage	V_{IN} or V_{OUT} 0V to 5V, V_{CC} = 0V			—	—	±1	µA
R_{ON}	Switch ON Resistance	V_{CC} = 2.3V	V_{IN} = 0V	I_{ON} = 30mA	—	6	8	Ω
		Typical at V_{CC} = 2.5V	V_{IN} = 1.7V	I_{ON} = 15mA	—	7	9	
		V_{CC} = 3V	V_{IN} = 0V	I_{ON} = 30mA	—	4	6	
			V_{IN} = 2.4V	I_{ON} = 15mA	—	5	8	

NOTE:
1. Typical values are at V_{CC} = 3.3V and T_A = 25°C.

TYPICAL ON RESISTANCE vs V_{IN} AT V_{CC} = 3.3V



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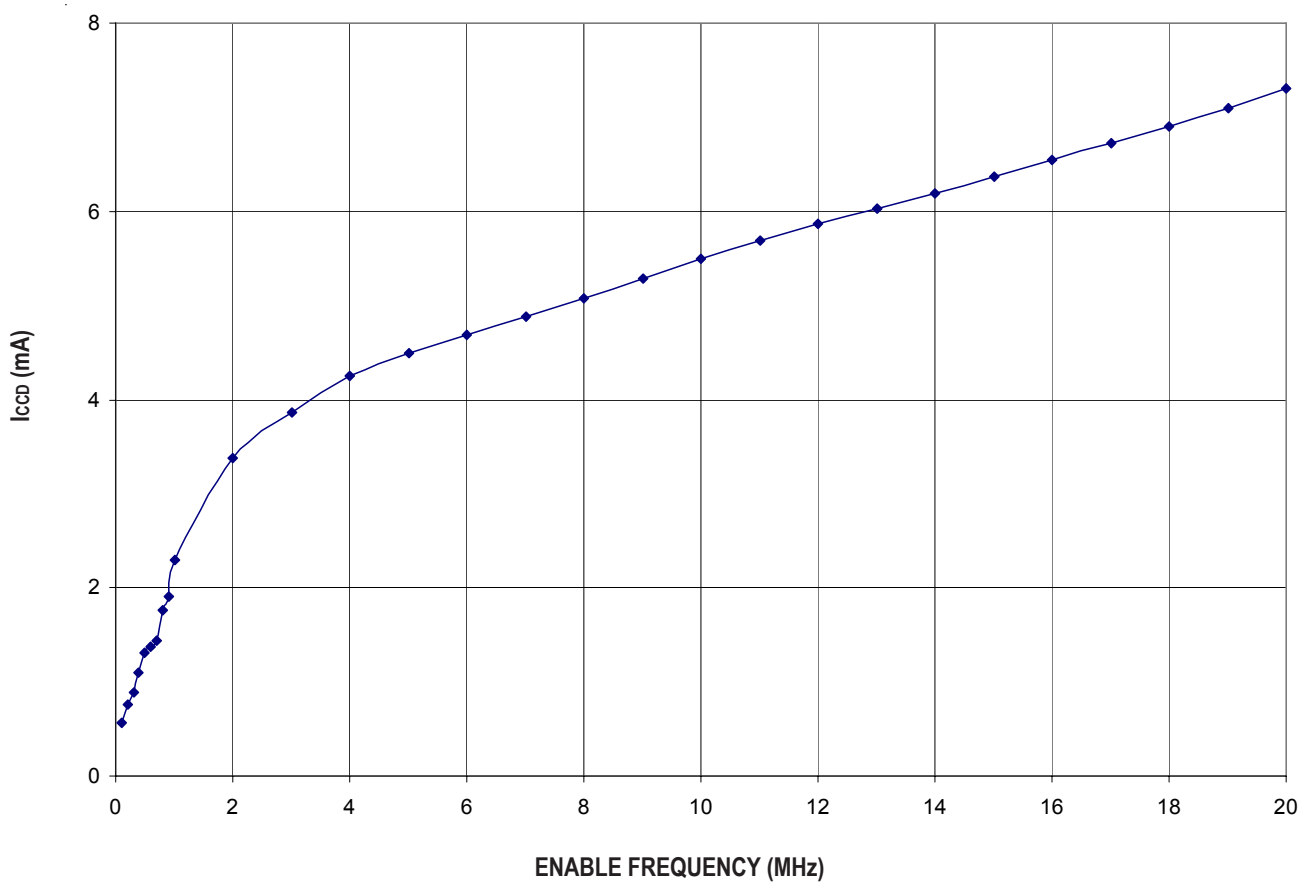
POWER SUPPLY CHARACTERISTICS

Symbol	Parameter	Test Conditions[1]	Min.	Typ.	Max.	Unit
I_{CCQ}	Quiescent Power Supply Current	V_{CC} = Max., V_{IN} = GND or V_{CC}, f = 0	—	2	4	mA
ΔI_{CC}	Power Supply Current [2,3] per Input HIGH	V_{CC} = Max., V_{IN} = 3V, f = 0 per Control Input	—	—	30	µA
I_{CCD}	Dynamic Power Supply Current[4]	V_{CC} = 3.3V, A and B Pins Open, Control Inputs Toggling @ 50% Duty Cycle	See Typical I_{CCD} vs Enable Frequency graph below			

NOTES:
1. For conditions shown as Min. or Max., use the appropriate values specified under DC Electrical Characteristics.
2. Per input driven at the specified level. Mux/demux pins do not contribute to ΔIcc.
3. This parameter is guaranteed but not tested.
4. This parameter represents the current required to switch internal capacitance at the specified frequency. The mux/demux inputs do not contribute to the Dynamic Power Supply Current. This parameter is guaranteed but not production tested.

TYPICAL I_{CCD} vs ENABLE FREQUENCY CURVE AT V_{CC} = 3.3V



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SWITCHING CHARACTERISTICS OVER OPERATING RANGE

T_A = -40°C to +85°C

Symbol	Parameter	V_{CC} = 2.5 ± 0.2V (1)		V_{CC} = 3.3 ± 0.3V (1)		Unit
		Min. (4)	Max.	Min. (4)	Max.	
t_{PLH} t_{PHL}	Data Propagation Delay(2,3) Yx to Ixx or Ixx to Yx	——	0.2	——	0.2	ns
t_{SEL}	Select Time S to Yx	1.5	9	1.5	8	ns
t_{PZH} t_{PZL}	Enable Time S to Ixx	1.5	9	1.5	9	ns
t_{PHZ} t_{PLZ}	Disable Time S to Ixx	1.5	8	1.5	8	ns
t_{PZH} t_{PZL}	Enable Time $\overline{E}$ to Yx or Ixx	1.5	9	1.5	8	ns
t_{PHZ} t_{PLZ}	Disable Time $\overline{E}$ to Yx or Ixx	1.5	8	1.5	8	ns
$f_{\overline{E}orS}$	Operating Frequency - Enable(2,5)	——	10	——	20	MHz

NOTES:
1. See Test Conditions under TEST CIRCUITS AND WAVEFORMS.
2. This parameter is guaranteed but not production tested.
3. The bus switch contributes no propagation delay other than the RC delay of the ON resistance of the switch and the load capacitance. The time constant for the switch alone is of the order of 0.2ns at C_L = 50pF. Since this time constant is much smaller than the rise and fall times of typical driving signals, it adds very little propagation delay to the system. Propagation delay of the bus switch, when used in a system, is determined by the driving circuit on the driving side of the switch and its interaction with the load on the driven side.
4. Minimums are guaranteed but not production tested.
5. Maximum toggle frequency for S or $\overline{E}$ control input (pass voltage > V_{CC}, V_{IN} = 5V, $R_{LOAD} \geq 1M\Omega$, no C_{LOAD}).

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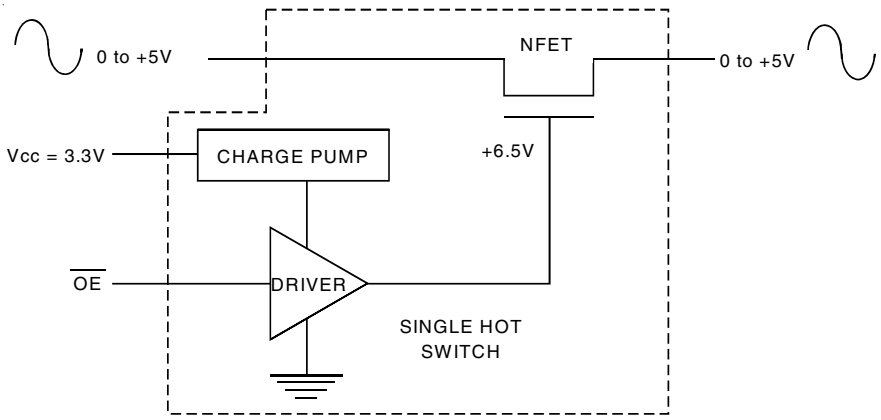
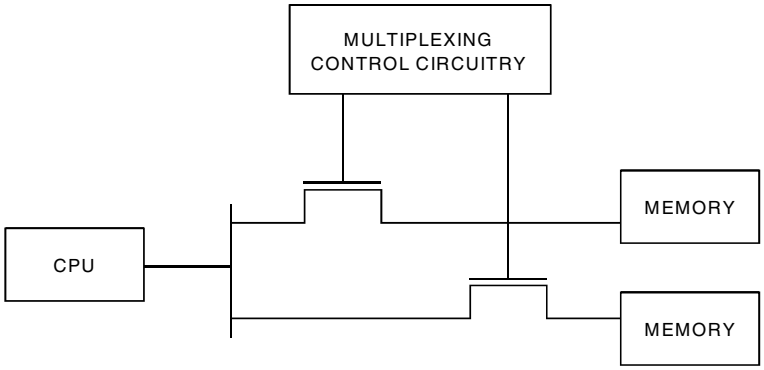
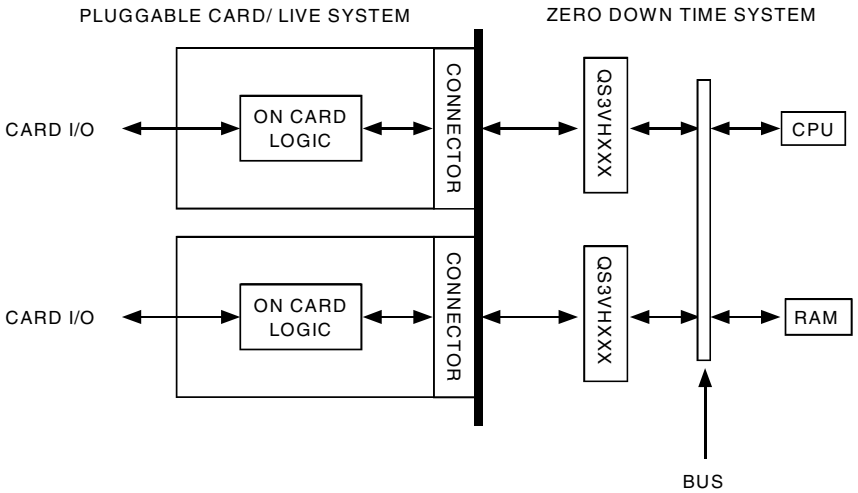
SOME APPLICATIONS FOR HOTSWITCH PRODUCTS



Rail-to-Rail Switching



Multiplexing / Demultiplexing



Hot-Swapping

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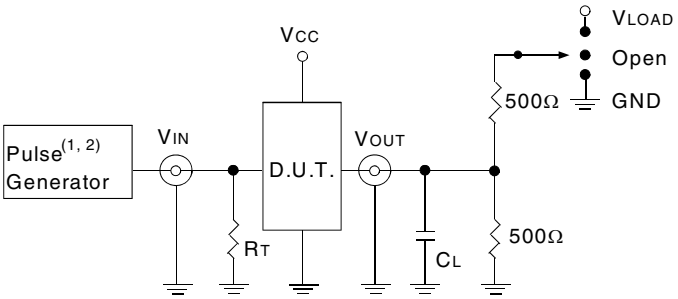
TEST CIRCUITS AND WAVEFORMS

TEST CONDITIONS

Symbol	$V_{CC}^{(1)}$= 3.3V ± 0.3V	$V_{CC}^{(2)}$= 2.5V ± 0.2V	Unit
V_{LOAD}	6	2 x Vcc	V
V_{IH}	3	Vcc	V
V_T	1.5	Vcc/2	V
V_{LZ}	300	150	mV
V_{HZ}	300	150	mV
C_L	50	30	pF



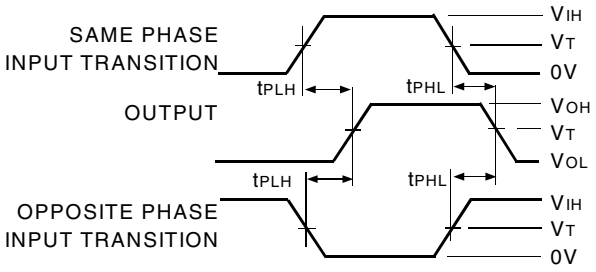
Test Circuits for All Outputs

DEFINITIONS:
C_L = Load capacitance: includes jig and probe capacitance.
R_T = Termination resistance: should be equal to Z_{OUT} of the Pulse Generator.

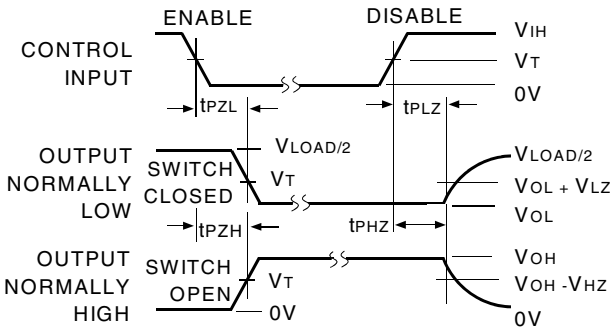
NOTES:
1. Pulse Generator for All Pulses: Rate ≤ 10MHz; t_F ≤ 2.5ns; t_R ≤ 2.5ns.
2. Pulse Generator for All Pulses: Rate ≤ 10MHz; t_F ≤ 2ns; t_R ≤ 2ns.

SWITCH POSITION

Test	Switch
t_{PLZ}/t_{PZL}	V_{LOAD}
t_{PHZ}/t_{PZH}	GND
t_{PD}	Open



Propagation Delay



NOTE:
1. Diagram shown for input Control Enable-LOW and input Control Disable-HIGH.

Enable and Disable Times

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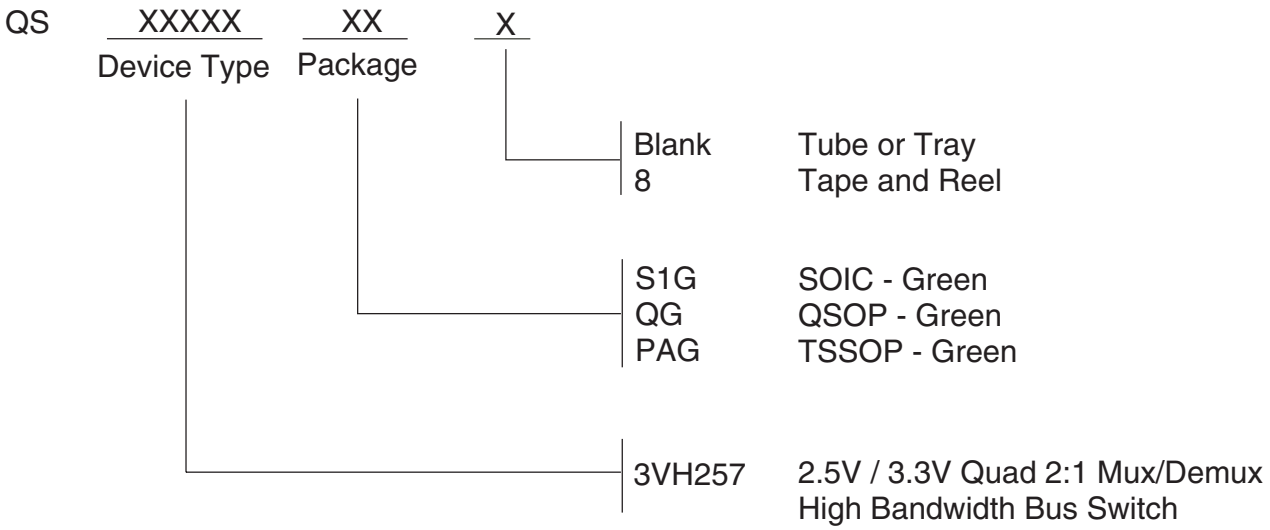
ORDERING INFORMATION



Datasheet Document History

09/01/08	Pg. 4, 8	Revise I_{CCQ} Typ. and Max. Remove non green package version and updated the ordering information by removing the "IDT" notation.
02/24/14	Pg. 8	Updated the Ordering Information by Adding Tape and Reel information.

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Test Report

No.: ETR25400256M01 Date: 09-Apr-2025

HENKEL CORPORATION
14000 JAMBOREE ROAD, IRVINE, CALIFORNIA, 92606 U.S.A.

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

Sample Submitted By	:	HENKEL CORPORATION
Sample Name	:	ADHESIVE
Style/Item No.	:	8290

==========

Sample Receiving Date	:	01-Apr-2025
Testing Period	:	01-Apr-2025 to 09-Apr-2025

Test Requested : As specified by client, to test Halogen-Fluorine, Chlorine, Bromine, Iodine in the submitted sample.

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: EE8319D8

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HENKEL CORPORATION
14000 JAMBOREE ROAD, IRVINE, CALIFORNIA, 92606 U.S.A.

Test Part Description

No.1 : SILVER COLORED PASTE

Test Result(s)

Test Item(s)	Method	Unit	MDL	Result
				No.1
Chlorine (Cl) (CAS No.: 22537-15-1)	With reference to EN 14582: 2016, analysis was performed by IC.	mg/kg	50	n.d.
Bromine (Br) (CAS No.: 10097-32-2)	With reference to EN 14582: 2016, analysis was performed by IC.	mg/kg	50	n.d.
Fluorine (F) (CAS No.: 14762-94-8)	With reference to EN 14582: 2016, analysis was performed by IC.	mg/kg	50	88.2
Iodine (I) (CAS No.: 14362-44-8)	With reference to EN 14582: 2016, analysis was performed by IC.	mg/kg	50	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)

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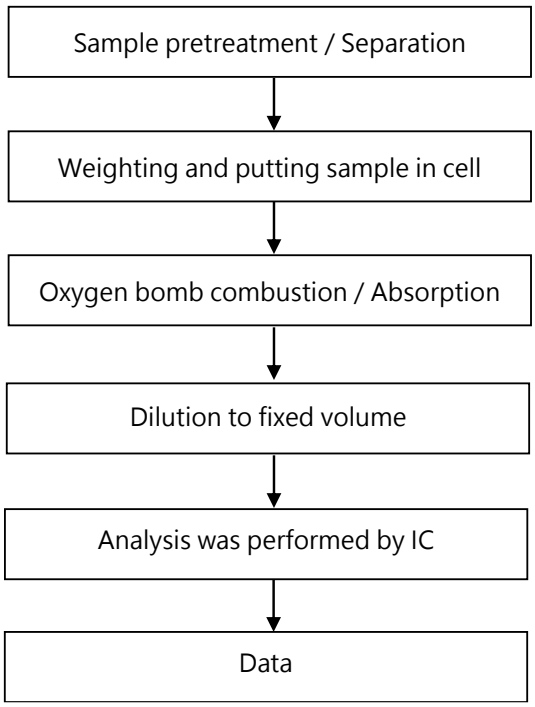
HENKEL CORPORATION
14000 JAMBOREE ROAD, IRVINE, CALIFORNIA, 92606 U.S.A.

Analytical flow chart - Halogen



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HENKEL CORPORATION
14000 JAMBOREE ROAD, IRVINE, CALIFORNIA, 92606 U.S.A.

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

ETR25400256



** End of Report **

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Test Report

No.: ETR25400256M04 Date: 09-Apr-2025

HENKEL CORPORATION
14000 JAMBOREE ROAD, IRVINE, CALIFORNIA, 92606 U.S.A.

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

Sample Submitted By : HENKEL CORPORATION
Sample Name : ADHESIVE
Style/Item No. : 8290

==========

Sample Receiving Date : 01-Apr-2025
Testing Period : 01-Apr-2025 to 09-Apr-2025

Test Results : Please refer to following pages.

Test Requested	Conclusion
RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU	PASS
Other items : - Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified (α- HBCDD, β- HBCDD, γ- HBCDD) - Beryllium (Be) - Phthalates (DIDP, DINP, DNOP)	See Results

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

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HENKEL CORPORATION
14000 JAMBOREE ROAD, IRVINE, CALIFORNIA, 92606 U.S.A.

Test Part Description

No.1 : SILVER COLORED PASTE

Test Result(s)

Test Item(s)	Method	Unit	MDL	Result	Limit
				No.1	
Cadmium (Cd)	With reference to IEC 62321-5: 2013, analysis was performed by ICP-OES.	mg/kg	2	n.d.	100
Lead (Pb)	With reference to IEC 62321-5: 2013, analysis was performed by ICP-OES.	mg/kg	2	n.d.	1000
Mercury (Hg)	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)	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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HENKEL CORPORATION
14000 JAMBOREE ROAD, IRVINE, CALIFORNIA, 92606 U.S.A.

Test Item(s)	Method	Unit	MDL	Result No.1	Limit
Butyl benzyl phthalate (BBP)	With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.	mg/kg	50	n.d.	1000
Dibutyl phthalate (DBP)		mg/kg	50	n.d.	1000
Di-(2-ethylhexyl) phthalate (DEHP)		mg/kg	50	n.d.	1000
Diisobutyl phthalate (DIBP)		mg/kg	50	n.d.	1000

Test Item(s)	Method	Unit	MDL	Result No.1	Limit
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)		mg/kg	50	n.d.	-
Di-n-octyl phthalate (DNOP) (CAS No.: 117-84-0)		mg/kg	50	n.d.	-
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.	-
Beryllium (Be) (CAS No.: 7440-41-7)	With reference to US EPA 3050B: 1996, analysis was performed by ICP-OES.	mg/kg	2	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
5. 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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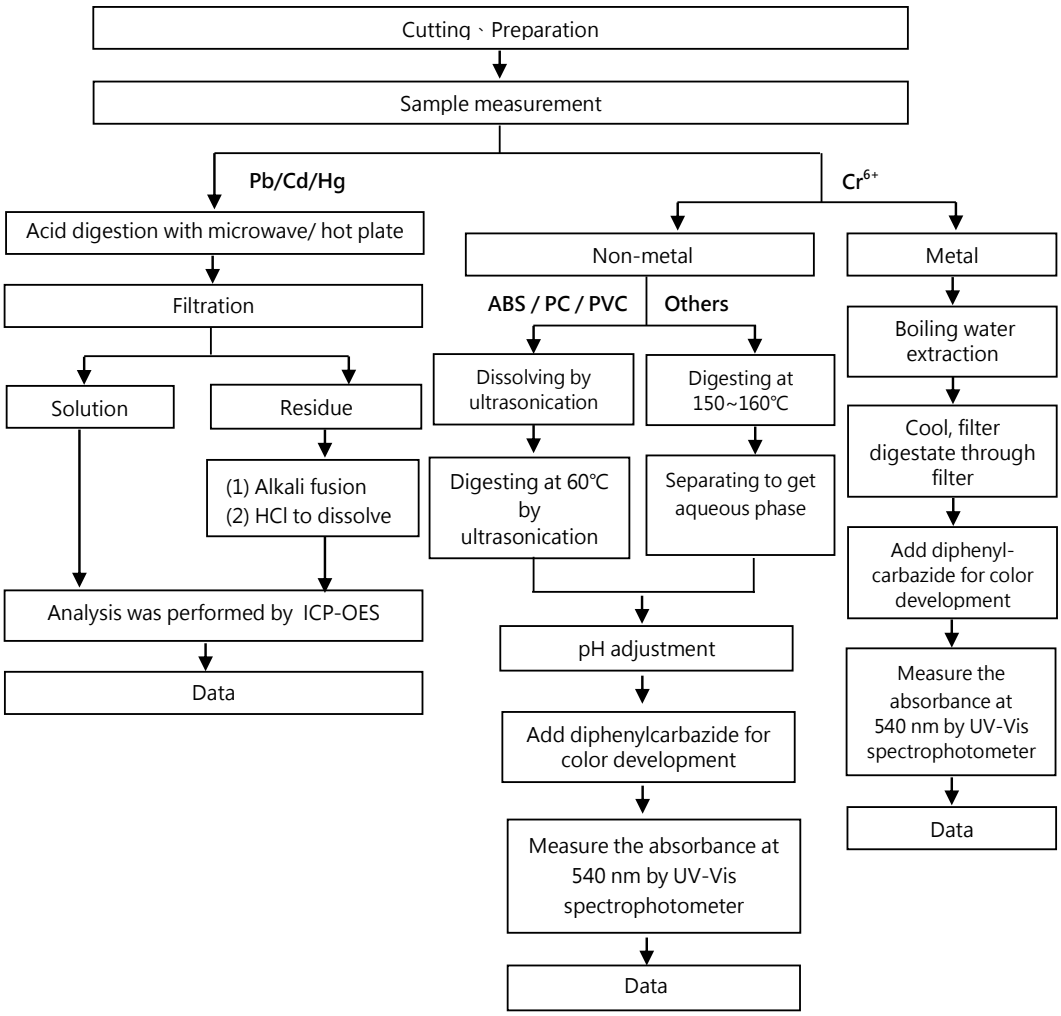
Analytical flow chart of heavy metal

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

(Cr^{6+} test method excluded)



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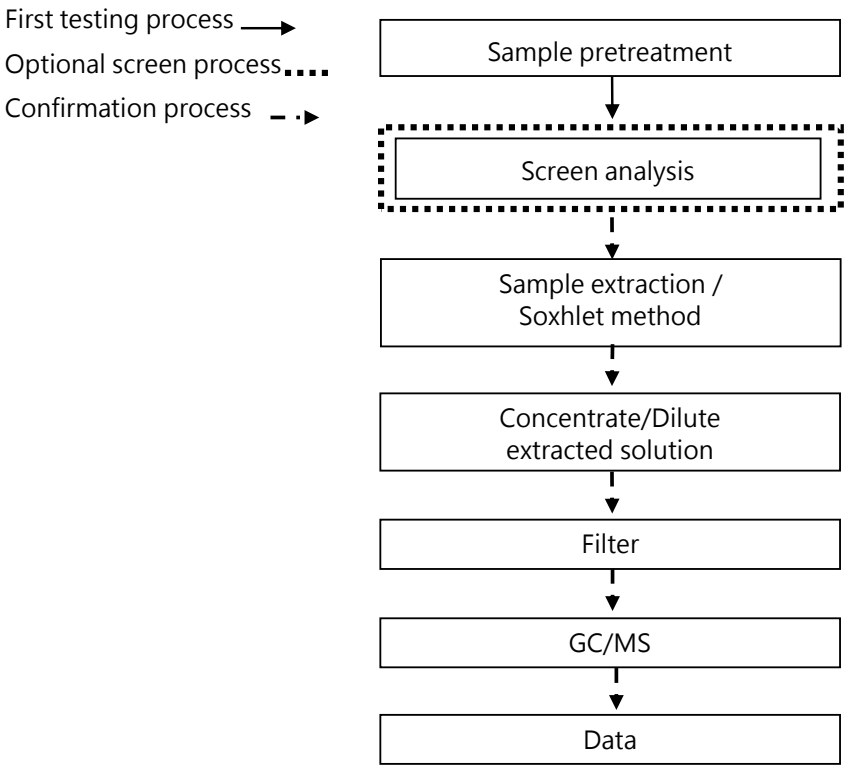
Analytical flow chart – PBBs / PBDEs



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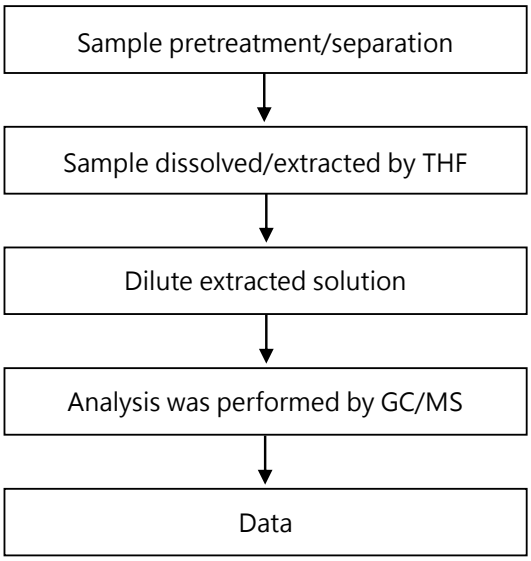
Analytical flow chart - Phthalate

【Test method: IEC 62321-8】



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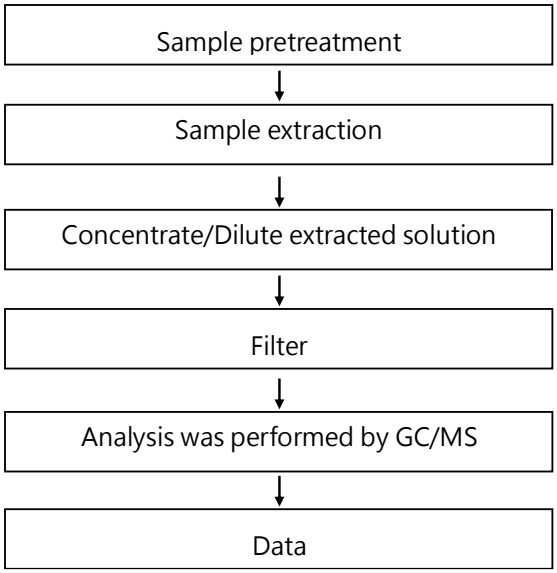
Analytical flow chart - HBCDD



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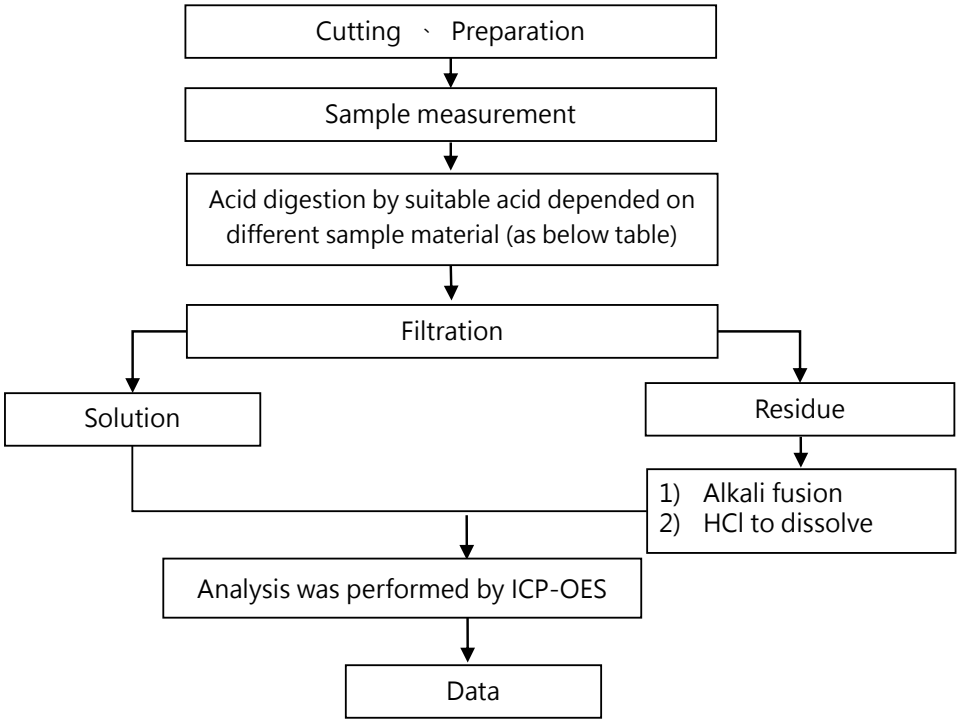
14000 JAMBOREE ROAD, IRVINE, CALIFORNIA, 92606 U.S.A.

Flow chart of digestion for the elements analysis performed by ICP-OES

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



Steel, copper, aluminum, solder	Aqua regia, HNO_3, HCl, HF, H_2O_2
Glass	HNO_3/HF
Gold, platinum, palladium, ceramic	Aqua regia
Silver	HNO_3
Plastic	H_2SO_4, H_2O_2, HNO_3, HCl
Others	Added appropriate reagent to total digestion

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

ETR25400256



** End of Report **

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Test Report

No.: ETR25400256M05 Date: 09-Apr-2025 Page: 1 of 7

HENKEL CORPORATION
14000 JAMBOREE ROAD, IRVINE, CALIFORNIA, 92606 U.S.A.

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

Sample Submitted By	:	HENKEL CORPORATION
Sample Name	:	ADHESIVE
Style/Item No.	:	8290

==========

Sample Receiving Date	:	01-Apr-2025
Testing Period	:	01-Apr-2025 to 09-Apr-2025

Test Requested : Testing item(s) is/are specified by client. Please refer to result table for testing 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: DB500D3A

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Test Part Description

No.1 : SILVER COLORED PASTE

Test Result(s)

Test Item(s)	Method	Unit	MDL	Result
				No.1
Perfluorooctane sulfonates and its salts (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.
Perfluorooctanoic acid and its salts (PFOA and its salts) (CAS No.: 335-67-1 and its salts)	With reference to CEN/TS 15968: 2010, 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)

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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.
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
	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

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Group Name	Substance Name	CAS No.
PFOS, its salts & derivatives	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
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
	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

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Group Name	Substance Name	CAS No.
PFOA, its salts & derivatives	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

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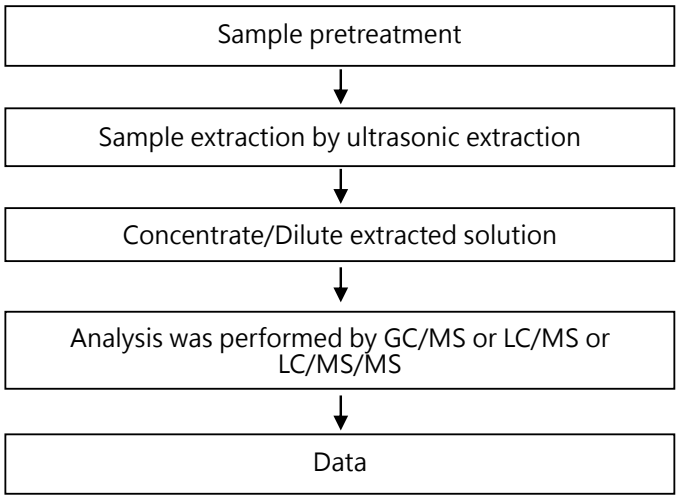
HENKEL CORPORATION
14000 JAMBOREE ROAD, IRVINE, CALIFORNIA, 92606 U.S.A.

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



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HENKEL CORPORATION
14000 JAMBOREE ROAD, IRVINE, CALIFORNIA, 92606 U.S.A.

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

ETR25400256



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Test Report

No.: ETR25400256M02 Date: 09-Apr-2025

HENKEL CORPORATION
14000 JAMBOREE ROAD, IRVINE, CALIFORNIA, 92606 U.S.A.

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

Sample Submitted By	:	HENKEL CORPORATION
Sample Name	:	ADHESIVE
Style/Item No.	:	8290

==========

Sample Receiving Date	:	01-Apr-2025
Testing Period	:	01-Apr-2025 to 09-Apr-2025

Test Requested : Testing item(s) is/are specified by client. Please refer to result table for testing 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

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PIN CODE: DB539DB7

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HENKEL CORPORATION
14000 JAMBOREE ROAD, IRVINE, CALIFORNIA, 92606 U.S.A.

Test Part Description

No.1 : SILVER COLORED PASTE

Test Result(s)

Test Item(s)	Method	Unit	MDL	Result
				No.1
Antimony (Sb) (CAS No.: 7440-36-0)	With reference to US EPA 3050B: 1996, analysis was performed by ICP-OES.	mg/kg	2	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)

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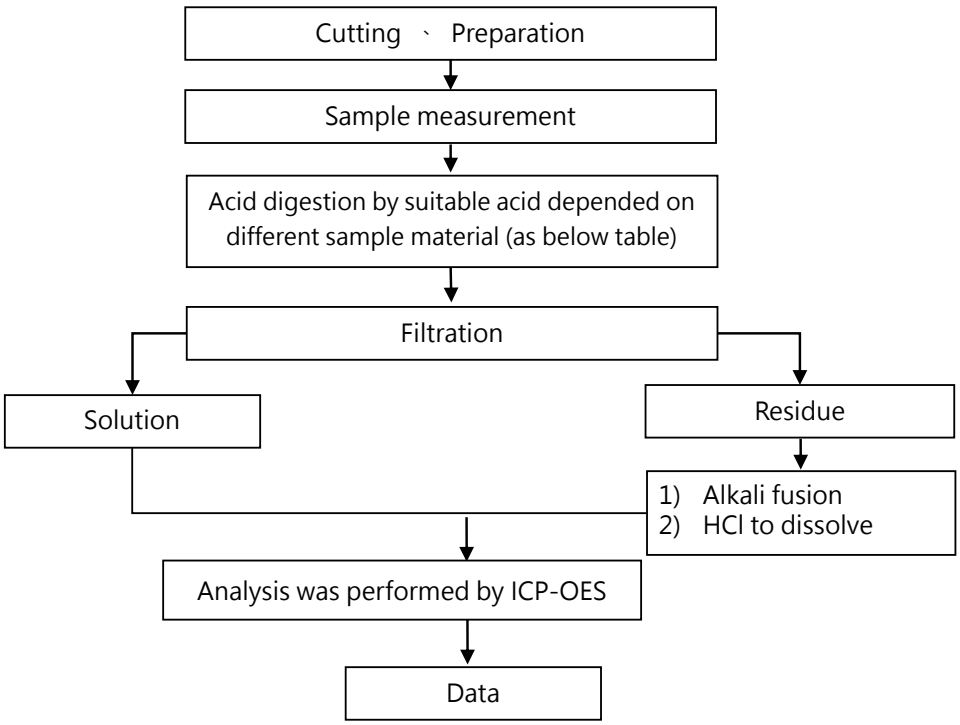
HENKEL CORPORATION
14000 JAMBOREE ROAD, IRVINE, CALIFORNIA, 92606 U.S.A.

Flow chart of digestion for the elements analysis performed by ICP-OES

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



Steel, copper, aluminum, solder	Aqua regia, HNO_3, HCl, HF, H_2O_2
Glass	HNO_3/HF
Gold, platinum, palladium, ceramic	Aqua regia
Silver	HNO_3
Plastic	H_2SO_4, H_2O_2, HNO_3, HCl
Others	Added appropriate reagent to total digestion

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HENKEL CORPORATION
14000 JAMBOREE ROAD, IRVINE, CALIFORNIA, 92606 U.S.A.

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

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測試報告
Test Report

號碼(No.): EKR25100968　　日期(Date): 24-Jan-2025　　

MITSUI HIGH-TEC INC.
10-1, KOMINE 2-CHOME, YAHATANISHI-KU KITAKYUSHU, 807-8588, JAPAN

以下測試樣品係由申請廠商所提供及確認 (The following sample(s) was/were submitted and identified by the applicant as)：

送樣廠商(Sample Submitted By)	:	MITSUI HIGH-TEC INC.
樣品名稱(Sample Name)	:	C194(A194)+Ag PLATING

==========

收件日(Sample Receiving Date)	:	15-Jan-2025
測試期間(Testing Period)	:	15-Jan-2025 to 24-Jan-2025

測試需求(Test Requested) :

(1) 依據客戶指定，參考RoHS 2011/65/EU Annex II及其修訂指令(EU) 2015/863測試鎘、鉛、汞、六價鉻、多溴聯苯、多溴聯苯醚, DBP, BBP, DEHP, DIBP。 (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) 依據客戶要求，參考美國毒管法(TSCA) 第6章節及聯邦規則彙編40 CFR Part 751，進行5項持久性生物累積毒性物質(PBTs)測試，測試項目請參閱測試結果表格。 (As specified by client, the sample(s) was/ were tested for 5 PBTs with reference to TSCA section 6 and 40 CFR Part 751. Please refer to result table for testing items.)

(3) 其他測試項目請見下一頁。 (Please refer to next pages for the other item(s).)

測試結果(Test Results) : 請參閱下一頁 (Please refer to following pages.)

結　　論(Conclusion) :

(1) 根據客戶所提供的樣品，其鎘、鉛、汞、六價鉻、多溴聯苯、多溴聯苯醚, DBP, BBP, DEHP, DIBP的測試結果符合RoHS 2011/65/EU Annex II暨其修訂指令(EU) 2015/863之限值要求。 (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) 根據客戶所提供的樣品，其測試結果符合美國毒管法(TSCA)第6章節及聯邦規則彙編40 CFR Part 751中對持久性生物累積毒性物質(PBTs)之限值要求。 (Based on the performed tests on submitted sample(s), the test results of PBTs comply with the limits as set by TSCA section 6 and 40 CFR Part 751.)

報告簽署人/張伯睿 博士/部經理
Ray Chang, Ph.D./ Department Manager
Signed for and on behalf of
SGS TAIWAN LTD.
化學實驗室-高雄/Chemical Laboratory-Kaohsiung

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PIN CODE: 219276B8

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測試報告
Test Report

MITSUI HIGH-TEC INC.
10-1, KOMINE 2-CHOME, YAHATANISHI-KU KITAKYUSHU, 807-8588, JAPAN

測試部位敘述 (Test Part Description)

No.1 : 銅色/銀色 C194(A194)+Ag PLATING (COPPER/SILVER COLORED C194(A194)+Ag PLATING)

測試結果 (Test Results)

測試項目 (Test Items)	測試方法 (Method)	單位 (Unit)	MDL	結果 (Result) No.1	限值 (Limit)
鎘 (Cd) (Cadmium (Cd))	參考IEC 62321-5: 2013，以感應耦合電漿發射光譜儀分析。(With reference to IEC 62321-5: 2013, analysis was performed by ICP-OES.)	mg/kg	2	n.d.	100
鉛 (Pb) (Lead (Pb))		mg/kg	2	3.85	1000
汞 (Hg) (Mercury (Hg))	參考IEC 62321-4: 2013+ AMD1: 2017，以感應耦合電漿發射光譜儀分析。(With reference to IEC 62321-4: 2013+ AMD1: 2017, analysis was performed by ICP-OES.)	mg/kg	2	n.d.	1000
六價鉻 (Hexavalent Chromium) Cr(VI) (#2)	參考IEC 62321-7-1: 2015，以紫外光-可見光分光光度計分析。(With reference to IEC 62321-7-1: 2015, analysis was performed by UV-VIS.)	μg/cm²	0.1	n.d.	-
一溴聯苯 (Monobromobiphenyl)	參考IEC 62321-6: 2015，以氣相層析儀/質譜儀分析。(With reference to IEC 62321-6: 2015, analysis was performed by GC/MS.)	mg/kg	5	n.d.	-
二溴聯苯 (Dibromobiphenyl)		mg/kg	5	n.d.	-
三溴聯苯 (Tribromobiphenyl)		mg/kg	5	n.d.	-
四溴聯苯 (Tetrabromobiphenyl)		mg/kg	5	n.d.	-
五溴聯苯 (Pentabromobiphenyl)		mg/kg	5	n.d.	-
六溴聯苯 (Hexabromobiphenyl)		mg/kg	5	n.d.	-
七溴聯苯 (Heptabromobiphenyl)		mg/kg	5	n.d.	-
八溴聯苯 (Octabromobiphenyl)		mg/kg	5	n.d.	-
九溴聯苯 (Nonabromobiphenyl)		mg/kg	5	n.d.	-
十溴聯苯 (Decabromobiphenyl)		mg/kg	5	n.d.	-
多溴聯苯總和 (Sum of PBBs)		mg/kg	-	n.d.	1000

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測試報告
Test Report

MITSUI HIGH-TEC INC.
10-1, KOMINE 2-CHOME, YAHATANISHI-KU KITAKYUSHU, 807-8588, JAPAN

測試項目 (Test Items)	測試方法 (Method)	單位 (Unit)	MDL	結果 (Result) No.1	限值 (Limit)
一溴聯苯醚 (Monobromodiphenyl ether)	參考IEC 62321-6: 2015，以氣相層析儀/質譜儀分析。(With reference to IEC 62321-6: 2015, analysis was performed by GC/MS.)	mg/kg	5	n.d.	-
二溴聯苯醚 (Dibromodiphenyl ether)		mg/kg	5	n.d.	-
三溴聯苯醚 (Tribromodiphenyl ether)		mg/kg	5	n.d.	-
四溴聯苯醚 (Tetrabromodiphenyl ether)		mg/kg	5	n.d.	-
五溴聯苯醚 (Pentabromodiphenyl ether)		mg/kg	5	n.d.	-
六溴聯苯醚 (Hexabromodiphenyl ether)		mg/kg	5	n.d.	-
七溴聯苯醚 (Heptabromodiphenyl ether)		mg/kg	5	n.d.	-
八溴聯苯醚 (Octabromodiphenyl ether)		mg/kg	5	n.d.	-
九溴聯苯醚 (Nonabromodiphenyl ether)		mg/kg	5	n.d.	-
十溴聯苯醚 (Decabromodiphenyl ether)		mg/kg	5	n.d.	-
多溴聯苯醚總和 (Sum of PBDEs)		mg/kg	-	n.d.	1000
多氯聯苯 (PCBs) (Polychlorinated biphenyls (PCBs))	參考US EPA 3550C: 2007，以氣相層析儀/質譜儀分析。(With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.)	mg/kg	0.5	n.d.	-
多氯奈 (PCNs) (Polychlorinated naphthalene (PCNs))	參考US EPA 3550C: 2007，以氣相層析儀/質譜儀分析。(With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.)	mg/kg	5	n.d.	-
多氯三聯苯 (PCTs) (Polychlorinated terphenyls (PCTs))	參考US EPA 3550C: 2007，以氣相層析儀/質譜儀分析。(With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.)	mg/kg	0.5	n.d.	-
短鏈氯化石蠟(C10-C13) (SCCP) (Short Chain Chlorinated Paraffins(C10-C13) (SCCP)) (CAS No.: 85535-84-8)	參考ISO 18219-1: 2021，以氣相層析儀/質譜儀分析。(With reference to ISO 18219-1: 2021, analysis was performed by GC/MS.)	mg/kg	50	n.d.	-

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測試報告
Test Report

MITSUI HIGH-TEC INC.
10-1, KOMINE 2-CHOME, YAHATANISHI-KU KITAKYUSHU, 807-8588, JAPAN

測試項目 (Test Items)	測試方法 (Method)	單位 (Unit)	MDL	結果 (Result) No.1	限值 (Limit)
氟 (F) (Fluorine (F)) (CAS No.: 14762-94-8)	參考BS EN 14582: 2016，以離子層析儀分析。(With reference to BS EN 14582: 2016, analysis was performed by IC.)	mg/kg	50	n.d.	-
氯 (Cl) (Chlorine (Cl)) (CAS No.: 22537-15-1)		mg/kg	50	n.d.	-
溴 (Br) (Bromine (Br)) (CAS No.: 10097-32-2)		mg/kg	50	n.d.	-
碘 (I) (Iodine (I)) (CAS No.: 14362-44-8)		mg/kg	50	n.d.	-
三丁基錫 (TBT) (Tributyl tin (TBT))	參考ISO 17353: 2004，以氣相層析儀/火焰光度偵測器分析。(With reference to ISO 17353: 2004, analysis was performed by GC/FPD.)	mg/kg	0.03	n.d.	-
三苯基錫 (TPT) (Triphenyl tin (TPT))		mg/kg	0.03	n.d.	-
二丁基錫 (DBT) (Dibutyl tin (DBT))		mg/kg	0.03	n.d.	-
二辛基錫 (DOT) (Dioctyl tin (DOT))		mg/kg	0.03	n.d.	-
氧化雙三丁基錫 (TBTO) (Bis(tributyltin) oxide (TBTO)) (CAS No.: 56-35-9)	由三丁基錫測試結果計算得之。(Calculated from the result of Tributyl Tin (TBT).)	mg/kg	0.03▲	n.d.	-
六溴環十二烷及所有主要被辨別出的異構物(HBCDD) (α- HBCDD, β- HBCDD, γ- HBCDD) (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))	參考IEC 62321: 2008，以氣相層析儀/質譜儀分析。(With reference to IEC 62321: 2008, analysis was performed by GC/MS.)	mg/kg	5	n.d.	-
聚氯乙烯 (Polyvinyl chloride) (PVC)	參考ASTM E1252: 2021，以傅立葉轉換紅外線光譜儀及焰色法分析。(With reference to ASTM E1252: 2021, analysis was performed by FT-IR and Flame Test.)	**	-	Negative	-
銻 (Sb) (Antimony (Sb)) (CAS No.: 7440-36-0)	參考US EPA 3052: 1996，以感應耦合電漿發射光譜儀分析。(With reference to US EPA 3052: 1996, analysis was performed by ICP-OES.)	mg/kg	2	n.d.	-

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測試報告
Test Report

號碼(No.): EKR25100968 日期(Date): 24-Jan-2025

MITSUI HIGH-TEC INC.
10-1, KOMINE 2-CHOME, YAHATANISHI-KU KITAKYUSHU, 807-8588, JAPAN

測試項目 (Test Items)	測試方法 (Method)	單位 (Unit)	MDL	結果 (Result) No.1	限值 (Limit)
鈹 (Be) (Beryllium (Be)) (CAS No.: 7440-41-7)	參考US EPA 3052: 1996，以感應耦合電漿發射光譜儀分析。(With reference to US EPA 3052: 1996, analysis was performed by ICP-OES.)	mg/kg	2	n.d.	-
磷 (P) (Phosphorus (P)) (CAS No.: 7723-14-0)	參考US EPA 3052: 1996，以感應耦合電漿發射光譜儀分析。(With reference to US EPA 3052: 1996, analysis was performed by ICP-OES.)	mg/kg	2	306	-
砷 (As) (Arsenic (As)) (CAS No.: 7440-38-2)	參考US EPA 3052: 1996，以感應耦合電漿發射光譜儀分析。(With reference to US EPA 3052: 1996, analysis was performed by ICP-OES.)	mg/kg	2	n.d.	-
紅磷 (Red Phosphorus)	以熱裂解-氣相層析儀/質譜儀分析。(Analysis was performed by Pyrolyzer-GC/MS.)	**	-	Negative	-
十溴二苯乙烷 (Decabromodiphenylethane) (CAS No.: 84852-53-9)	參考US EPA 3550C: 2007，以氣相層析儀/質譜儀分析。(With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.)	mg/kg	5	n.d.	-
鄰苯二甲酸二丁酯 (DBP) (Dibutyl phthalate (DBP))	參考IEC 62321-8: 2017，以氣相層析儀/質譜儀分析。(With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.)	mg/kg	50	n.d.	1000
鄰苯二甲酸丁苯甲酯 (BBP) (Butyl benzyl phthalate (BBP))	參考IEC 62321-8: 2017，以氣相層析儀/質譜儀分析。(With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.)	mg/kg	50	n.d.	1000
鄰苯二甲酸二異丁酯 (DIBP) (Diisobutyl phthalate (DIBP))	參考IEC 62321-8: 2017，以氣相層析儀/質譜儀分析。(With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.)	mg/kg	50	n.d.	1000

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測試報告
Test Report

MITSUI HIGH-TEC INC.
10-1, KOMINE 2-CHOME, YAHATANISHI-KU KITAKYUSHU, 807-8588, JAPAN

測試項目 (Test Items)	測試方法 (Method)	單位 (Unit)	MDL	結果 (Result) No.1	限值 (Limit)
鄰苯二甲酸二(2-乙基己基)酯 (DEHP) (Di-(2-ethylhexyl) phthalate (DEHP))	參考IEC 62321-8: 2017，以氣相層析儀/質譜儀分析。(With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.)	mg/kg	50	n.d.	1000
鄰苯二甲酸二異癸酯 (DIDP) (Diisodecyl phthalate (DIDP)) (CAS No.: 26761-40-0, 68515-49-1)	參考IEC 62321-8: 2017，以氣相層析儀/質譜儀分析。(With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.)	mg/kg	50	n.d.	-
鄰苯二甲酸二異壬酯 (DINP) (Diisononyl phthalate (DINP)) (CAS No.: 28553-12-0, 68515-48-0)	參考IEC 62321-8: 2017，以氣相層析儀/質譜儀分析。(With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.)	mg/kg	50	n.d.	-
鄰苯二甲酸二正辛酯 (DNOP) (Di-n-octyl phthalate (DNOP)) (CAS No.: 117-84-0)	參考IEC 62321-8: 2017，以氣相層析儀/質譜儀分析。(With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.)	mg/kg	50	n.d.	-
鄰苯二甲酸二正戊酯 (DNPP) (Di-n-pentyl phthalate (DNPP)) (CAS No.: 131-18-0)	參考IEC 62321-8: 2017，以氣相層析儀/質譜儀分析。(With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.)	mg/kg	50	n.d.	-
鄰苯二甲酸二正己酯 (DNHP) (Di-n-hexyl phthalate (DNHP)) (CAS No.: 84-75-3)	參考IEC 62321-8: 2017，以氣相層析儀/質譜儀分析。(With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.)	mg/kg	50	n.d.	-
鄰苯二甲酸二(2-甲氧基乙基)酯 (DMEP) (Bis(2-methoxyethyl) phthalate (DMEP)) (CAS No.: 117-82-8)	參考IEC 62321-8: 2017，以氣相層析儀/質譜儀分析。(With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.)	mg/kg	50	n.d.	-
鄰苯二甲酸二(C7-11支鏈與直鏈)烷基酯 (DHNUP) (1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters (DHNUP)) (CAS No.: 68515-42-4)	參考IEC 62321-8: 2017，以氣相層析儀/質譜儀分析。(With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.)	mg/kg	50	n.d.	-

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MITSUI HIGH-TEC INC.
10-1, KOMINE 2-CHOME, YAHATANISHI-KU KITAKYUSHU, 807-8588, JAPAN

測試項目 (Test Items)	測試方法 (Method)	單位 (Unit)	MDL	結果 (Result) No.1	限值 (Limit)
鄰苯二甲酸二 (C6-8支鏈)烷基酯，富C7 (DIHP) (1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich (DIHP)) (CAS No.: 71888-89-6)	參考IEC 62321-8: 2017，以氣相層析儀/質譜儀分析。(With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.)	mg/kg	50	n.d.	-
十溴聯苯醚 (DecaBDE) (Decabromodiphenyl ether (DecaBDE)) (CAS No.: 1163-19-5)	參考US EPA 3550C: 2007，以氣相層析儀/質譜儀分析。(With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.)	mg/kg	5	n.d.	1000 / N/A(*3)
異丙基化磷酸三苯酯 (PIP 3:1) (Phenol, isopropylated, phosphate (3:1) (PIP 3:1)) (CAS No.: 68937-41-7)	參考US EPA 3550C: 2007，以氣相層析儀/質譜儀分析。(With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.)	mg/kg	5	n.d.	1000 / N/A(*1)
2,4,6-三叔丁基酚 (2,4,6-TTBP) (2,4,6-Tris(tert-butyl)phenol (2,4,6-TTBP)) (CAS No.: 732-26-3)	參考US EPA 3550C: 2007，以氣相層析儀/質譜儀分析。(With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.)	mg/kg	5	n.d.	3000 / N/A(*2)
五氯苯硫酚 (PCTP) (Pentachlorothiophenol (PCTP)) (CAS No.: 133-49-3)	參考US EPA 3550C: 2007，以氣相層析儀/質譜儀分析。(With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.)	mg/kg	5	n.d.	10000
六氯丁二烯 (HCBD) (Hexachlorobutadiene (HCBD)) (CAS No.: 87-68-3)	參考US EPA 3550C: 2007，以氣相層析儀/質譜儀分析。(With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.)	mg/kg	5	n.d.	Prohibited
全氟辛烷磺酸及其鹽類 (PFOS and its salts) (Perfluorooctane sulfonates and its salts (PFOS and its salts)) (CAS No.: 1763-23-1 and its salts)	參考CEN/TS 15968: 2010，以液相層析串聯質譜儀分析。(With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.)	mg/kg	0.01	n.d.	-
N-乙基全氟正辛磺醯胺 (EtFOSA) (N-ethylperfluoro-1-octanesulfonamide (EtFOSA)) (CAS No.: 4151-50-2)	參考CEN/TS 15968: 2010，以液相層析串聯質譜儀分析。(With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.)	mg/kg	0.01	n.d.	-

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測試報告
Test Report

MITSUI HIGH-TEC INC.
10-1, KOMINE 2-CHOME, YAHATANISHI-KU KITAKYUSHU, 807-8588, JAPAN

測試項目 (Test Items)	測試方法 (Method)	單位 (Unit)	MDL	結果 (Result) No.1	限值 (Limit)
N-甲基全氟正辛磺醯胺 (N-Me-FOSA) (N-Methyl-Perfluorooctanesulfonamide (N-Me-FOSA)) (CAS No.: 31506-32-8)	參考CEN/TS 15968: 2010，以液相層析串聯質譜儀分析。(With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.)	mg/kg	0.01	n.d.	-
N-乙基全氟辛基磺醯胺乙醇 (N-Et-FOSE alcohol) (N-Ethyl-Perfluorooctanesulfonamidoethanol (N-Et-FOSE alcohol)) (CAS No.: 1691-99-2)	參考CEN/TS 15968: 2010，以液相層析串聯質譜儀分析。(With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.)	mg/kg	0.01	n.d.	-
N-甲基全氟辛基磺醯胺乙醇 (N-Me-FOSE alcohol) (N-Methyl-Perfluorooctanesulfonamidoethanol (N-Me-FOSE alcohol)) (CAS No.: 24448-09-7)	參考CEN/TS 15968: 2010，以液相層析串聯質譜儀分析。(With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.)	mg/kg	0.01	n.d.	-
全氟辛基磺醯胺及其鹽類 (PFOSA and its salts) (Perfluorooctanesulfonamide and its salts (PFOSA and its salts)) (CAS No.: 754-91-6 and its salts)	參考CEN/TS 15968: 2010，以液相層析串聯質譜儀分析。(With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.)	mg/kg	0.01	n.d.	-
全氟辛酸及其鹽類 (PFOA and its salts) (Perfluorooctanoic acid and its salts (PFOA and its salts)) (CAS No.: 335-67-1 and its salts)	參考CEN/TS 15968: 2010，以液相層析串聯質譜儀分析。(With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.)	mg/kg	0.01	n.d.	-
全氟辛酸甲酯 (Me-PFOA) (Methyl perfluorooctanoate (Me-PFOA)) (CAS No.: 376-27-2)	參考CEN/TS 15968: 2010，以氣相層析質譜儀分析。(With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.)	mg/kg	0.1	n.d.	-
全氟辛酸乙酯 (Et-PFOA) (Ethyl perfluorooctanoate (Et-PFOA)) (CAS No.: 3108-24-5)	參考CEN/TS 15968: 2010，以氣相層析質譜儀分析。(With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.)	mg/kg	0.1	n.d.	-
全氟辛基碘烷 (PFOI) (Perfluoro-1-iodooctane (PFOI)) (CAS No.: 507-63-1)	參考CEN/TS 15968: 2010，以氣相層析質譜儀分析。(With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.)	mg/kg	0.1	n.d.	-

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MITSUI HIGH-TEC INC.
10-1, KOMINE 2-CHOME, YAHATANISHI-KU KITAKYUSHU, 807-8588, JAPAN

測試項目 (Test Items)	測試方法 (Method)	單位 (Unit)	MDL	結果 (Result) No.1	限值 (Limit)
3-全氟庚基丙酸 (7:3 FTCA) (3-Perfluoroheptyl propanoic acid (7:3 FTCA)) (CAS No.: 812-70-4)	參考CEN/TS 15968: 2010，以液相層析串聯質譜儀分析。(With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.)	mg/kg	0.01	n.d.	-
1H,1H,2H,2H-全氟癸磺酸及其鹽類 (8:2 FTS and its salts) (1H,1H,2H,2H-Perfluorodecanesulfonic acid and its salts (8:2 FTS and its salts)) (CAS No.: 39108-34-4 and its salts)	參考CEN/TS 15968: 2010，以液相層析串聯質譜儀分析。(With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.)	mg/kg	0.01	n.d.	-
1H,1H,2H,2H-全氟-1-癸醇 (8:2 FTOH) (1H,1H,2H,2H-Perfluoro-1-decanol (8:2 FTOH)) (CAS No.: 678-39-7)	參考CEN/TS 15968: 2010，以氣相層析質譜儀及液相層析串聯質譜儀分析。(With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS and LC/MS/MS.)	mg/kg	0.1	n.d.	-
1H,1H,2H,2H-全氟癸基丙烯酸酯 (8:2 FTA) (1H,1H,2H,2H-Perfluorodecyl acrylate (8:2 FTA)) (CAS No.: 27905-45-9)	參考CEN/TS 15968: 2010，以氣相層析質譜儀分析。(With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.)	mg/kg	0.1	n.d.	-
1H,1H,2H,2H-全氟癸基甲基丙烯酸酯 (8:2 FTMA) (1H,1H,2H,2H-Perfluorodecyl methacrylate (8:2 FTMA)) (CAS No.: 1996-88-9)	參考CEN/TS 15968: 2010，以氣相層析質譜儀分析。(With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.)	mg/kg	0.1	n.d.	-
2H,2H-全氟癸酸及其鹽類 (H2PFDA and its salts) (2H,2H-Perfluorodecane acid and its salts (H2PFDA and its salts)) (CAS No.: 27854-31-5 and its salts)	參考CEN/TS 15968: 2010，以液相層析串聯質譜儀分析。(With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.)	mg/kg	0.01	n.d.	-
1H,1H,2H,2H-全氟癸基碘 (8:2 FTI) (1H,1H,2H,2H-Perfluorodecyl iodide (8:2 FTI)) (CAS No.: 2043-53-0)	參考CEN/TS 15968: 2010，以氣相層析質譜儀分析。(With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.)	mg/kg	0.1	n.d.	-

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測試報告
Test Report

MITSUI HIGH-TEC INC.
10-1, KOMINE 2-CHOME, YAHATANISHI-KU KITAKYUSHU, 807-8588, JAPAN

測試項目 (Test Items)	測試方法 (Method)	單位 (Unit)	MDL	結果 (Result) No.1	限值 (Limit)
1H,1H,2H,2H-全氟十七烷三甲基氧矽烷 (8:2 FTSi(OC_2H_5)$_3$) (1H,1H,2H,2H-Perfluorodecyltriethoxysilane (8:2 FTSi(OC_2H_5)$_3$)) (CAS No.: 101947-16-4)	參考CEN/TS 15968: 2010，以氣相層析質譜儀分析。(With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.)	mg/kg	0.1	n.d.	-
2H,2H,3H,3H-全氟癸酸及其鹽類 (4HPFUnA and its salts) (2H,2H,3H,3H-Perfluoroundecanoic acid and its salts (4HPFUnA and its salts)) (CAS No.: 34598-33-9 and its salts)	參考CEN/TS 15968: 2010，以液相層析串聯質譜儀分析。(With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.)	mg/kg	0.01	n.d.	-
1H,1H,2H-全氟-1-癸烯 (PFDE) (1H,1H,2H-Heptadecafluoro-1-decene (PFDE)) (CAS No.: 21652-58-4)	參考CEN/TS 15968: 2010，以氣相層析質譜儀分析。(With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.)	mg/kg	0.1	n.d.	-
雙(1H,1H,2H,2H-全氟癸基)磷酸酯及其鹽類 (8:2 diPAP and its salts) (Bis(1H,1H,2H,2H-Perfluorodecyl)phosphate and its salts (8:2 diPAP and its salts)) (CAS No.: 678-41-1 and its salts)	參考CEN/TS 15968: 2010，以液相層析串聯質譜儀分析。(With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.)	mg/kg	0.01	n.d.	-

備註(Note)：

1. mg/kg = ppm；0.1wt% = 0.1% = 1000ppm
2. MDL = Method Detection Limit (方法偵測極限值)
3. n.d. = Not Detected (未檢出)；小於MDL / Less than MDL
4. "-" = Not Regulated (無規格值)
5. **= Qualitative analysis (No Unit) 定性分析(無單位)
6. Negative = Undetectable 陰性(未偵測到/未檢出); Positive = Detectable 陽性(已偵測到/檢出)
7. (#2) =
   a. 當六價鉻結果大於0.13 μg/cm²，表示樣品表層含有六價鉻。(The sample is positive for Cr(VI) if the Cr(VI) concentration is greater than 0.13 μg/cm². The sample coating is considered to contain Cr(VI).)
   b. 當六價鉻結果為n.d. (濃度小於0.10 μg/cm²)，表示表層不含六價鉻。(The sample is negative for Cr(VI) if Cr(VI) is n.d. (concentration less than 0.10 μg/cm²). The coating is considered a non-Cr(VI) based coating)
   c. 當六價鉻結果介於 0.10 及 0.13 μg/cm² 時，無法確定塗層是否含有六價鉻。(The result between 0.10 μg/cm² and 0.13 μg/cm² is considered to be inconclusive - unavoidable coating variations may influence the determination.)

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MITSUI HIGH-TEC INC.
10-1, KOMINE 2-CHOME, YAHATANISHI-KU KITAKYUSHU, 807-8588, JAPAN

8. ▲：MDL是針對元素/測試化合物之評估。(The MDL was evaluated for element / tested substance.)
   換算公式 (Conversion Formula)：AX = A × F

AX	A	F
氧化雙三丁基錫 (Bis(tributyltin)oxide) (TBTO)	三丁基錫 (Tributyl Tin) (TBT)	1.0276

   參數換算表 (Parameter Conversion Table)：
   https://eecloud.sgs.com/Region_TW/DocDownload.aspx?name=Others
9. 除非另有說明，參照ILAC-G8:09/2019決定規則，採用簡單允收規則之二分法(w=0)進行符合性判定；根據此規則，符合性結果之判定係以測試結果與限值做比較。(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.)
10. 詳細法規說明請點以下網址連結。(Detail explanation of the regulation is available at the following link.)
    https://www.ecfr.gov/current/title-40/chapter-I/subchapter-R/part-751?toc=1
11. N/A(*1) : 若產品/成品為以下，則不適用 (The submitted sample is exempted from the regulated scope if it is anyone of the following) :
    - 航空或軍事用液壓油 (Hydraulic fluids for aviation or military)
    - 潤滑劑和油脂 (Lubricants and grease)
    - 汽車和航空航天器的新零件和替換零件 (New and replacement parts for motor and aerospace vehicles)
    - 在封閉系統中製造氰基丙烯酸酯粘合劑 (Manufacture of cyanoacrylate adhesives in closed systems)
    - 火車和船舶應用的專用發動機空氣濾清器 (Specialized engine air filters for locomotive and marine applications)
    - 從含PIP(3:1)的產品或成品中回收的塑料 (Plastic for recycling from PIP (3:1)-containing products or articles)
    - 從包含PIP(3:1)的產品或成品中回收的塑料製成的產品或成品 (Finished products or articles made of plastic recycled from PIP (3:1)-containing products or articles)
    - 於2026/10/31前分銷含PIP(3:1)的成品 (Distribution in commerce of PIP (3:1)-containing articles before October 31, 2026)
    - 電路板或線束等零件 (Circuit boards and wire harnesses, including but not limited to terminal and fuse covers, cable sleeves, casings, connectors, and tapes)
    - 用於修復或維護目的，未新添加PIP(3:1)的成品 (Articles that contain PIP (3:1), and where PIP (3:1) has not been newly added, for the purpose of repair or maintenance)
    - 用於半導體產業等新生產機台或新實驗室設備或新商用電子設備 (New manufacturing equipment, including in the semiconductor industry, for new heating, ventilation, air-conditioning, refrigeration, and water-heating equipment, new power generating equipment, new laboratory equipment, new commercial electronic equipment)

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MITSUI HIGH-TEC INC.
10-1, KOMINE 2-CHOME, YAHATANISHI-KU KITAKYUSHU, 807-8588, JAPAN

12. N/A(*2) : 若產品為非作為潤滑油中添加劑，則不適用。(The submitted sample is exempted from the regulated scope if it is not oil and lubricant additives.)
13. N/A(*3) : 若產品/成品為以下，則不適用 (The submitted sample is exempted from the regulated scope if it is anyone of the following) :
    從產品或成品進行加工和分銷含十溴二苯醚回收的塑料或者由這種再生塑料製成的含十溴二苯醚的產品或成品。
    (Exempts processing and distribution for recycling of DecaBDE-containing plastic from products or articles and DecaBDE-containing products or articles made from such recycled plastic.)

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MITSUI HIGH-TEC INC.
10-1, KOMINE 2-CHOME, YAHATANISHI-KU KITAKYUSHU, 807-8588, JAPAN

PFAS Remark：

現有PFAS定量技術是分析PFAS物質的特定結構，但同碳數族群之PFAS酸及鹽類物質，其可被辨識的特定結構相同，因此無法區別所分析的特定結構是來自酸或者鹽類，故測試結果為同碳數族群之PFAS之酸及鹽類物質的濃度總合。下表PFAS物質濃度皆已包含在測試結果中，相關資訊請參見下表：(下表列舉PFAS物質僅為範例，並不包含所有同碳數族群之PFAS鹽類。)
(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.))

群組名稱 (Group Name)	物質名稱 (Substance Name)	CAS No.
PFOS, 及其鹽&衍生物 (PFOS, its salts & derivatives)	全氟辛烷磺酸 (Perfluorooctane sulfonates) (PFOS)	1763-23-1
	全氟辛基磺酸鉀 (PFOS-K) Potassium perfluorooctanesulfonate (PFOS-K)	2795-39-3
	全氟辛基磺酸鋰 (PFOS-Li) Perfluorooctanesulfonic acid, lithium salt (PFOS-Li)	29457-72-5
	全氟辛基磺酸銨 (PFOS-NH_4) Perfluorooctanesulfonic acid, ammonium salt (PFOS-NH_4)	29081-56-9
	全氟辛基磺酸二乙醇銨 (PFOS-$NH(OH)_2$) Perfluorooctane sulfonate diethanolamine salt (PFOS-$NH(OH)_2$)	70225-14-8
	全氟辛基磺酸四乙基銨 (PFOS-$N(C_2H_5)_4$) Perfluorooctanesulfonic acid,tetraethylammonium salt (PFOS-$N(C_2H_5)_4$)	56773-42-3
	全氟辛基磺酸二癸二甲基銨 (PFOS-DDA) 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
	全氟辛基磺酸四丁基銨 (PFOS-$N(C_4H_9)_4$) TetrabutylAmmonium perfluorooctanesulfonate (PFOS-$N(C_4H_9)_4$)	111873-33-7
	全氟辛基磺醯氟 (POSF) Perfluorooctane sulfonyl fluoride (POSF)	307-35-7
	全氟辛基磺酸鎂 (PFOS-Mg) Perfluorooctanesulfonic acid, magnesium salt (PFOS-Mg)	91036-71-4
	全氟辛基磺酸鈉 (PFOS-Na) Perfluorooctanesulfonic acid, sodium salt (PFOS-Na)	4021-47-0

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MITSUI HIGH-TEC INC.
10-1, KOMINE 2-CHOME, YAHATANISHI-KU KITAKYUSHU, 807-8588, JAPAN

群組名稱 (Group Name)	物質名稱 (Substance Name)	CAS No.
PFOS, 及其鹽&衍生物 (PFOS, its salts & derivatives)	全氟辛烷磺酸哌啶 Piperidine 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluorooctanesulfonate	71463-74-6
	全氟辛烷磺酸鹽 Perfluorooctanesulfonate (anion)	45298-90-6
	全氟辛烷磺酸與 N,N-二乙基乙胺 (1:1) (PFOS-N(C_2H_5)$_3$) 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
	N,N,N-三甲基-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-十七氟-1-辛烷磺酸甲銨(1:1) (PFOS-N(CH_3)$_4$) 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
	1-五胺，N,N,N-三丙基-, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-十七氟-1-辛烷磺酸鹽(1:1) (PFOS-N(C_3H_7)$_3$(C_5H_{11})) 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-丁銨，N,N-二丁基-N-甲基-，1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8 ,8-十七氟-1-辛烷磺酸鹽 (1:1) (PFOS-N(C_4H_9)$_3$(CH_3)) 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
	碘鎓，雙[4-(1,1-二甲基乙基)苯基]-，1,1,2,2,3,3,4,4,5,5,6,6,7,7 ,8,8,8 -十七氟-1-辛烷磺酸鹽 (1:1) 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
	二苯基鋶(2,4,6-三甲基苯基)-, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8 ,8-十七氟-1-辛烷磺酸鹽 (1:1) 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
	吡啶鎓，1-十六烷基-，1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-十七氟-1-辛烷磺酸鹽 (1:1) 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

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MITSUI HIGH-TEC INC.
10-1, KOMINE 2-CHOME, YAHATANISHI-KU KITAKYUSHU, 807-8588, JAPAN

群組名稱 (Group Name)	物質名稱 (Substance Name)	CAS No.
PFOS, 及其鹽&衍生物 (PFOS, its salts & derivatives)	1-癸胺，N,N,N-三乙基-，1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-十七氟-1 -辛烷磺酸鹽(1:1) 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
	全氟辛烷磺酸四丁基鏻 (PFOS-P(C_4H_9)$_4$)) Tetrabutylphosphonium perfluorooctane sulfonate (PFOS-P(C_4H_9)$_4$))	2185049-59-4
	全氟辛烷磺酸二乙胺鹽 (PFOS-$C_4H_{11}N$) Perfluorooctanesulfonic acid diethylamine salt (PFOS-$C_4H_{11}N$)	2205029-08-7
	庚基二甲基{2-[(2-甲基丙-2-烯酰基)氧基]乙基}全氟辛烷磺酸氮紮鹽 (PFOS-$C_{15}H_{30}NO_2$) Heptyldimethyl{2-[(2-methylprop-2-enoyl)oxy]ethyl}azanium perfluorooctanesulfonate (PFOS-$C_{15}H_{30}NO_2$)	1203998-97-3
	1-辛烷磺酸，1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-十七氟-,1,1' -酸酐 (PFOSAN) 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
PFOSA, 及其鹽 (PFOSA, its salts)	全氟辛基磺醯胺 (Perfluorooctanesulfonamide) (PFOSA)	754-91-6
	全氟辛基磺醯胺鋰鹽 (1:1) (PFOSA-Li) Perfluorooctanesulfonamide lithium salt (1:1) (PFOSA-Li)	76752-79-9
	全氟辛基磺醯胺鈉鹽 (1:1) (PFOSA-Na) Perfluorooctanesulfonamide Sodium salt (1:1) (PFOSA-Na)	76752-78-8
	全氟辛基磺醯胺鉀鹽 (1:1) (PFOSA-K) Perfluorooctanesulfonamide Potassium salt (1:1) (PFOSA-K)	76752-70-0
	全氟辛基磺醯胺銨鹽 (1:1) (PFOSA-NH_4) Perfluorooctanesulfonamide Ammonium salt (1:1) (PFOSA-NH_4)	76752-72-2
	全氟辛基磺醯胺三乙胺的化合物(1:1) (PFOSA-$C_6H_{15}N$) heptadecafluorooctane-1-sulphonamide, compound with triethylamine(1:1) (PFOSA-$C_6H_{15}N$)	76752-82-4
PFOA, 及其鹽&衍生物 (PFOA, its salts & derivatives)	全氟辛酸 (Perfluorooctanoic acid) (PFOA)	335-67-1
	全氟辛酸鈉 (PFOA-Na) Sodium perfluorooctanoate (PFOA-Na)	335-95-5
	全氟辛酸鉀 (PFOA-K) Potassium perfluorooctanoate (PFOA-K)	2395-00-8
	全氟辛酸銀 (PFOA-Ag) Silver perfluorooctanote (PFOA-Ag)	335-93-3

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MITSUI HIGH-TEC INC.
10-1, KOMINE 2-CHOME, YAHATANISHI-KU KITAKYUSHU, 807-8588, JAPAN

群組名稱 (Group Name)	物質名稱 (Substance Name)	CAS No.
PFOA, 及其鹽&衍生物 (PFOA, its salts & derivatives)	全氟辛氟 (PFOA-F) Perfluorooctanoyl fluoride (PFOA-F)	335-66-0
	全氟辛酸銨 (APFO) Ammonium pentadecafluorooctanoate (APFO)	3825-26-1
	全氟辛酸鋰 (PFOA-Li) Lithium perfluorooctanoate (PFOA-Li)	17125-58-5
	全氟辛酸鈷 (PFOA-Co) Cobalt perfluorooctanoate (PFOA-Co)	35965-01-6
	全氟辛酸銫 (PFOA-Cs) Cesium perfluorooctanoate (PFOA-Cs)	17125-60-9
	全氟辛酸鉻 (PFOA-Cr(3^+)) 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
	全氟辛酸-哌嗪(2:1) PFOA-NH($C_4H_{10}N$) Pentadecafluorooctanoic acid--piperazine (2/1)PFOA-NH($C_4H_{10}N$)	423-52-9
	全氟辛酸鹽 Pentadecafluorooctanoate (anion)	45285-51-6
	全氟辛酸酐 Perfluorooctanoic Anhydride	33496-48-9
	乙銨，N,N,N-三乙基-, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-十五氟辛酸(1:1) 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
	全氟辛酸四甲銨鹽 Tetramethylammoniumperfluoroctanoat	32609-65-7
	1-丙銨，N,N,N-三丙基-, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-十五氟辛酸(1:1) 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
	辛酸，2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-十五氟-鉀鹽，水合物 (1:1:2) (PFOA-K(H_2O)$_2$) 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

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MITSUI HIGH-TEC INC.
10-1, KOMINE 2-CHOME, YAHATANISHI-KU KITAKYUSHU, 807-8588, JAPAN

群組名稱 (Group Name)	物質名稱 (Substance Name)	CAS No.
PFOA, 及其鹽&衍生物 (PFOA, its salts & derivatives)	辛酸，2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-十五氟-，化合物。與乙胺 (1:1) (PFOA-C_2H_7N) 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
	十五氟辛酸化合物與吡啶 (1:1) (9CI) (PFOA-C_5H_5N) Octanoic acid, pentadecafluoro-, compd. with pyridine (1:1) (9CI) (PFOA-C_5H_5N)	95658-47-2
	十五氟辛酸-1-苯基哌嗪(1:1) (PFOA-$C_{10}H_{14}N_2$) Pentadecafluorooctanoic acid- 1-phenylpiperazine(1:1) (PFOA-$C_{10}H_{14}N_2$)	1514-68-7
	1-辛胺，N,N,N-三甲基-，2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-十五氟辛酸 (1:1) (PFOA- $C_{11}H_{26}N$) 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
8:2 FTS, 及其鹽 (8:2 FTS, its salts)	1H,1H,2H,2H-全氟癸磺酸 (1H,1H,2H,2H-Perfluorodecanesulfonic acid) (8:2 FTS)	39108-34-4
	1H, 1H, 2H, 2H-全氟癸磺酸鉀 (8:2 FTS-K) 1H,1H,2H,2H-Perfluorodencane sulfonate acid Potassium salt (8:2 FTS-K)	438237-73-1
	1H, 1H, 2H, 2H-全氟癸磺酸銨 (8:2 FTS-NH_4) 1H,1H,2H,2H-Perfluorodencane sulfonate acid Ammonium salt (8:2 FTS-NH_4)	149724-40-3
	1H, 1H, 2H, 2H-全氟癸磺酸鈉 (8:2 FTS-Na) 1H,1H,2H,2H-Perfluorodencane sulfonate acid Sodium salt (8:2 FTS-Na)	27619-96-1
	1H,1H,2H,2H-全氟癸磺酸鹽 (8:2 FTS(anion)) 8: 2 Fluorotelomer sulfonate (anion) (8:2 FTS(anion))	481071-78-7
H2PFDA, 及其鹽 (H2PFDA, its salts)	2H,2H-全氟癸酸 (2H,2H-Perfluorodecane acid) (H2PFDA)	27854-31-5
	四丁基磷2H,2H-全氟癸酸酯 Tetrabutylphosphonium 2H,2H-Perfluorodecanoate	882489-14-7
4HPFUnA, 及其鹽 (4HPFUnA, its salts)	2H,2H,3H,3H-全氟癸酸 (2H,2H,3H,3H-Perfluoroundecanoic Acid) (4HPFUnA)	34598-33-9
	2H,2H,3H,3H-全氟癸酸鉀 (H4PFUnA-K) Potassium 2H,2H,3H,3H-Perfluoroundecanoate (H4PFUnA-K)	83310-58-1
	2H,2H,3H,3H-全氟癸酸鋰 (H4PFUnA-Li) Lithium 3-(perfluorooctyl)propanoate (H4PFUnA-Li)	67304-23-8

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MITSUI HIGH-TEC INC.
10-1, KOMINE 2-CHOME, YAHATANISHI-KU KITAKYUSHU, 807-8588, JAPAN

群組名稱 (Group Name)	物質名稱 (Substance Name)	CAS No.
8:2diPAP, 及其鹽 (8:2diPAP, its salts)	雙(1H,1H,2H,2H-全氟癸基)磷酸酯 (Bis(1H,1H,2H,2H-Perfluorodecyl)phosphate) (8:2diPAP)	678-41-1
	雙(1H,1H,2H,2H-全氟癸基)磷酸酯鈉 (8:2diPAP-Na) Sodium bis(1H,1H,2H,2H-perfluorodecyl)phosphate (8:2diPAP-Na)	114519-85-6
	雙(2-羥乙基)雙((全氟辛基)乙基)磷酸氫銨 Bis(2-hydroxyethyl)ammonium bis((perfluorooctyl)ethyl) hydrogen phosphate	57677-97-1
	雙[2-(全氟辛基)乙基]磷酸銨鹽 (8:2diPAP-NH_4) Bis[2-(perfluorooctyl)ethyl] phosphate ammonium salt (8:2diPAP-NH_4)	93776-20-6
	8:2 氟調聚物磷酸二酯離子 8:2 Fluorotelomer phosphate diester ion	1411713-91-1

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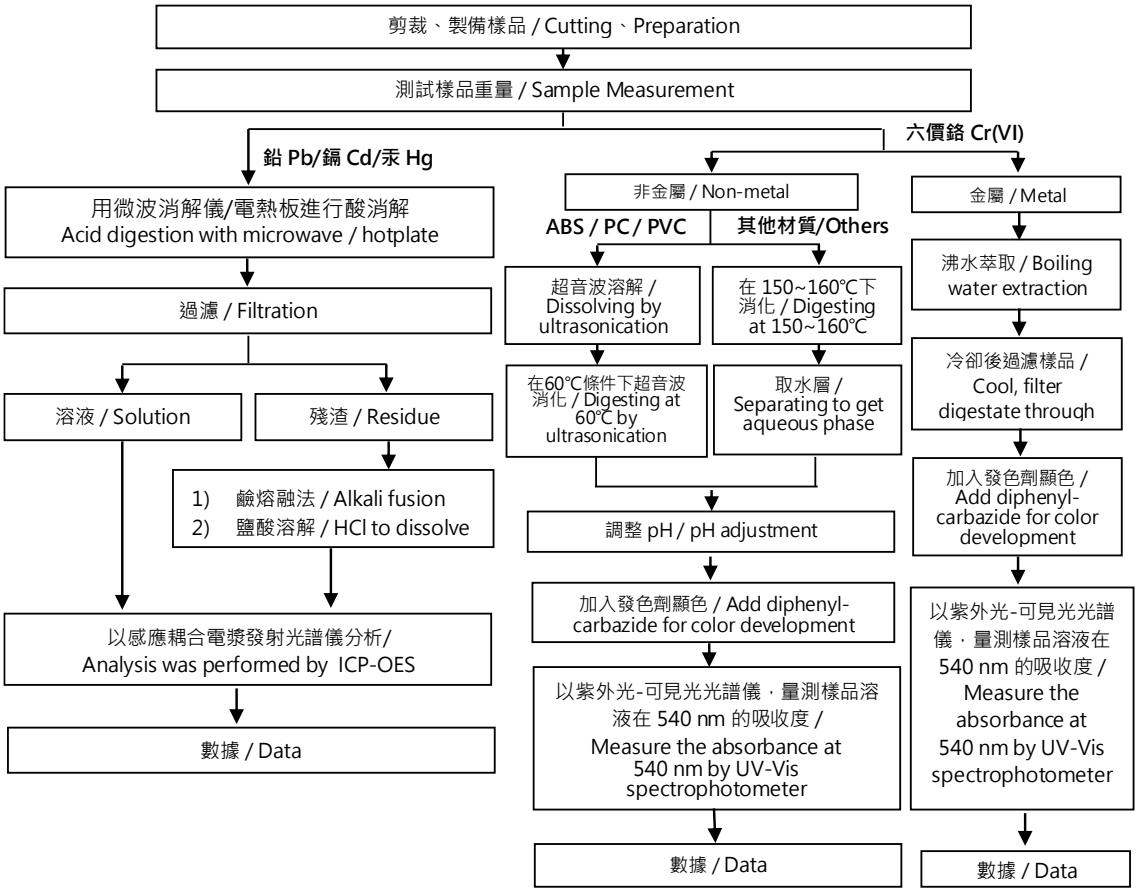
MITSUI HIGH-TEC INC.
10-1, KOMINE 2-CHOME, YAHATANISHI-KU KITAKYUSHU, 807-8588, JAPAN

重金屬流程圖 / Analytical flow chart of Heavy Metal

根據以下的流程圖之條件，樣品已完全溶解。（六價鉻測試方法除外）
These samples were dissolved totally by pre-conditioning method according to below flow chart.
（Cr^{6+} test method excluded）



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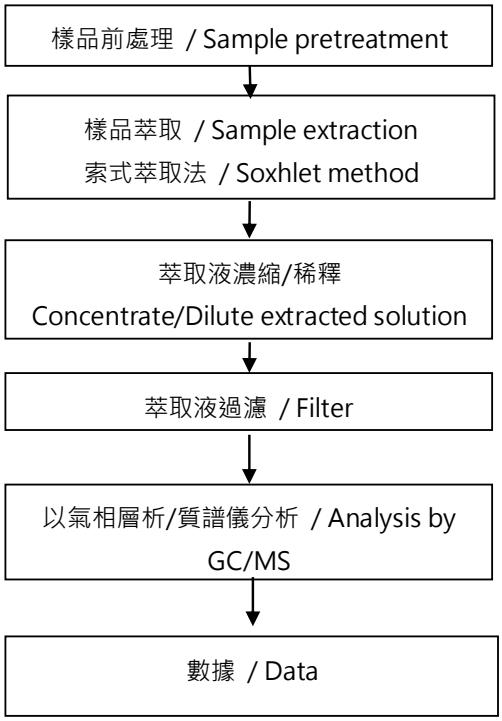
MITSUI HIGH-TEC INC.
10-1, KOMINE 2-CHOME, YAHATANISHI-KU KITAKYUSHU, 807-8588, JAPAN

多溴聯苯/多溴聯苯醚 分析流程圖 / PBB/PBDE analytical FLOW CHART



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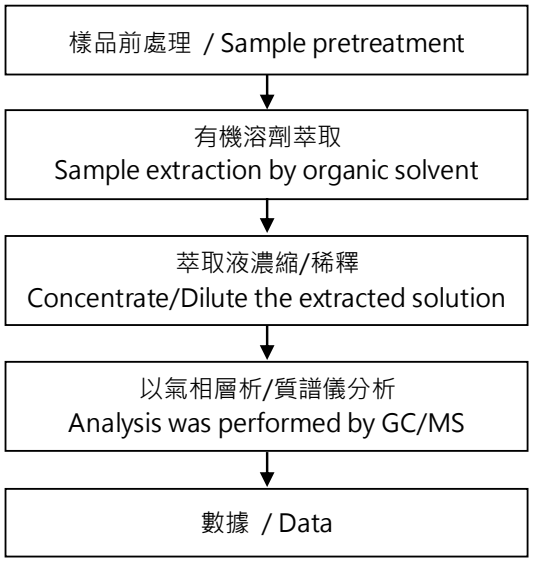
MITSUI HIGH-TEC INC.
10-1, KOMINE 2-CHOME, YAHATANISHI-KU KITAKYUSHU, 807-8588, JAPAN

分析流程圖 / Analytical flow chart

【適用於：多氯聯苯、多氯奈、多氯三聯苯、滅蟻靈、氯化石蠟、DBBT】

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



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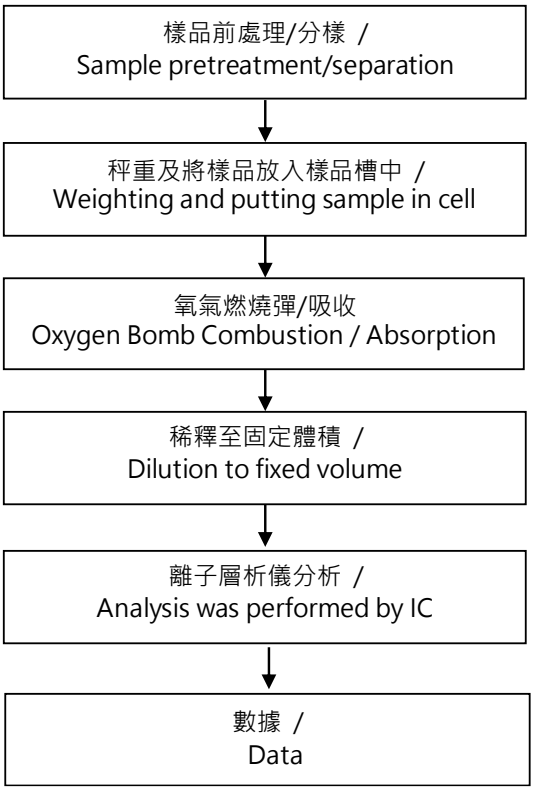
MITSUI HIGH-TEC INC.
10-1, KOMINE 2-CHOME, YAHATANISHI-KU KITAKYUSHU, 807-8588, JAPAN

鹵素分析流程圖 / Analytical flow chart of Halogen



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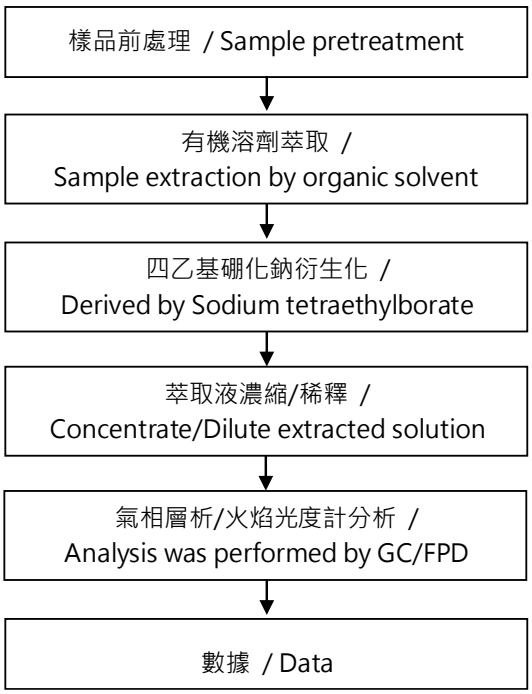
MITSUI HIGH-TEC INC.
10-1, KOMINE 2-CHOME, YAHATANISHI-KU KITAKYUSHU, 807-8588, JAPAN

有機錫分析流程圖 / Analytical flow chart - Organic-Tin



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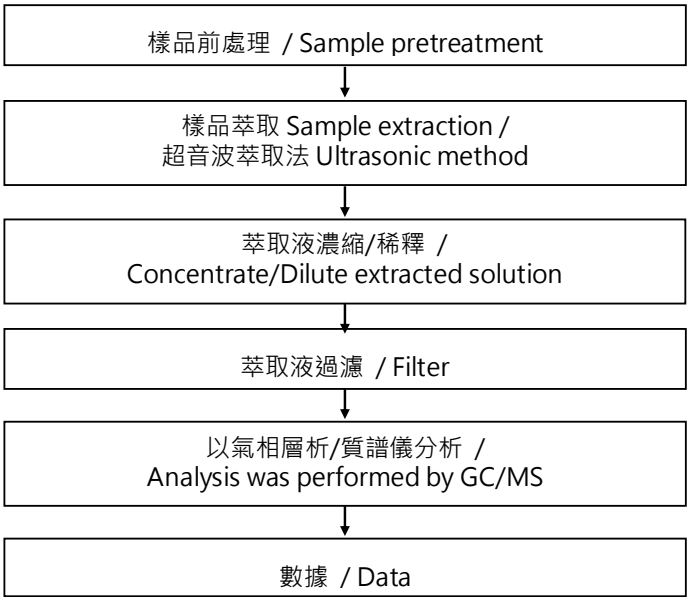
MITSUI HIGH-TEC INC.
10-1, KOMINE 2-CHOME, YAHATANISHI-KU KITAKYUSHU, 807-8588, JAPAN

六溴環十二烷分析流程圖 / Analytical flow chart - HBCDD



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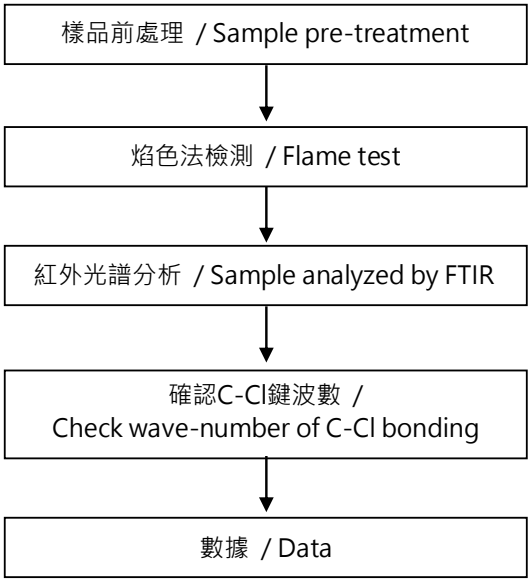
MITSUI HIGH-TEC INC.
10-1, KOMINE 2-CHOME, YAHATANISHI-KU KITAKYUSHU, 807-8588, JAPAN

聚氯乙烯物質判定分析流程圖 / Analysis flow chart - PVC



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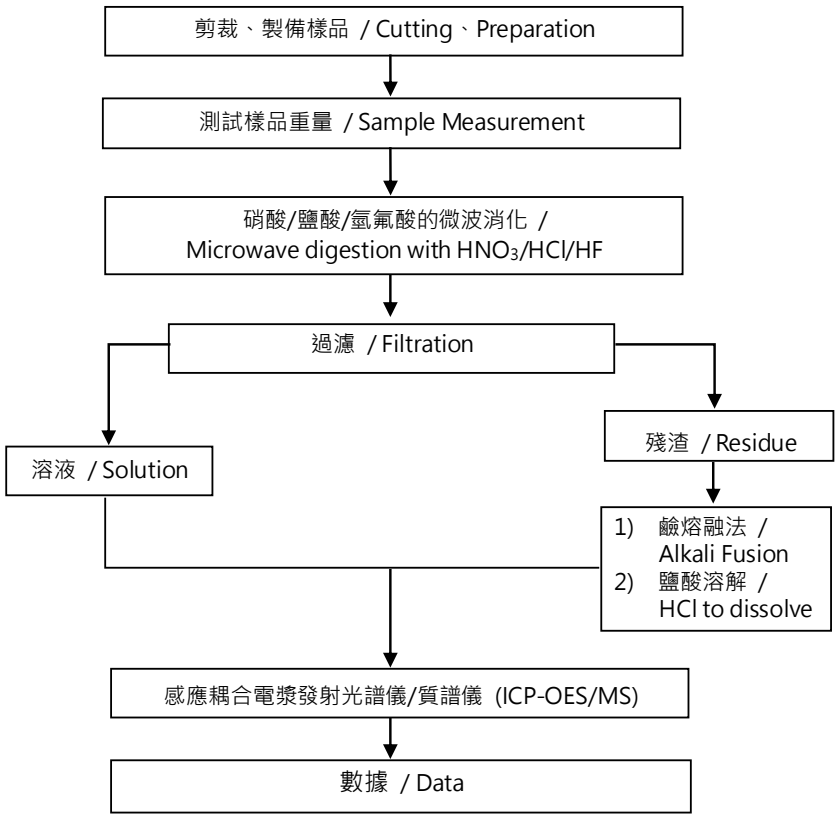
MITSUI HIGH-TEC INC.
10-1, KOMINE 2-CHOME, YAHATANISHI-KU KITAKYUSHU, 807-8588, JAPAN

元素(含重金屬)分析流程圖 / Analytical flow chart of Elements (Heavy metal included)

根據以下的流程圖之條件，樣品已完全溶解。

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

【參考方法/Reference method：US EPA 3051、US EPA 3052】



* US EPA 3051 方法未添加氫氟酸 / US EPA 3051 method does not add HF.

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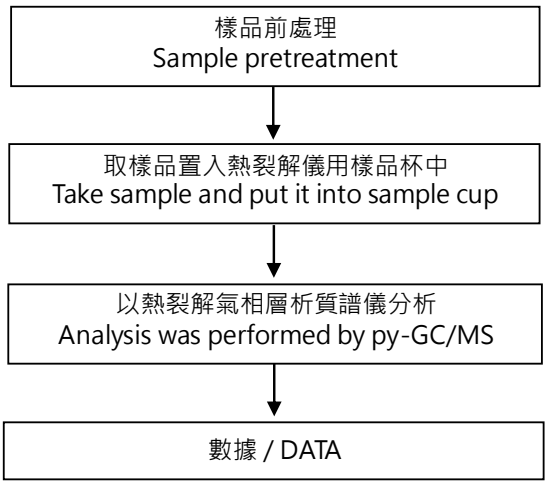
MITSUI HIGH-TEC INC.
10-1, KOMINE 2-CHOME, YAHATANISHI-KU KITAKYUSHU, 807-8588, JAPAN

紅磷分析流程 / Analytical flow chart - Red phosphorus



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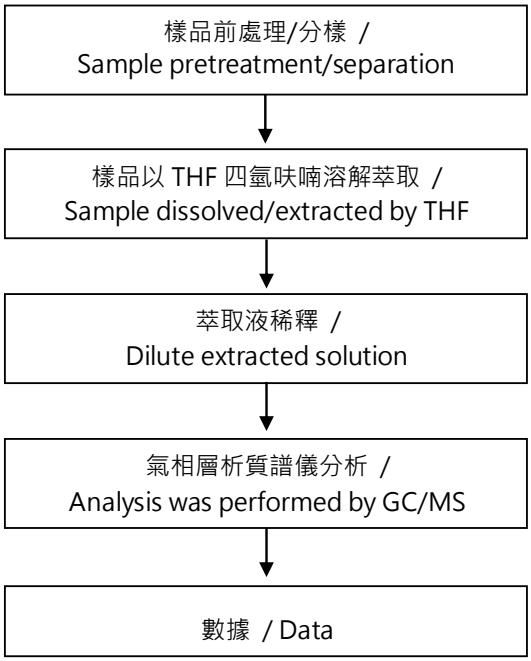
MITSUI HIGH-TEC INC.
10-1, KOMINE 2-CHOME, YAHATANISHI-KU KITAKYUSHU, 807-8588, JAPAN

可塑劑分析流程圖 / Analytical flow chart of phthalate content

【測試方法/Test method: IEC 62321-8】



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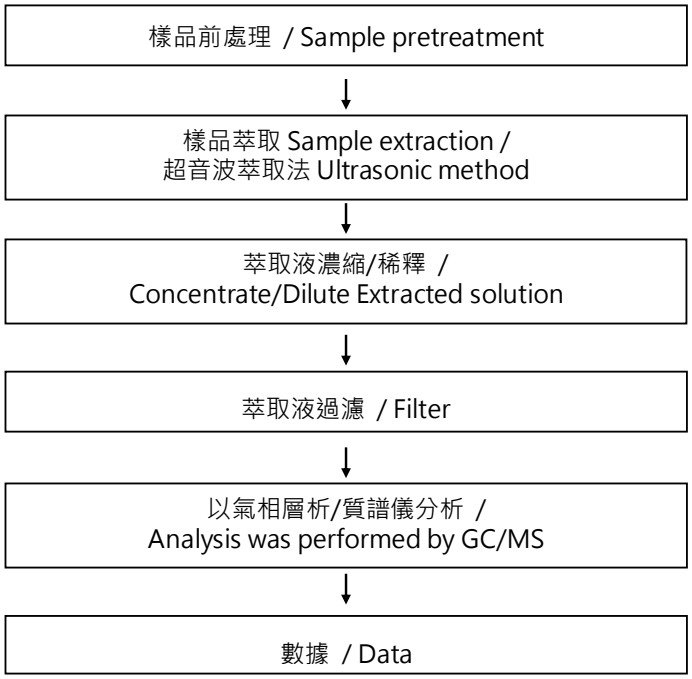
MITSUI HIGH-TEC INC.
10-1, KOMINE 2-CHOME, YAHATANISHI-KU KITAKYUSHU, 807-8588, JAPAN

持久性生物累積毒性物質 (PBTs) 分析流程圖 /
Analytical flow chart - Persistent, Bioaccumulative, Toxic (PBTs)



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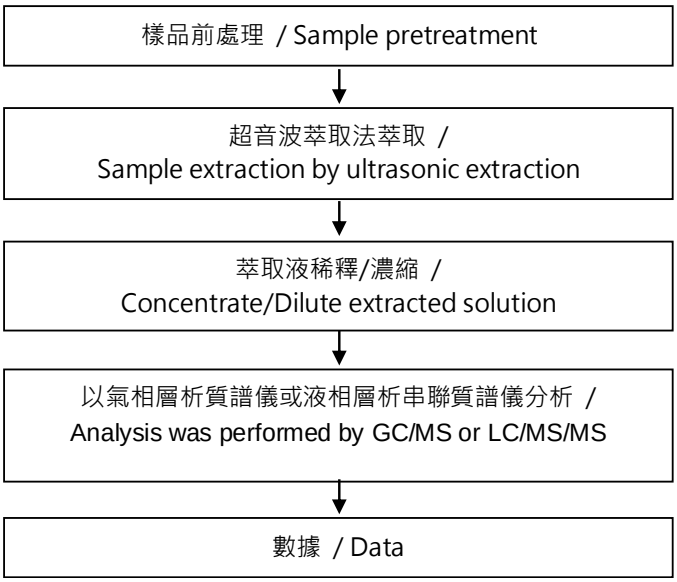
MITSUI HIGH-TEC INC.
10-1, KOMINE 2-CHOME, YAHATANISHI-KU KITAKYUSHU, 807-8588, JAPAN

全氟化合物(包含全氟辛酸/全氟辛烷磺酸/其相關化合物等等)分析流程圖 / Analytical flow chart – PFAS (including PFOA/PFOS/its related compound, etc.)



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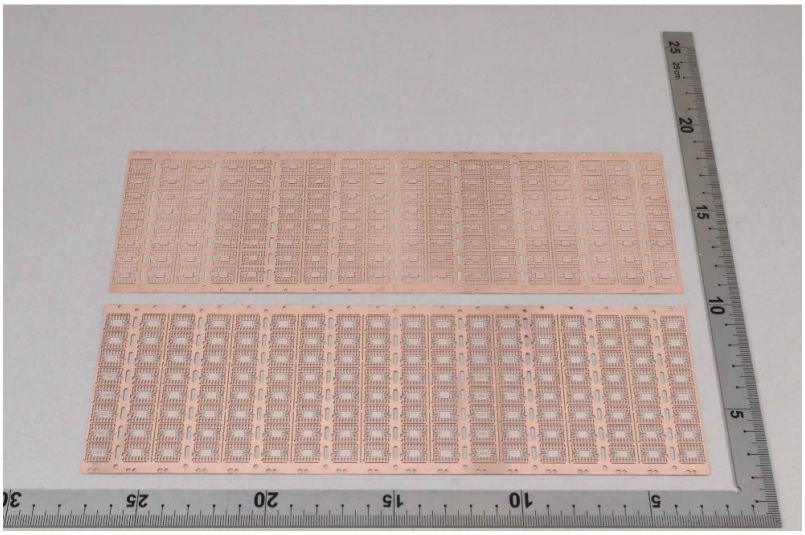
測試報告
Test Report

MITSUI HIGH-TEC INC.
10-1, KOMINE 2-CHOME, YAHATANISHI-KU KITAKYUSHU, 807-8588, JAPAN

*** 照片中如有箭頭標示，則表示為實際檢測之樣品/部位. ***
(The tested sample / part is marked by an arrow if it's shown on the photo.)

EKR25100968



** 報告結尾 (End of Report) **

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Test Report

No.: EKR25200102M07 Date: 12-Feb-2025

SUMITOMO BAKELITE SINGAPORE PTE CO., LTD.
NO. 1 SENOKO SOUTH ROAD, SINGAPORE 758069

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

Sample Submitted By : SUMITOMO BAKELITE SINGAPORE PTE CO., LTD.
Sample Name : EPOXY MOLDING COMPOUND
Style/Item No. : EME-G600 TYPE

==========

Sample Receiving Date : 03-Feb-2025
Testing Period : 03-Feb-2025 to 07-Feb-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) 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.

Ray Chang, Ph.D./Department Manager
Signed for and on behalf of
SGS TAIWAN LTD.
Chemical Laboratory-Kaohsiung

PIN CODE: E3BFD54F

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SUMITOMO BAKELITE SINGAPORE PTE CO., LTD.
NO. 1 SENOKO SOUTH ROAD, SINGAPORE 758069

Test Part Description

No.1 : BLACK EPOXY MOLDING COMPOUND

Test Result(s)

Test Item(s)	Method	Unit	MDL	Result	Limit
				No.1	
Cadmium (Cd)	With reference to IEC 62321-5: 2013, analysis was performed by ICP-OES.	mg/kg	2	n.d.	100
Lead (Pb)	With reference to IEC 62321-5: 2013, analysis was performed by ICP-OES.	mg/kg	2	n.d.	1000
Mercury (Hg)	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)	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	With reference to IEC 62321-6: 2015, analysis was performed by GC/MS.	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 No.1	Limit
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.	-
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.	-
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.	-
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)		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.	-
Perfluorooctane sulfonates and its salts (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.	-
Perfluorooctanoic acid and its salts (PFOA and its salts) (CAS No.: 335-67-1 and its salts)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
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.	-
Phthalates					
Dibutyl phthalate (DBP)	With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.	mg/kg	50	n.d.	1000
Butyl benzyl phthalate (BBP)	With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.	mg/kg	50	n.d.	1000
Diisobutyl phthalate (DIBP)	With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.	mg/kg	50	n.d.	1000
Di-(2-ethylhexyl) phthalate (DEHP)	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.	-

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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
5. 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.
6. This is the additional test report of EKR25200102.

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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.
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-$NH(OH)_2$)	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
	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

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NO. 1 SENOKO SOUTH ROAD, SINGAPORE 758069

Group Name	Substance Name	CAS No.
PFOS, its salts & derivatives	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
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
	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

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NO. 1 SENOKO SOUTH ROAD, SINGAPORE 758069

Group Name	Substance Name	CAS No.
PFOA, its salts & derivatives	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

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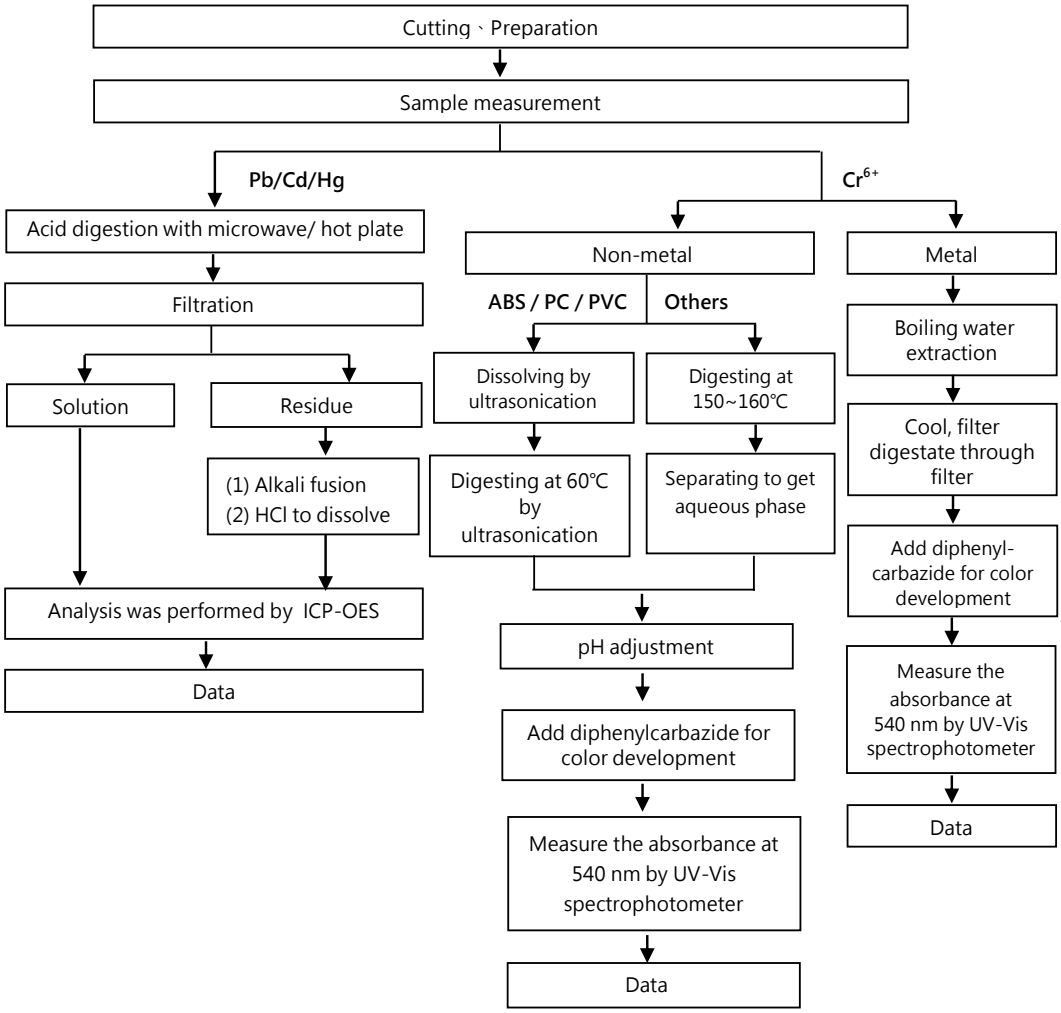
NO. 1 SENOKO SOUTH ROAD, SINGAPORE 758069

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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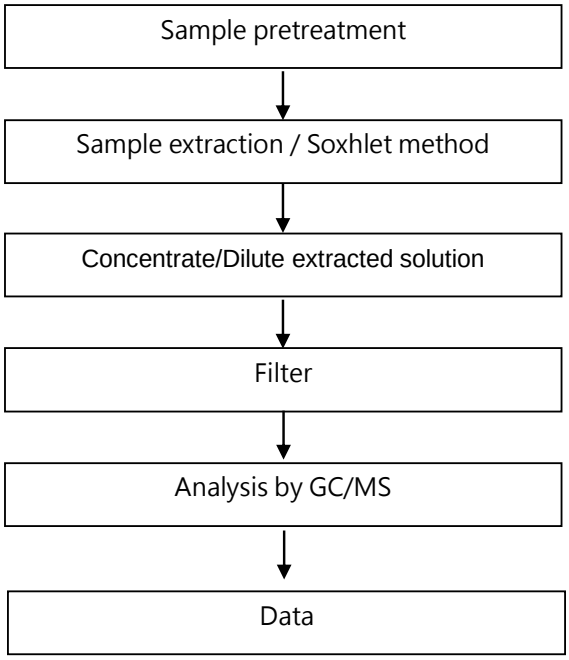
PBB/PBDE analytical FLOW CHART



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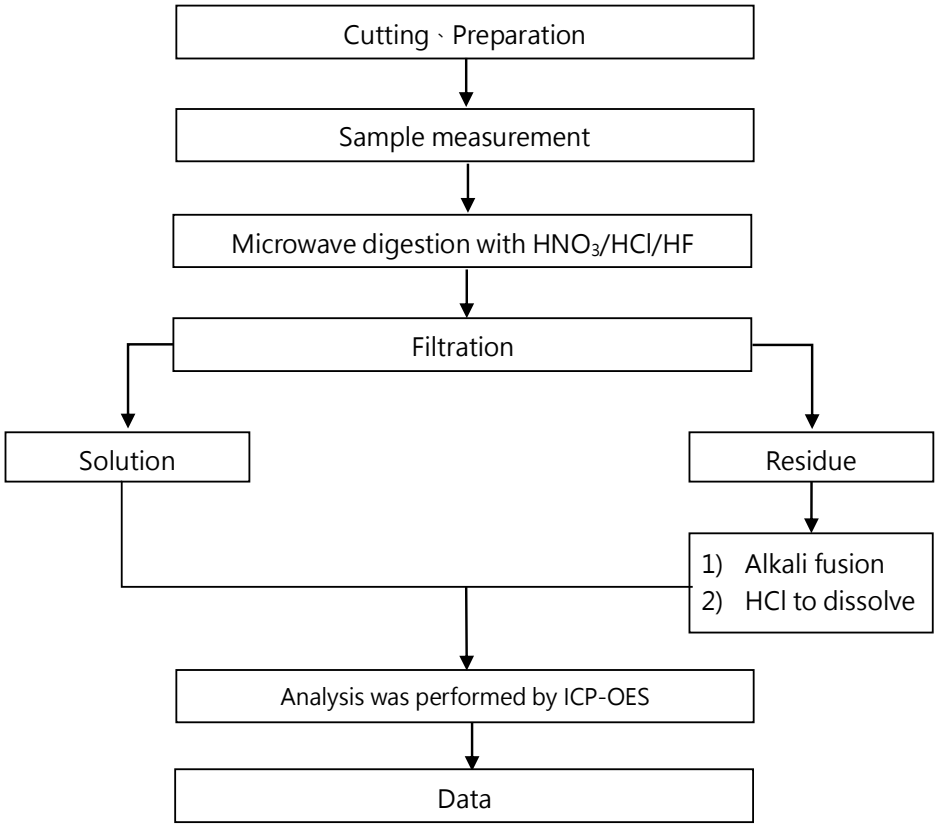
Analytical flow chart of elements (Heavy metal included)

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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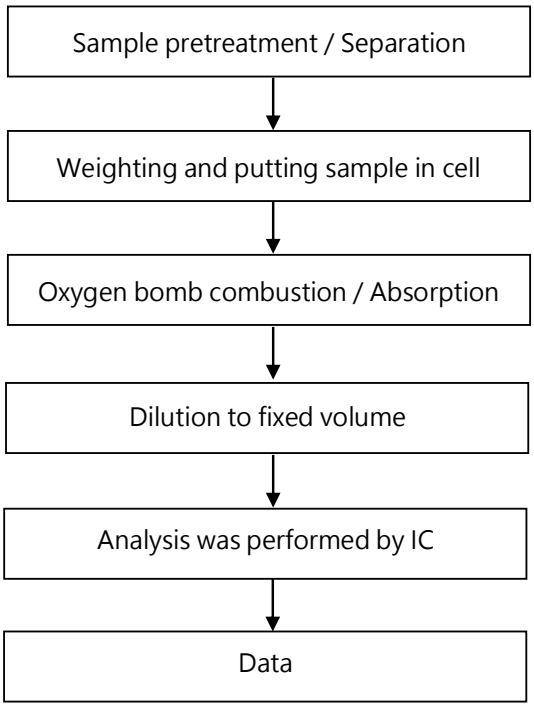
Analytical flow chart - Halogen



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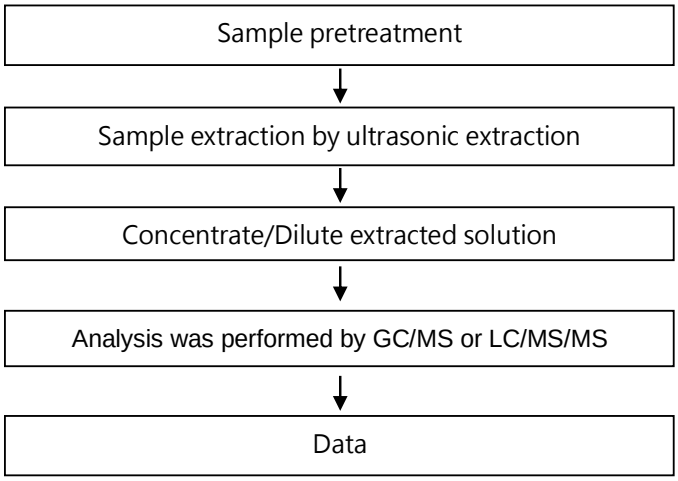
Analytical flow chart – PFAS (including PFOA/PFOS/its related compound, etc.)



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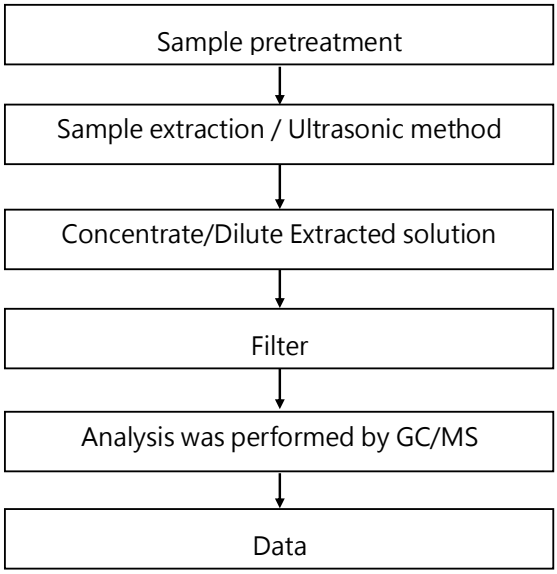
SUMITOMO BAKELITE SINGAPORE PTE CO., LTD.
NO. 1 SENOKO SOUTH ROAD, SINGAPORE 758069

Analytical flow chart - HBCDD



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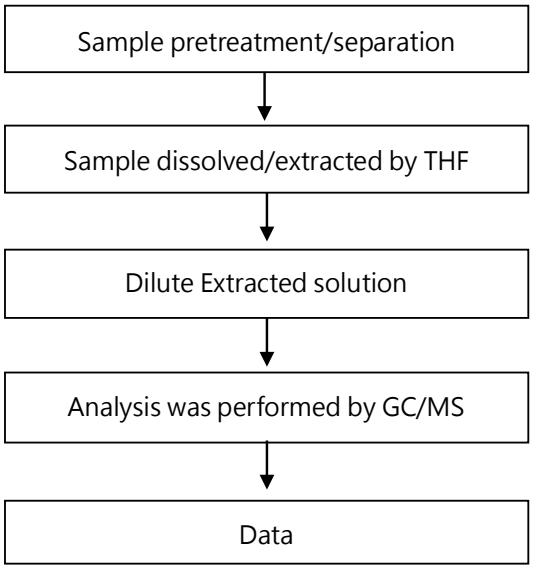
SUMITOMO BAKELITE SINGAPORE PTE CO., LTD.
NO. 1 SENOKO SOUTH ROAD, SINGAPORE 758069

Analytical flow chart of phthalate content

【Test method: IEC 62321-8】



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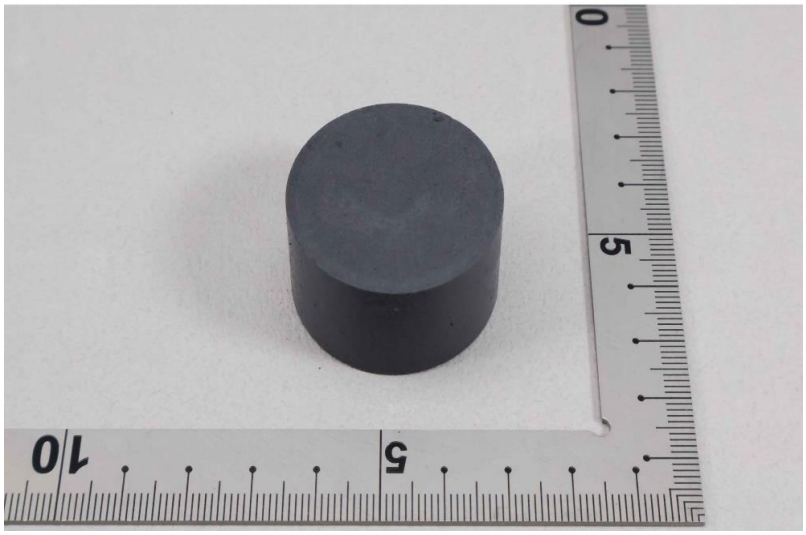
NO. 1 SENOKO SOUTH ROAD, SINGAPORE 758069

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

EKR25200102



** End of Report **

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SAMM 077

TEST REPORT: No. CPSA/250151145-CB70617
Job Ref. C&P/2025-01-16-004

REPORTED DATE: 23-January-2025

SYTRON PTE LTD
25 MANDAI ESTATE, INNOVATION PLACE,
#04-09 TOWER 1, SINGAPORE 729930

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

SAMPLE DESCRIPTION	:	S-238, PURE TIN ANODE BALL
SAMPLE RECEIVED	:	16-January-2025
TESTING PERIOD	:	16-January-2025 to 22-January-2025

TEST REQUESTED	:	Selected test(s) as requested by customer
TEST METHOD	:	-PLEASE REFER TO NEXT PAGE(S)-
TEST RESULTS	:	-PLEASE REFER TO NEXT PAGE(S)-

SIGNED FOR AND ON BEHALF OF
SGS (MALAYSIA) SDN BHD

TAY SIAM PINE
TECHNICAL MANAGER
IKM NO. M/3452/6047/11/12

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SGS (Malaysia) Sdn.Bhd.
(Company No. 10871-T)
Lot 4, Persiaran Jubli Perak,Seksyen 22, 40300 Shah Alam, Selangor Darul Ehsan, Malaysia.
t +6(03) 7627 0080 **f** +6 (03) 7627 0082 www.sgs.com

SAMM 077

TEST REPORT: No. CPSA/250151145-CB70617 **REPORTED DATE:** 23-January-2025

Job Ref. C&P/2025-01-16-004

TEST RESULTS:

Test Part Description

Sample Description: -PLEASE REFER TO PAGE 1-

RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU

Test Parameter(s):	Unit	Test Method	Result	MDL	Limit
Cadmium (Cd)	mg/kg	With reference to IEC 62321-5:2013, determination of Cadmium by ICP-OES.	N.D.	2	Max 100
Lead (Pb)	mg/kg	With reference to IEC 62321-5:2013, determination of Lead by ICP-OES.	13	2	Max 1000
Mercury (Hg)	mg/kg	With reference to IEC 62321-4:2013+A1:2017, determination of Mercury by ICP-OES.	N.D.	2	Max 1000
Hexavalent Chromium (CrVI)	µg/cm²	With reference to IEC 62321-7-1:2015, determination of Hexavalent Chromium by Colorimetric Method using UV-Vis.	N.D.	0.10	-
Sum of PBBs	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	-	Max 1000
Monobromobiphenyl	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Dibromobiphenyl	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Tribromobiphenyl	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Tetrabromobiphenyl	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Pentabromobiphenyl	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Hexabromobiphenyl	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Heptabromobiphenyl	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Octabromobiphenyl	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Nonabromobiphenyl	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Decabromobiphenyl	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-

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SAMM 077

TEST REPORT: No. CPSA/250151145-CB70617 **REPORTED DATE:** 23-January-2025

Job Ref. C&P/2025-01-16-004

TEST RESULTS:

Test Part Description

Sample Description: -PLEASE REFER TO PAGE 1-

RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU

Test Parameter(s):	Unit	Test Method	Result	MDL	Limit
Sum of PBDEs	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	-	Max 1000
Monobromodiphenyl ether	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Dibromodiphenyl ether	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Tribromodiphenyl ether	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Tetrabromodiphenyl ether	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Pentabromodiphenyl ether	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Hexabromodiphenyl ether	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Heptabromodiphenyl ether	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Octabromodiphenyl ether	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Nonabromodiphenyl ether	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Decabromodiphenyl ether	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-

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TAY SIAM PINE
TECHNICAL MANAGER
IKM NO. M/3452/6047/11/12

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SAMM 077

TEST REPORT: No. CPSA/250151145-CB70617 **REPORTED DATE:** 23-January-2025

Job Ref. C&P/2025-01-16-004

TEST RESULTS:

Test Part Description

Sample Description: -PLEASE REFER TO PAGE 1-

RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU

Test Parameter(s):	Unit	Test Method	Result	MDL	Limit
Dibutyl phthalate (DBP) (CAS No. 84-74-2)	mg/kg	With reference to IEC 62321-8:2017, determination of phthalates by GC-MS.	N.D.	50	Max 1000
Di(2-ethylhexyl) phthalate (DEHP) (CAS No. 117-81-7)	mg/kg	With reference to IEC 62321-8:2017, determination of phthalates by GC-MS.	N.D.	50	Max 1000
Benzyl butyl phthalate (BBP) (CAS No. 85-68-7)	mg/kg	With reference to IEC 62321-8:2017, determination of phthalates by GC-MS.	N.D.	50	Max 1000
Diisobutyl phthalate (DIBP) (CAS No. 84-69-5)	mg/kg	With reference to IEC 62321-8:2017, determination of phthalates by GC-MS.	N.D.	50	Max 1000

Note : (a) mg/kg = ppm ; (0.1wt% = 1000ppm)
(b) N.D. = Not Detected
(c) MDL = Method Detection Limit
(d) - = Not regulated
(e) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.
(f) IEC 62321 series is equivalent to EN 62321 series.

[redacted]

(g) a. The sample is positive for CrVI if the CrVI concentration is greater than 0.13 µg/cm². The sample coating is considered to contain CrVI.
b. The sample is negative for CrVI if CrVI is N.D. (concentration less than 0.10 µg/cm²). The coating is considered a non-CrVI based coating.
c. The result between 0.10 µg/cm² and 0.13 µg/cm² is considered to be inconclusive - unavoidable coating variations may influence the determination.
For corrosion protection coatings on metals: Information on storage conditions and production date of the tested sample is unavailable and thus results of Cr(VI) represent status of the sample at the time of testing.
(h)The restriction of DEHP, BBP, DBP and DIBP shall apply to medical devices, including in vitro medical devices, and monitoring and control instruments, including industrial monitoring and control

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SAMM 077

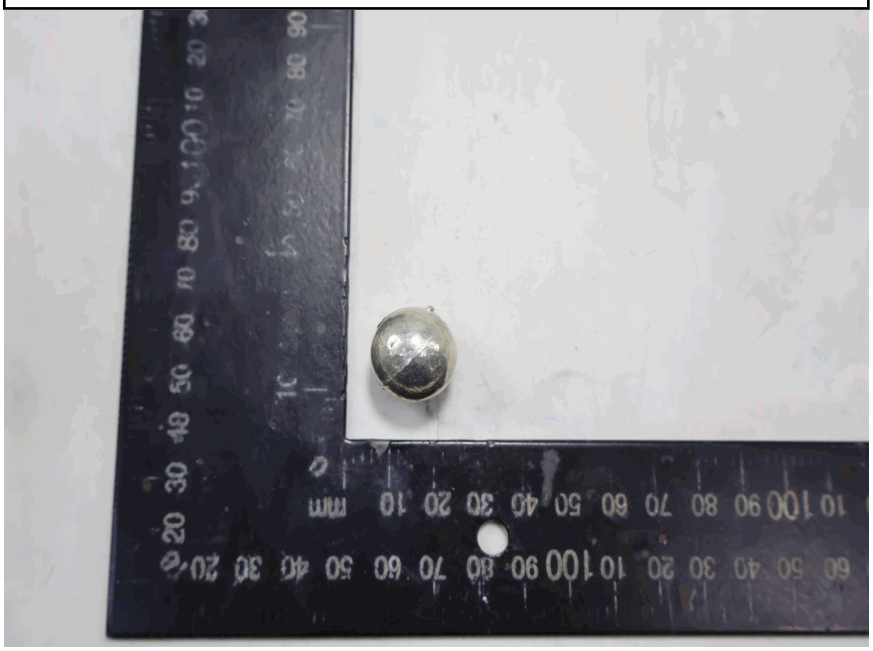
TEST REPORT: No. CPSA/250151145-CB70617
Job Ref. C&P/2025-01-16-004

REPORTED DATE: 23-January-2025

Test Part Description :

Sample Description: -PLEASE REFER TO PAGE 1-

SYTRON PTE LTD
CB70617



SGS authenticate the photo on original report only

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TAY SIAM PINE
TECHNICAL MANAGER
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TEST REPORT: No. CPSA/250151145-CB70617 **REPORTED DATE:** 23-January-2025

Job Ref. C&P/2025-01-16-004

1. DETERMINATION OF CADMIUM CONTENT BY IEC 62321-5 2013

Sample Receiving and Registration
↓
Sample Preparation
↓
Weigh sample (0.2-0.5g) into digestion vessel
↓
Acid digestion (Hotplate)
↓
"Totally Dissolved"
↓
Filtration
↓
Analyses by ICP

2. DETERMINATION OF LEAD CONTENT BY IEC 62321-5 2013

Sample Receiving and Registration
↓
Sample Preparation
↓
Weigh sample (0.2-0.5g) into digestion vessel
↓
Acid digestion (Hotplate)
↓
"Totally Dissolved"
↓
Filtration
↓
Analyses by ICP

3. DETERMINATION OF MERCURY CONTENT BY IEC 62321-4 2013/AMD1 2017

Sample Receiving and Registration
↓
Sample Preparation
↓
Weigh sample (0.1-0.5g) into digestion vessel
↓
Acid digestion (Hotplate)
↓
"Totally Dissolved"
↓
Filtration
↓
Analyses by ICP

4. DETERMINATION OF HEXAVALENT CHROMIUM BY IEC 62321-7-1 2015

Sample Receiving and Registration
↓
Sample Preparation
↓
Boiling-water-extraction
↓
Analyses by UV- Spectrophotometer
↓
Test Report

5. DETERMINATION OF PBB/PBDE WITH GC-MS BY IEC 62321-6 2015

Sample Preparation
↓
Weigh sample (0.5-4.0g) into extraction thimble
↓
Soxhlet Extraction with Toluene
↓
Filter through 0.45 um membrane filter
↓
Analyses by GC-MS (with appropriate dilution)

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TAY SIAM PINE
TECHNICAL MANAGER
IKM NO. M/3452/6047/11/12

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TEST REPORT: No. CPSA/250151145-CB70617 **REPORTED DATE:** 23-January-2025

Job Ref. C&P/2025-01-16-004

DETERMINATION OF PHTHALATES WITH GC-MS BY IEC 62321-8:2017

Sample Cutting / Preparation

↓

Sample Measurement

↓

Solvent Extraction

↓

Concentrate / Dilute extracted solution

↓

GC-MS analysis

↓

DATA

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*** End of test report ***

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t +6(03) 7627 0080 **f** +6 (03) 7627 0082 www.sgs.com

TEST REPORT: No. CPSA/240841139-CB58865 **REPORTED DATE:** 20 Aug 2024

TANAKA ELECTRONICS (MALAYSIA) SDN. BHD.

PLOT 11, PHASE IV, BAYAN LEPAS FIZ,
11900, PENANG, MALAYSIA.

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

SAMPLE DESCRIPTION	:	Au BONDING WIRE
JOB REF.	:	C&P/2024-08-07-009
SAMPLE RECEIVED	:	07 Aug 2024
TESTING PERIOD	:	07 Aug 2024 to 20 Aug 2024

TEST REQUESTED	:	Selected test(s) as requested by customer
TEST METHOD	:	-PLEASE REFER TO NEXT PAGE(S)-
TEST RESULTS	:	-PLEASE REFER TO NEXT PAGE(S)-
REMARKS	:	1) This report supersedes report no.: CPSA/240841001-CB58865

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SGS (MALAYSIA) SDN BHD

.....
TAY SIAM PINE
TECHNICAL MANAGER
IKM No. M/3452/6047/11/12

CHECK REPORT
DIPH9NXL

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TEST REPORT: No. CPSA/240841139-CB58865 **REPORTED DATE:** 20 Aug 2024

TEST RESULTS:

Test Part Description

Sample Description: -PLEASE REFER TO PAGE 1-

RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU

Test Parameter(s):	Unit	Test Method	Result	MDL	Limit
Lead (Pb)	mg/kg	With reference to IEC 62321-5:2013, determination of Lead by ICP-OES.	N.D.	2	Max 1000
Cadmium (Cd)	mg/kg	With reference to IEC 62321-5:2013, determination of Cadmium by ICP-OES.	N.D.	2	Max 100
Mercury (Hg)	mg/kg	With reference to IEC 62321-4:2013+A1:2017, determination of Mercury by ICP-OES.	N.D.	2	Max 1000
Hexavalent Chromium (CrVI)	µg/cm²	With reference to IEC 62321-7-1:2015, determination of Hexavalent Chromium by Colorimetric Method using UV-Vis.	N.D.	0.10	-
Hexavalent Chromium (CrVI)	mg/kg	With reference to JIS H 8625, determination of Hexavalent Chromium by Colorimetric Method using UV-Vis.	N.D.	2	Max 1000
Sum of PBBs	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	-	Max 1000
Monobromobiphenyl	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Dibromobiphenyl	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Tribromobiphenyl	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Tetrabromobiphenyl	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Pentabromobiphenyl	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Hexabromobiphenyl	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Heptabromobiphenyl	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Octabromobiphenyl	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Nonabromobiphenyl	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Decabromobiphenyl	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-

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TEST REPORT: No. CPSA/240841139-CB58865 **REPORTED DATE:** 20 Aug 2024

TEST RESULTS:

Test Part Description

Sample Description: -PLEASE REFER TO PAGE 1-

RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU

Test Parameter(s):	Unit	Test Method	Result	MDL	Limit
Sum of PBDEs	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	-	Max 1000
Monobromodiphenyl ether	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Dibromodiphenyl ether	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Tribromodiphenyl ether	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Tetrabromodiphenyl ether	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Pentabromodiphenyl ether	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Hexabromodiphenyl ether	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Heptabromodiphenyl ether	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Octabromodiphenyl ether	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Nonabromodiphenyl ether	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Decabromodiphenyl ether	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-

Note : (a) mg/kg = ppm ; ug/kg = ppb (0.01 mg/kg = 10 ug/kg); 0.1wt% = 1000ppm
(b) N.D. = Not Detected
(c) MDL = Method Detection Limit
(d) - = Not regulated
(e) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.
(f) IEC 62321 series is equivalent to EN 62321 series
(g) a. The sample is positive for CrVI if the CrVI concentration is greater than 0.13 µg/cm². The sample coating is considered to contain CrVI.
b. The sample is negative for CrVI if CrVI is N.D. (concentration less than 0.10 µg/cm²). The coating is considered a non-CrVI based coating.
c. The result between 0.10 µg/cm² and 0.13 µg/cm² is considered to be inconclusive - unavoidable coating variations may influence the determination.
For corrosion protection coatings on metals: Information on storage conditions and production date of the tested sample is unavailable and thus results of Cr(VI) represent status of the sample at the time of testing.

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TEST REPORT: No. CPSA/240841139-CB58865 **REPORTED DATE:** 20 Aug 2024

TEST RESULTS:

Test Part Description

Sample Description: -PLEASE REFER TO PAGE 1-

Optional: RoHS Directive 2011/65/EU, priority substances

Test Parameter(s):	Unit	Test Method	Result	MDL
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))	mg/kg	In-house method, SGS-TM-RSTS-O-012, with reference to IEC 62321-6:2015. Analysis was performed by GCMS	N.D.	5

Note : (a) Reference Information: Directive 2011/65/EU recasting RoHS directive 2002/95/EC: Hexabromocyclododecane (HBCDD), Bis (2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) are considered as a priority for risk evaluation and substance restriction.
(b) N.D. = Not Detected

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TEST REPORT: No. CPSA/240841139-CB58865 **REPORTED DATE:** 20 Aug 2024

TEST RESULTS:

Test Part Description

Sample Description: -PLEASE REFER TO PAGE 1-

RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU

Test Parameter(s):	Unit	Test Method	Result	MDL	Limit
Dibutyl phthalate (DBP) (CAS No. 84-74-2)	mg/kg	With reference to IEC 62321-8:2017, determination of phthalates by GC-MS.	N.D.	50	Max 1000
Di(2-ethylhexyl) phthalate (DEHP) (CAS No. 117-81-7)	mg/kg	With reference to IEC 62321-8:2017, determination of phthalates by GC-MS.	N.D.	50	Max 1000
Benzyl butyl phthalate (BBP) (CAS No. 85-68-7)	mg/kg	With reference to IEC 62321-8:2017, determination of phthalates by GC-MS.	N.D.	50	Max 1000
Diisobutyl phthalate (DIBP) (CAS No. 84-69-5)	mg/kg	With reference to IEC 62321-8:2017, determination of phthalates by GC-MS.	N.D.	50	Max 1000

Note : (a) mg/kg = ppm ; ug/kg = ppb (0.01 mg/kg = 10 ug/kg); 0.1wt% = 1000ppm
(b) N.D. = Not Detected
(c) MDL = Method Detection Limit
(d) - = Not regulated
(e) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.
(f) IEC 62321 series is equivalent to EN 62321 series
(g) The restriction of DEHP, BBP, DBP and DIBP shall apply to medical devices, including in vitro medical devices, and monitoring and control instruments, including industrial monitoring and control instruments, from 22 July 2021.

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TEST RESULTS:

Test Part Description

Sample Description: -PLEASE REFER TO PAGE 1-

Test Parameter(s):	Unit	Test Method	Result	MDL
Dimethyl Fumarate (CAS No.:624-49-7)	mg/kg	With reference to US EPA 3550C method. Analysis was performed by GC/MS.	N.D.	0.1
Polychlorinated biphenyls(PCB)	mg/kg	In-house method SGS-TM-RSTS-O-015 with reference to EPA 3550C. Analysis was performed by GC-MS and/or GC-ECD	N.D.	0.5
Polychlorinated naphthalene(PCN)	mg/kg	In-house method SGS-TM-RSTS-O-015 with reference to EPA 3550C. Analysis was performed by GC-MS and/or GC-ECD	N.D.	5
Polychlorinated terphenyls(PCT)	mg/kg	In-house method SGS-TM-RSTS-O-015 with reference to EPA 3550C. Analysis was performed by GC-MS and/or GC-ECD	N.D.	5
Alkanes,C10-13,chloro(SCCP) (CAS No. :85535-84-8	mg/kg	With reference to EPA 3550C. Analysis was performed by GC-ECD	N.D.	100
Polyvinylchloride (PVC)	-	Analysis was performed by FTIR and FLAME Test	NEGATIVE	-
Antimony (Sb)	mg/kg	With reference to EPA Method 3052, and performed by ICP-OES.	N.D.	2
Beryllium (Be)	mg/kg	With reference to EPA Method 3052, and performed by ICP-OES.	7	2
Magnesium (Mg)	mg/kg	With reference to EPA Method 3052, and performed by ICP-OES.	N.D.	20
Arsenic (As)	mg/kg	With reference to EPA Method 3052, and performed by ICP-OES.	N.D.	2
Phosphorus, P	mg/kg	With reference to EPA3052,performed by ICP-OES	N.D.	20
Perfluorooctanoic acid (PFOA)	%	With reference to US EPA 3550C:2007. Analysis was performed by HPLC-MS	N.D.	0.001
Perfluorooctanesulfonic acid (PFOS)	%	With reference to US EPA 3550C:2007. Analysis was performed by HPLC-MS	N.D.	0.001

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Halogen	-	-	-	-
Halogen-Fluorine (F)	mg/kg	With reference to BS EN 14582:2016, analysis performed by IC method for Fluorine content.	N.D.	50
Halogen-Chlorine (Cl)	mg/kg	With reference to BS EN 14582:2016, analysis performed by IC method for Chlorine content.	N.D.	50
Halogen-Bromine (Br)	mg/kg	With reference to BS EN 14582:2016, analysis performed by IC method for Bromine content.	N.D.	50
Halogen-Iodine (I)	mg/kg	With reference to BS EN 14582:2016, analysis performed by IC method for Iodine content.	N.D.	50

Note : (a) mg/kg = ppm ; ug/kg = ppb (0.01 mg/kg = 10 ug/kg); 0.1wt% = 1000ppm
(b) N.D. = Not Detected
(c) MDL = Method Detection Limit
(d) Negative = Undetectable / Positive = Detectable

TEST RESULTS:

Test Part Description

Sample Description: -PLEASE REFER TO PAGE 1-

Test Parameter(s):	Unit	Test Method	Result	MDL
Phthalates	-	-	-	-
Di-n-octyl phthalate (DNOP) (CAS No. 117-84-0)	mg/kg	With reference to IEC 62321-8:2017, determination of phthalates by GC-MS.	N.D.	50
Di-isononyl phthalate (DINP) (CAS No.: 2855-3-12-0;68515-48-0)	mg/kg	With reference to IEC 62321-8:2017, determination of phthalates by GC-MS.	N.D.	100
Di-n-hexyl phthalate (DnHP/DHEXP) (CAS No. 84-75-3)	mg/kg	In-house SGS-TM-RSTS-O-003 with reference to IEC 62321-8:2017. Analysis was performed by GC-MS.	N.D.	50
Bis (2-methoxyethyl) phthalate (DMEP) (CAS No.:117-82-8)	mg/kg	In-house SGS-TM-RSTS-O-003 with reference to IEC 62321-8:2017. Analysis was performed by GC-MS.	N.D.	50
Di-isodecyl phthalate (DIDP) (CAS No.: 2676-1-40-0,68515-49-1)	mg/kg	With reference to IEC 62321-8:2017, determination of phthalates by GC-MS.	N.D.	100

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(c) MDL = Method Detection Limit

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TEST REPORT: No. CPSA/240841139-CB58865 **REPORTED DATE:** 20 Aug 2024

Test Part Description :

Sample Description: -PLEASE REFER TO PAGE 1-

TANAKA ELECTRONICS (MALAYSIA) SDN. BHD.
CB58865



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1. DETERMINATION OF CADMIUM CONTENT BY IEC 62321-5 2013

Sample Receiving and Registration
↓
Sample Preparation
↓
Weigh sample (0.2-0.5g) into digestion vessel
↓
Acid digestion (Hotplate)
↓
"Totally Dissolved"
↓
Filtration
↓
Analyses by ICP

2. DETERMINATION OF LEAD CONTENT BY IEC 62321-5 2013

Sample Receiving and Registration
↓
Sample Preparation
↓
Weigh sample (0.2-0.5g) into digestion vessel
↓
Acid digestion (Hotplate)
↓
"Totally Dissolved"
↓
Filtration
↓
Analyses by ICP

3. DETERMINATION OF MERCURY CONTENT BY IEC 62321-4 2013/AMD1 2017

Sample Receiving and Registration
↓
Sample Preparation
↓
Weigh sample (0.1-0.5g) into digestion vessel
↓
Acid digestion (Hotplate)
↓
"Totally Dissolved"
↓
Filtration
↓
Analyses by ICP

4. DETERMINATION OF HEXAVALENT CHROMIUM BY IEC 62321-7-1 2015

Sample Receiving and Registration
↓
Sample Preparation
↓
Boiling-water-extraction
↓
Analyses by UV- Spectrophotometer
↓
Test Report

5. DETERMINATION OF PBB/PBDE WITH GC-MS BY IEC 62321-6 2015

Sample Preparation
↓
Weigh sample (0.5-4.0g) into extraction thimble
↓
Soxhlet Extraction with Toluene
↓
Filter through 0.45 um membrane filter
↓
Analyses by GC-MS (with appropriate dilution)

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IKM No. M/3452/6047/11/12

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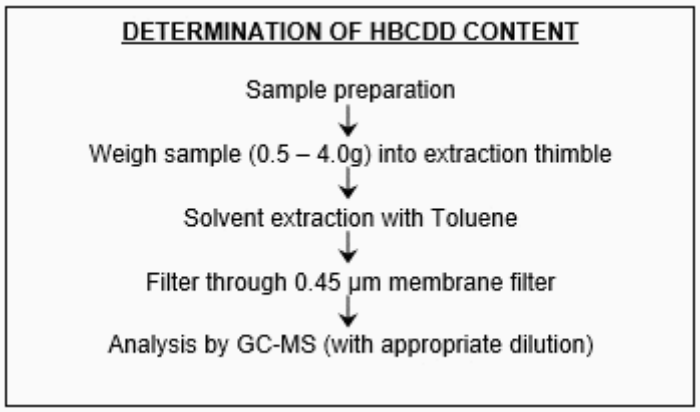

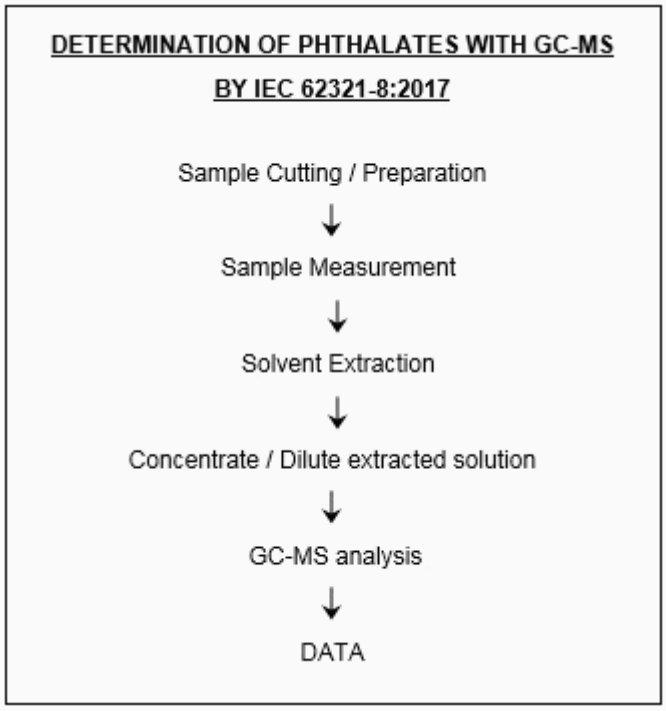

SIGNED FOR AND ON BEHALF OF
SGS (MALAYSIA) SDN BHD

.....

TAY SIAM PINE
TECHNICAL MANAGER
IKM No. M/3452/6047/11/12

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MICROWAVE ASSISTED ACID DIGESTION OF SILICEOUS AND ORGANICALLY BASED METRICES BY US EPA 3052

Sample Preparation
↓
Weight sample (0.2-0.5g) into digestion vessel
↓
Acid digestion
↓
"Totally Dissolved"
↓
Filtration
↓
Analyses by ICP

PVC DETECTION WITH FTIR

Sample preparation
(apply ATR for analysis)
↓
FT-IR Scanning
↓
Report

DETERMINATION OF HALOGEN CONTENT

Sample pre-treatment
↓
Weighting and putting sample in cell
↓
Combustion / Absorption
↓
Dilution to fixed volume
↓
Analyses by IC

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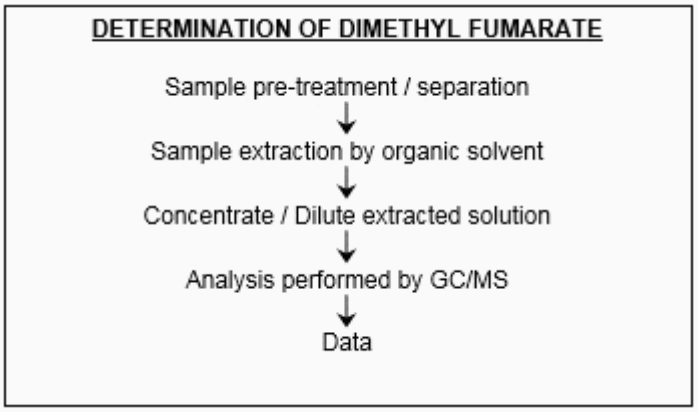

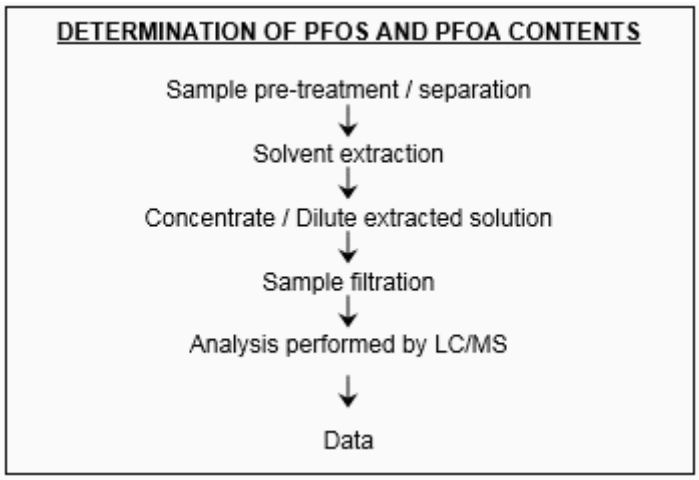

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TECHNICAL MANAGER
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*** End of test report ***

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Test Report

No.: ETR24C00159 Date: 18-Dec-2024

Taiwan Semiconductor Manufacturing Company, Ltd.
8, Li-Hsin Rd. 6, Hsinchu Science Park, Hsinchu 300-096, Taiwan, R.O.C.

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

Sample Submitted By : Taiwan Semiconductor Manufacturing Company, Ltd.
Sample Name : TSMC Fab 3 Finished Wafer

==========

Sample Receiving Date : 02-Dec-2024
Testing Period : 02-Dec-2024 to 18-Dec-2024

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, the sample(s) was/ were tested for 5 PBTs with reference to TSCA section 6 and 40 CFR Part 751. Please refer to result table for testing items.
(3) As requested by the client, the risk of specific PFAS in the selected sample is evaluated. The total amounts of evaluated PFAS are 477 items, concluding 145 tested items and 332 listed items (see PFAS Remark).
(4) 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.
(2) Based on the performed tests on submitted sample(s), the test results of PBTs comply with the limits as set by TSCA section 6 and 40 CFR Part 751.

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

CHECK REPORT
PIN CODE: F4D5AB48

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Taiwan Semiconductor Manufacturing Company, Ltd.
8, Li-Hsin Rd. 6, Hsinchu Science Park, Hsinchu 300-096, Taiwan, R.O.C.

Test Part Description

No.1 : WAFER

Test Result(s)

Test Item(s)	Method	Unit	MDL	Result	Limit
				No.1	
Cadmium (Cd)	With reference to IEC 62321-5: 2013, analysis was performed by ICP-OES.	mg/kg	2	n.d.	100
Lead (Pb)	With reference to IEC 62321-5: 2013, analysis was performed by ICP-OES.	mg/kg	2	n.d.	1000
Mercury (Hg)	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)	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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Taiwan Semiconductor Manufacturing Company, Ltd.
8, Li-Hsin Rd. 6, Hsinchu Science Park, Hsinchu 300-096, Taiwan, R.O.C.

Test Item(s)	Method	Unit	MDL	Result	Limit
				No.1	
Butyl benzyl phthalate (BBP)	With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.	mg/kg	50	n.d.	1000
Dibutyl phthalate (DBP)	With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.	mg/kg	50	n.d.	1000
Di-(2-ethylhexyl) phthalate (DEHP)	With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.	mg/kg	50	n.d.	1000
Diisobutyl phthalate (DIBP)	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.	-
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.	-
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.	-
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.	-

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Test Item(s)	Method	Unit	MDL	Result	Limit
				No.1	
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.	-
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.	-
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.	-
Dioctyl 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.	-
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)		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.	-

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Test Item(s)	Method	Unit	MDL	Result No.1	Limit
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)		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.	-
o-anisidine (CAS No.: 90-04-0)		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.	-
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	-
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.	-
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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Test Item(s)	Method	Unit	MDL	Result No.1	Limit
Chlorofluorocarbons (CFCs)					
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.	-
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.	-
Hydrochlorofluorocarbons (HCFCs)					
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-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.	-

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Test Item(s)	Method	Unit	MDL	Result No.1	Limit
HCFC-234 (CAS No.: 425-94-5)	With reference to US EPA 5021A: 2014, analysis was performed by GC/MS.	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.	-
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.	-
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 (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-244B1 (C3H3F4Br)		mg/kg	1	n.d.	-
HBFC-243B2 (C3H3F3Br2)		mg/kg	1	n.d.	-

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Test Item(s)	Method	Unit	MDL	Result No.1	Limit
HBFC-242B3 (C3H3F2Br3)	With reference to US EPA 5021A: 2014, analysis was performed by GC/MS.	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.	-
HBFC-251B1		mg/kg	1	n.d.	-

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Test Item(s)	Method	Unit	MDL	Result No.1	Limit
Hydrofluorocarbon (HFCs)					
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 (C2H3F3)		mg/kg	1	n.d.	-
HFC-143a (C2H3F3)		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.	-
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.	-
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.	-
Perfluorohexane (CAS No.: 355-42-0)		mg/kg	1	n.d.	-

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Test Item(s)	Method	Unit	MDL	Result No.1	Limit
Perfluoro-n-pentane (CAS No.: 678-26-2)	With reference to US EPA 5021A: 2014, analysis was performed by GC/MS.	mg/kg	1	n.d.	-
Perfluorodecalin (CAS No.: 306-94-5)		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.	-
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 (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.	-

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Test Item(s)	Method	Unit	MDL	Result No.1	Limit
1,1-Dichloroethane (CAS No.: 75-34-3)	With reference to US EPA 5021A: 2014, analysis was performed by GC/MS.	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.	-
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.	-
Decabromodiphenyl ether (DecaBDE) (CAS No.: 1163-19-5)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	5	n.d.	1000 / N/A(*3)
Phenol, isopropylated, phosphate (3:1) (PIP 3:1) (CAS No.: 68937-41-7)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	5	n.d.	1000 / N/A(*1)
2,4,6-Tris(tert-butyl)phenol (2,4,6-TTBP) (CAS No.: 732-26-3)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	5	n.d.	3000 / N/A(*2)
Pentachlorothiophenol (PCTP) (CAS No.: 133-49-3)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	5	n.d.	10000
Hexachlorobutadiene (HCBD) (CAS No.: 87-68-3)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	5	n.d.	Prohibited
PFAS					
PFHxA and its salts					
Perfluorohexane acid and its salts (PFHxA and its salts) (CAS No.: 307-24-4 and its salts)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
PFHxA related compounds					
1H,1H,2H,2H-Perfluoro-1-octanol (6:2FTOH) (CAS No.: 647-42-7)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS and LC/MS/MS.	mg/kg	0.1	n.d.	-
1H,1H,2H,2H-Perfluorooctylacrylate (6:2FTA) (CAS No.: 17527-29-6)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	0.1	n.d.	-

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Test Item(s)	Method	Unit	MDL	Result	Limit
				No.1	
1H,1H,2H,2H-Perfluorooctyl methacrylate (6:2 FTMAC) (CAS No.: 2144-53-8)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	0.1	n.d.	-
1H,1H,2H,2H-Perfluorooctanesulphonic acid and its salts (6:2 FTS and its salts) (CAS No.: 27619-97-2 and its salts)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
1,1,1,2,2,3,3,4,4,5,5,6,6-tridecafluoro-8-iodooctane (6:2 FTI) (CAS No.: 2043-57-4)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	0.1	n.d.	-
Perfluorohexyl iodide (PFHxI) (CAS No.: 355-43-1)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	0.2	n.d.	-
n-(4,4,5,5,6,6,7,7,8,8,9,9,9-tridecafluorononyl)iodoacetamide (CAS No.: 852527-50-5)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
Perfluorooctyl triethoxysilane (POTS) (CAS No.: 51851-37-7)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	0.1	n.d.	-
1H,1H,2H,2H-Perfluorooctyltrichlorosilane (CAS No.: 78560-45-9)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	0.1	n.d.	-
Mono[2-(perfluorohexyl)ethyl] Phosphate and its salts (6:2 monoPAP and its salts) (CAS No.: 57678-01-0 and its salts)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.1	n.d.	-
2-Iodo-1H,1H,1H,2H,3H,3H-perfluorononane (CAS No.: 38550-34-4)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	0.2	n.d.	-
N-[3-(dimethylamino)propyl]-3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctanesulphonamide N-oxide (CAS No.: 80475-32-7)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.1	n.d.	-
Thiocyanic acid, 3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl ester (CAS No.: 26650-09-9)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	0.2	n.d.	-

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				No.1	
2H,2H,3H,3H-Perfluorononanoic acid (6:3 FTCA) (CAS No.: 27854-30-4)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.1	n.d.	-
1H,1H,2H,2H-Perfluorooctanethiol (6:2 FTSH) (CAS No.: 34451-26-8)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	0.2	n.d.	-
1H,1H,2H,2H-Perfluorooctyldimethylchlorosilane (6:2 FTSiMe2Cl) (CAS No.: 102488-47-1)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	0.2	n.d.	-
1-Iodo-1H,1H-Perfluoroheptane (6:1 FTI) (CAS No.: 212563-43-4)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	0.2	n.d.	-
3-(Perfluorohexyl)propyl iodide (6:3 FTI) (CAS No.: 89889-20-3)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	0.2	n.d.	-
1H,1H,2H,2H-Perfluorooctanephosphonic acid and its salts (6:2 FTPA and its salts) (CAS No.: 252237-40-4 and its salts)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.1	n.d.	-
1H,1H-perfluorohexan-1-ol (5:1 FTOH) (CAS No.: 423-46-1)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS and LC/MS/MS.	mg/kg	0.2	n.d.	-
1H,1H-perfluoro-1-heptanol (6:1 FTOH) (CAS No.: 375-82-6)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS and LC/MS/MS.	mg/kg	0.2	n.d.	-
3-(perfluorohexyl)propanol (6:3 FTOH) (CAS No.: 80806-68-4)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	0.2	n.d.	-
3,3,4,4,5,5,6,6,7,7,7-undecafluoro-2-heptanol (CAS No.: 914637-05-1)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS and LC/MS/MS.	mg/kg	0.2	n.d.	-
1-(perfluorohexyl)octane (CAS No.: 133331-77-8)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	0.2	n.d.	-
1H,1H-Perfluoroheptylamine (6:1 FTNH2) (CAS No.: 423-49-4)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	0.2	n.d.	-
Perfluorohexyl ethylene (PFHxE) (CAS No.: 25291-17-2)	With reference to CEN/TS 15968: 2010, 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
PFHxS and its salts					
Perfluorohexane sulfonate and its salts (PFHxS and its salts) (CAS No.: 355-46-4 and its salts)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
PFHxS related compounds					
N-Methylperfluoro-1-hexanesulfonamide (N-Me-FHxSA) (CAS No.: 68259-15-4)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
Perfluorohexane sulfonamide (PFHxSA) (CAS No.: 41997-13-1)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
N-[3-(dimethylamino)propyl]tridecafluorohexanesulphonamide (N-AP-FHxSA) (CAS No.: 50598-28-2)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
2-[Methyl[(tridecafluorohexyl)sulphonyl]amino]ethyl acrylate (N-MeFHSEA) (CAS No.: 67584-57-0)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	0.2	n.d.	-
2-Propenoic acid, 2-methyl-, 2-[methyl[(1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluorohexyl)sulfonyl]amino]ethyl ester (CAS No.: 67584-61-6)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	0.1	n.d.	-
2-Propenoic acid, 2-methyl-, 2-[ethyl[(1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluorohexyl)sulfonyl]amino]ethyl ester (CAS No.: 67906-70-1)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	0.1	n.d.	-
1-Hexanesulfonamide, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-N-(2-hydroxyethyl)-N-methyl-(MeFHxSE) (CAS No.: 68555-75-9)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
Glycine, N-ethyl-N-[(1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluorohexyl)sulfonyl] and its salts (EtFHxSAA and its salts) (CAS No.: 68957-32-4 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	Limit
				No.1	
PFOS and its salts					
Perfluorooctane sulfonates and its salts (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.	-
PFOS related compounds					
N-ethylperfluoro-1-octanesulfonamide (EtFOSA) (CAS No.: 4151-50-2)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
N-Methyl-Perfluoroctanesulfonamide (N-Me-FOSA) (CAS No.: 31506-32-8)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
N-Ethyl-Perfluoroctanesulfonamidoethanol (N-Et-FOSE alcohol) (CAS No.: 1691-99-2)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
N-Methyl-Perfluoroctanesulfonamidoethanol (N-Me-FOSE alcohol) (CAS No.: 24448-09-7)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
Perfluoroctanesulfonamide and its salts (PFOSA and its salts) (CAS No.: 754-91-6 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					
Perfluorooctanoic acid and its salts (PFOA and its salts) (CAS No.: 335-67-1 and its salts)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
PFOA related compounds					
Methyl perfluorooctanoate (Me-PFOA) (CAS No.: 376-27-2)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	0.1	n.d.	-
Ethyl perfluorooctanoate (Et-PFOA) (CAS No.: 3108-24-5)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	0.1	n.d.	-
Perfluoro-1-iodooctane (PFOI) (CAS No.: 507-63-1)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	0.1	n.d.	-
3-Perfluoroheptyl propanoic acid (7:3 FTCA) (CAS No.: 812-70-4)	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	Limit
				No.1	
1H,1H,2H,2H-Perfluorodecanesulfonic acid and its salts (8:2 FTS and its salts) (CAS No.: 39108-34-4 and its salts)	With reference to CEN/TS 15968: 2010, 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)	With reference to CEN/TS 15968: 2010, 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)	With reference to CEN/TS 15968: 2010, 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)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	0.1	n.d.	-
2H,2H-Perfluorodecane acid and its salts (H2PFDA and its salts) (CAS No.: 27854-31-5 and its salts)	With reference to CEN/TS 15968: 2010, 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)	With reference to CEN/TS 15968: 2010, 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)	With reference to CEN/TS 15968: 2010, 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)	With reference to CEN/TS 15968: 2010, 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)	With reference to CEN/TS 15968: 2010, 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)	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
C9-C20 PFCAs its salts and related compounds					
1H,1H,2H,2H-Perfluorodecanesulfonic acid and its salts (8:2 FTS and its salts) (CAS No.: 39108-34-4 and its salts)	With reference to CEN/TS 15968: 2010, 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)	With reference to CEN/TS 15968: 2010, 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)	With reference to CEN/TS 15968: 2010, 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)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	0.1	n.d.	-
2H,2H-Perfluorodecane acid and its salts (H2PFDA and its salts) (CAS No.: 27854-31-5 and its salts)	With reference to CEN/TS 15968: 2010, 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)	With reference to CEN/TS 15968: 2010, 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)	With reference to CEN/TS 15968: 2010, 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)	With reference to CEN/TS 15968: 2010, 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)	With reference to CEN/TS 15968: 2010, 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)	With reference to CEN/TS 15968: 2010, 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)	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	Limit
				No.1	
Perfluoro-3,7-dimethyloctanoic Acid (PF-3,7-DMOA) (CAS No.: 172155-07-6)	With reference to CEN/TS 15968: 2010, 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)	With reference to CEN/TS 15968: 2010, 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)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
Perfluorododecanoic acid and its salts (PFDoDA and its salts) (CAS No.: 307-55-1 and its salts)	With reference to CEN/TS 15968: 2010, 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)	With reference to CEN/TS 15968: 2010, 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)	With reference to CEN/TS 15968: 2010, 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)	With reference to CEN/TS 15968: 2010, 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)	With reference to CEN/TS 15968: 2010, 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)	With reference to CEN/TS 15968: 2010, 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)	With reference to CEN/TS 15968: 2010, 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)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS and LC/MS/MS.	mg/kg	0.1	n.d.	-

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Test Item(s)	Method	Unit	MDL	Result	Limit
				No.1	
1H,1H,2H,2H-Perfluorododecane sulfonic acid and its salts (10:2 FTS and its salts) (CAS No.: 120226-60-0 and its salts)	With reference to CEN/TS 15968: 2010, 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)	With reference to CEN/TS 15968: 2010, 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)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	0.1	n.d.	-
Perfluorononane sulfonic acid and its salts (PFNS and its salts) (CAS No.: 68259-12-1 and its salts)	With reference to CEN/TS 15968: 2010, 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)	With reference to CEN/TS 15968: 2010, 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)	With reference to CEN/TS 15968: 2010, 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)	With reference to CEN/TS 15968: 2010, 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)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.1	n.d.	-
Perfluorododecyl iodide (PFDoDI) (CAS No.: 307-60-8)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	0.1	n.d.	-
Perfluorodecyl iodide (PFDI) (CAS No.: 423-62-1)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	0.1	n.d.	-
10:2 Fluortelomerphosphatemonoester (10:2 monoPAP and its salts) (CAS No.: 57678-05-4 and its salts)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/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)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.1	n.d.	-

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Test Item(s)	Method	Unit	MDL	Result	Limit
				No.1	
Perfluorohexadecanoic acid and its salts (PFHxDA and its salts, C16) (CAS No.: 67905-19-5 and its salts)	With reference to CEN/TS 15968: 2010, 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)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
Other PFAS					
Perfluorobutane acid and its salts (PFBA and its salts) (CAS No.: 375-22-4 and its salts)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
Perfluorobutane sulfonate and its salts (PFBS and its salts) (CAS No.: 375-73-5 and its salts)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
Perfluorobutane sulfon amides (CAS No.: 30334-69-1)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.1	n.d.	-
1,1,2,2,3,3,4,4,4-nonafluoro-N-(2-hydroxyethyl)-N-methylbutane-1-sulphonamide (PFBS-NC3H8O) (CAS No.: 34454-97-2)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
1H,1H,2H,2H-Perfluorohexyl methacrylate (4:2 FTMA) (CAS No.: 1799-84-4)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	0.1	n.d.	-
Perfluoropentane acid and its salts (PFPA and its salts) (CAS No.: 2706-90-3 and its salts)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
Perfluoroheptane acid and its salts (PFHpA and its salts) (CAS No.: 375-85-9 and its salts)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
7H-Dodecanefluoroheptane acid and its salts (HPFHpA and its salts) (CAS No.: 1546-95-8 and its salts)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
Perfluoroheptane sulfonate and its salts (PFHpS and its salts) (CAS No.: 375-92-8 and its salts)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
Perfluoro-3-methoxypropanoic acid (PFMPA) (CAS No.: 377-73-1)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-

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Taiwan Semiconductor Manufacturing Company, Ltd.
8, Li-Hsin Rd. 6, Hsinchu Science Park, Hsinchu 300-096, Taiwan, R.O.C.

Test Item(s)	Method	Unit	MDL	Result	Limit
				No.1	
Perfluoro-4-methoxybutanoic acid (PFMBA) (CAS No.: 863090-89-5)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA) (CAS No.: 151772-58-6)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
4,8-Dioxa-3H-perfluorononanoic acid and its salts (ADONA and its salts) (CAS No.: 919005-14-4 and its salts)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
1H,1H,2H,2H-Perfluoro-1-hexanol (4:2FTOH) (CAS No.: 2043-47-2)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS and LC/MS/MS.	mg/kg	0.4	n.d.	-
2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propionic acide and its salts (HFPO-DA and its salts) (CAS No.: 13252-13-6 and its salts)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
1H,1H,2H,2H-Perfluorohexanesulfonic acid and its salts (4:2 FTS and its salts) (CAS No.: 757124-72-4 and its salts)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
Perfluorooctane sulfonamidoacetic acid and its salts (FOSAA and its salts) (CAS No.: 2806-24-8 and its salts)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
N-methylperfluorooctane sulfonamidoacetic acid and its salts (N-MeFOSAA and its salts) (CAS No.: 2355-31-9 and its salts)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
N-ethylperfluorooctane sulfonamidoacetic acid and its salts (N-EtFOSAA and its salts) (CAS No.: 2991-50-6 and its salts)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
Perfluoropentane sulfonic acid and its salts (PFPeS and its salts) (CAS No.: 2706-91-4 and its salts)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
3-Perfluoropropyl propanoic acid (3:3 FTCA) (CAS No.: 356-02-5)	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	Limit
				No.1	
2-Perfluorohexyl ethanoic acid (6:2 FTCA) (CAS No.: 53826-12-3)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
3-Perfluoropentyl propanoic acid (5:3 FTCA) (CAS No.: 914637-49-3)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) (CAS No.: 113507-82-7)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid and its salts (9Cl-PF3ONS and its salts) (CAS No.: 756426-58-1 and its salts)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid and its salts (11Cl-PF3OUdS and its salts) (CAS No.: 763051-92-9 and its salts)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
2-(N-ethylperfluorooctanesulfamido)ethyl acrylate (EtFOSAC) (CAS No.: 423-82-5)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	0.1	n.d.	-
11H-Perfluoroundecanoic acid and its salts (11H-PFUnDA and its salts) (CAS No.: 1765-48-6 and its salts)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.1	n.d.	-
Pentafluoropropionate acid and its salts (PFPrA and its salts) (CAS No.: 422-64-0 and its salts)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.1	n.d.	-
1H,1H,2H,2H-Perfluorodecyltrichlorosilane (CAS No.: 78560-44-8)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	0.1	n.d.	-
1H,1H,2H,2H-Perfluorodecyltrimethoxysilane (CAS No.: 83048-65-1)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.				
2H-Perfluoro-2-decenoic acid (8:2 FTUCA) (CAS No.: 70887-84-2)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
2H-Perfluoro-2-octenoic acid (6:2 FTUCA) (CAS No.: 70887-88-6)	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	Limit
				No.1	
2H-Perfluoro-2-dodecenoic acid (10:2 FTUCA) (CAS No.: 70887-94-4)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
2-Perfluorodecyl ethanoic acid (10:2 FTCA) (CAS No.: 53826-13-4)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
6:6 Perfluorophosphinic acid and its salts (6:6 PFPi and its salts) (CAS No.: 40143-77-9 and its salts)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
6:8 Perfluorophosphinic acid (6:8 PFPi) (CAS No.: 610800-34-5)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
8:8 Perfluorophosphinic acid and its salts (8:8 PFPi and its salts) (CAS No.: 40143-79-1 and its salts)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
1H,1H,2H,2H-Heptadecafluorodecyl acetate (8:2 FTOAc) (CAS No.: 37858-04-1)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	0.1	n.d.	-
Mono-[2-(perfluorooctyl)ethyl]phosphate and its salts (8:2 monoPAP and its salts) (CAS No.: 57678-03-2 and its salts)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.1	n.d.	-
1-Dodecanol, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,12-heneicosafluoro-, 1-acetate (10:2 FTOAc) (CAS No.: 37858-05-2)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	0.1	n.d.	-
Perfluoro-2,5-dimethyl-3,6-dioxanonanoic acid and its salts (HFPO-TA and its salts) (CAS No.: 13252-14-7 and its salts)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.2	n.d.	-
Pentafluoroethane sulfonic acid (PFEtS) (CAS No.: 354-88-1)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
Bis[2-(perfluorohexyl)ethyl] Phosphate and its salts (6:2 diPAP and its salts) (CAS No.: 57677-95-9 and its salts)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
Trifluoromethanesulfonimide and its salts (TFSI and its salts) (CAS No.: 82113-65-3 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	Limit
				No.1	
Trifluoromethane sulfonic acid and its salts (TFMS and its salts) (CAS No.: 1493-13-6 and its salts)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
Perfluoropropate sulfonic acid and its salts (PFPrS and its salts) (CAS No.: 423-41-6 and its salts)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
1-pefluoroheptyl ethanol (7:2 secondary) (7:2s FTOH) (CAS No.: 24015-83-6)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	0.2	n.d.	-
4:2 Fluorotelomer iodide (4:2 FTI) (CAS No.: 2043-55-2)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	0.2	n.d.	-
Perfluoroheptane-1-sulfinic acid and its salts (PFHpSi and its salts) (CAS No.: 769067-51-8 and its salts)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
Perfluorooctylphosphoic acid and its salts (PFOPA and its salts) (CAS No.: 40143-78-0 and its salts)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
1H,1H-Perfluorooctylamine (CAS No.: 307-29-9)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	0.2	n.d.	-
Perfluoroheptanamide (CAS No.: 2358-22-7)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	0.1	n.d.	-
Perfluorobutyramide (CAS No.: 662-50-0)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	0.2	n.d.	-
1H,1H,2H,2H-Nonafluorohexyl acrylate (4:2 FTA) (CAS No.: 52591-27-2)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	0.2	n.d.	-
N-methylperfluoro-1-butanesulfonamide (CAS No.: 68298-12-4)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
N-Ethyl-1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-N-(2-hydroxyethyl)-1-hexanesulfonamide (CAS No.: 34455-03-3)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
Ethyl perfluoroisobutyl ether and its isomers (CAS No.: 163702-05-4 and others)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	10	n.d.	-

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Test Item(s)	Method	Unit	MDL	Result	Limit
				No.1	
1,1,1,2,2,3,4,5,5,5,-decafluoro-Pentane (CAS No.: 138495-42-8)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	10	n.d.	-
Trifluorotoluene (CAS No.: 98-08-8)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	1	n.d.	-
1-Chloro-4 (Trifluoromethyl)Benzene (CAS No.: 98-56-6)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	1	n.d.	-
1H,1H,2H,2H-Perfluorodecylmethyldichlorosilane (CAS No.: 3102-79-2)	With reference to CEN/TS 15968: 2010, analysis was performed by GC/MS.	mg/kg	0.1	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
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. ▲：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
7. 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.
8. Detail explanation of the regulation is available at the following link.
   https://www.ecfr.gov/current/title-40/chapter-I/subchapter-R/part-751?toc=1

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9. N/A(*1) : The submitted sample is exempted from the regulated scope if it is anyone of the following :
   - Hydraulic fluids for aviation or military
   - Lubricants and grease
   - New and replacement parts for motor and aerospace vehicles
   - Manufacture of cyanoacrylate adhesives in closed systems
   - Specialized engine air filters for locomotive and marine applications
   - Plastic for recycling from PIP (3:1)-containing products or articles
   - Finished products or articles made of plastic recycled from PIP (3:1)-containing products or articles
   - Distribution in commerce of PIP (3:1)-containing articles before October 31, 2026
   - Circuit boards and wire harnesses, including but not limited to terminal and fuse covers, cable sleeves, casings, connectors, and tapes
   - Articles that contain PIP (3:1), and where PIP (3:1) has not been newly added, for the purpose of repair or maintenance
   - New manufacturing equipment, including in the semiconductor industry, for new heating, ventilation, air-conditioning, refrigeration, and water-heating equipment, new power generating equipment, new laboratory equipment, new commercial electronic equipment
10. N/A(*2) : The submitted sample is exempted from the regulated scope if it is not oil and lubricant additives.
11. N/A(*3) : The submitted sample is exempted from the regulated scope if it is anyone of the following :
    Exempts processing and distribution for recycling of DecaBDE-containing plastic from products or articles and DecaBDE-containing products or articles made from such recycled plastic.

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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.
PFBA, its salts	Perfluorobutane acid (PFBA)	375-22-4
	Ammonium perfluorobutanoate (PFBA-NH_4)	10495-86-0
	Sodium perfluorobutanoate (PFBA-Na)	2218-54-4
	Potassium heptafluorobutanoate (PFBA-K)	2966-54-3
	Silver perfluorobutanoate (PFBA-Ag)	3794-64-7
	Lithium perfluorobutanoate (PFBA-Li)	4146-76-3
	Heptafluorobutanoic acid-piperazine (1:1)	375-04-2
	Perfluorobutanoate (anion)	45048-62-2
PFBS, its salts & derivatives	Perfluorobutane sulfonate (PFBS)	375-73-5
	1-Butanesulfonic acid, 1,1,2,2,3,3,4,4,4-nonafluoro-, sodium salt (1:1) (PFBS-Na)	60453-92-1
	Lithium perfluorobutanesulfonate (PFBS-Li)	131651-65-5
	Magnesium perfluorobutanesulfonate (PFBS-Mg)	507453-86-3
	Perfluorobutane Sulfonate K-salt (PFBS-K)	29420-49-3
	Perfluorobutane sulfonyl fluoride (PFBS-F)	375-72-4
	Tetraethylammonium perfluorobutanesulfonate (PFBS-$N(CH_3CH_2)_4$)	25628-08-4
	Triphenylsulfanium perfluorobutane sulfonate (TPS-PFBS)	144317-44-2
	Dimethyl(phenyl)sulfanium perfluorobutane sulfonate	220133-51-7
	Tetrabutyl-phosphonium nonafluoro-butane-1-sulfonate	220689-12-3
	Morpholinium perfluorobutanesulfonate	503155-89-3
	Ammonium 1,1,2,2,3,3,4,4,4-nonafluorobutane-1-sulphonate (PFBS-NH_4)	68259-10-9
	NonafluorobutanesulfonicacidHydrate	59933-66-3
	Nonafluoro-1-butanesulfonyl chloride (PFBS-Cl)	2991-84-6
	Bis(4-tert-butylphenyl)iodonium perfluoro-1-butanesulfonate (PFBS-$I(C_6H_4)_2(C_4H_9)_2$)	194999-85-4

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Taiwan Semiconductor Manufacturing Company, Ltd.
8, Li-Hsin Rd. 6, Hsinchu Science Park, Hsinchu 300-096, Taiwan, R.O.C.

Group Name	Substance Name	CAS No.
PFBS, its salts & derivatives	1,1,2,2,3,3,4,4,4-nonafluorobutane-1-sulphonic acid, compound with 2,2'-iminodiethanol (1:1) (PFBS-NH($C_2H_5O)_2$)	70225-18-2
	1-(4-butoxy-1-naphthyl)tetrahydrothiophenium nonafluorobutane-1-sulfonate (PFBS-$SC_{18}H_{23}O$)	209482-18-8
	Tetrabutylammonium nonafluorobutanesulfonate ((PFBS-$N(C_4H_9)_4$))	108427-52-7
	Diphenyliodanium nonafluorobutane-1-sulfonate((PFBS-$I(C_6H_5)_2$))	194999-82-1
	Sulfonium, tris[4-(1,1-dimethylethyl)phenyl]-, 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonate (1:1)	241806-75-7
	Sulfonium, (4-cyclohexylphenyl)diphenyl-, 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonate (1:1)	425670-64-0
	Thiophenium, tetrahydro-1-(1-methyl-1H-indol-3-yl)-, 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonate (1:1)	867373-18-0
	Pyridinium, 1-ethyl-3-methyl-, 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonate (1:1)	1015420-87-7
	1H-Imidazolium, 1-methyl-3-octyl-, 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonate (1:1)	905972-83-0
	1H-Imidazolium, 3-hexyl-1-methyl-, 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonate (1:1)	1001557-05-6
	2-Propanaminium, N,N-dimethyl-N-(1-methylethyl)-, 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonate (1:1)	374571-81-0
	Sulfonium, [4-[2-(1,1-dimethylethoxy)-2-oxoethoxy]phenyl]diphenyl-, 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonate (1:1)	857285-80-4
	1-Butanaminium, N,N-dibutyl-N-methyl-, 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonate (1:1)	124472-66-8
	1-Butanesulfonic acid, 1,1,2,2,3,3,4,4,4-nonafluoro-, zinc salt (2:1) (PFBS-Zn)	502457-69-4
	1-Pentanaminium, N,N,N-tripropyl-, 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonate (1:1)	56773-55-8
	Perfluorobutanesulfonic acid tetramethylammonium salt (PFBS-$N(CH_3)_4$)	25628-17-5
	1-Butanesulfonic acid, 1,1,2,2,3,3,4,4,4-nonafluoro-, 1,1'-anhydride	36913-91-4
	Perfluorobutane sulfonate (anion)	45187-15-3

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Group Name	Substance Name	CAS No.
PFBS, its salts & derivatives	1-(4-butoxy-1-naphthalenyl)tetrahydrothiophenium - 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonate	EC No. 468-770-4
	1-Butanesulfonic acid, 1,1,2,2,3,3,4,4,4-nonafluoro-, compd. with N,N-diethylethanamine (1:1)	182059-38-7
	1-Octanaminium, N-(2-hydroxyethyl)-N,N-dimethyl-, 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonate (1:1)	334529-55-4
	Pyridinium, 1-hexadecyl-, 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonate (1:1)	334529-62-3
	Pyridinium, 1-butyl-, 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonate (1:1)	334529-64-5
	1-Octanaminium, N-methyl-N,N-dioctyl-, 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonate (1:1)	495417-51-1
	Sulfonium, tris(4-methylphenyl)-, 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonate (1:1)	722538-68-3
PFPA, its salts	Perfluoropentane acid (PFPA)	2706-90-3
	Sodium perfluoropentanoate (PFPA-Na)	2706-89-0
	Potasium perfluoropentanoate (PFPA-K)	336-23-2
	Ammonium perfluoropentanoate (PFPA-NH_4)	68259-11-0
	Lithium perfluoropentanoate (PFPA-Li)	198482-22-3
	Silver perfluoropentanoate (PFPA-Ag)	2795-30-4
	Perfluoropentanoate (anion)	45167-47-3
	Pentanoic acid, 2,2,3,3,4,4,5,5,5-nonafluoro-, compd. with phenylmethyl carbamimidothioate (1:1) (PFPeA-$C_8H_{10}N_2S$)	64808-55-5
	Nonafluoropentanoic anhydrid (PFPeAA)	308-28-1
PFHxA, its salts & derivatives	Perfluorohexane acid (PFHxA)	307-24-4
	Ammonium perfluorohexanoate (PFHxA-NH_4)	21615-47-4
	Sodium perfluorohexanoate (PFHxA-Na)	2923-26-4
	Potassium perfluorohexanoate (PFHxA-K)	3109-94-2
	Perfluorohexanoyl fluoride (PFHxA-F)	355-38-4
	Silver perfluorohexanoate (PFHxA-Ag)	336-02-7
	Lithium perfluorohexanoate (PFHxA-Li)	90430-61-8
	Perfluorohexanoic anhydride	308-13-4
	Hexanoic acid, undecafluoro-, compd. with piperazine (2:1) (8Cl,9Cl)	423-47-2
	Perfluorohexanoate (anion)	92612-52-7
	Perfluorohexanoyl chloride (PFHxA-Cl)	335-53-5
	Hexanoic acid, 2,2,3,3,4,4,5,5,6,6,6-undecafluoro-, compd. with 1-hexanamine (1:1) (PFHxA-$C_6H_{15}N$)	565225-91-4

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Group Name	Substance Name	CAS No.
PFHxA, its salts & derivatives	Hexanoic acid, 2,2,3,3,4,4,5,5,6,6,6-undecafluoro-, compd. with 1-phenylpiperazine (1:1) (PFHxA-$C_{10}H_{14}N_2$)	985-60-4
6:2 FTS, its salts	1H,1H,2H,2H-Perfluorooctanesulphonic acid (6:2 FTS)	27619-97-2
	Sodium 1H,1H,2H,2H-Perfluorooctanesulfonate (6:2 FTS-Na)	27619-94-9
	Potassium 1H,1H,2H,2H-Perfluorooctanesulfonate (6:2 FTS-K)	59587-38-1
	Ammonium 1H,1H,2H,2H-Perfluorooctanesulfonate (6:2 FTS-NH_4)	59587-39-2
	1-Octanesulfonic acid, 3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluoro-, barium salt (2:1) (6:2 FTS-Ba)	1807944-82-6
	3,3,4,4,5,5,6,6,7,7,8,8,8-Tridecafluorooctane-1-sulfonate (6:2 FTS(anion))	425670-75-3
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
	Perfluorohexanesulfonate sulfonyl 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

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Group Name	Substance Name	CAS No.
PFHxS, its salts & derivatives	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
	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

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Group Name	Substance Name	CAS No.
PFHxS, its salts & derivatives	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
	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 $(C_4H_9)_4$)	2310194-12-6
EtFHxSAA, its salts	Glycine, N-ethyl-N-[(1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluorohexyl)sulfonyl] (EtFHxSAA)	68957-32-4
	Potassium N-ethyl-n-[(tridecafluorohexyl)sulfonyl]glycinate (EtFHxSAA-K)	67584-53-6
	Sodium N-ethyl-N-((tridecafluorohexyl)sulphonyl)glycinate (EtFHxSAA-Na)	68555-70-4
PFHpA, its salts	Perfluoroheptane acid (PFHpA)	375-85-9
	Sodium perfluoroheptanoate (PFHpA-Na)	20109-59-5
	Potassium perfluoroheptanoate (PFHpA-K)	21049-36-5
	Ammonium perfluoroheptanoate (PFHpA-NH_4)	6130-43-4
	Cesium perfluoroheptanoate (PFHpA-Cs)	171198-24-6
	Silver perfluoroheptanoate (PFHpA-Ag)	424-05-5
	Lithium perfluoroheptanoate (PFHpA-Li)	60871-90-1
	Perflluoroheptanoate (anion)	120885-29-2

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Group Name	Substance Name	CAS No.
HPFHpA, its salts	7H-Dodecanefluoroheptane acid (HPFHpA)	1546-95-8
	Sodium 2,2,3,3,4,4,5,5,6,6,7,7-dodecafluoroheptanoate (HPFHpA-Na)	2264-25-7
	Ammonium 2,2,3,3,4,4,5,5,6,6,7,7-dodecafluoroheptanoate (HPFHpA-NH_4)	376-34-1
	7H-Perfluoroheptanoate (HPFHpA(anion))	69681-35-2
PFHpS, its salts	Perfluoroheptane sulfonate (PFHpS)	375-92-8
	Perfluoroheptanesulfonate Na-salt (PFHpS-Na)	21934-50-9
	Potassium perfluoroheptanesulfonate (PFHpS-K)	60270-55-5
	Ammonium perfluoroheptanesulfonate (PFHpS-NH_4)	68259-07-4
	Lithium perfluoroheptanesulfonate (PFHpS-Li)	117806-54-9
	1-Heptanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,7-pentadecafluoro-, compd. with 2,2'-iminobis[ethanol] (1:1)	70225-15-9
	Perfluoroheptane sulfonate (anion)	146689-46-5
	Triethylammonium perfluoroheptane sulfonate	72033-40-0
	Tetraethylammonium perfluoroheptane sulfonate	439863-97-5
	1-Heptanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,7-pentadecafluoro-, anhydride (9CI) (PFHpSA)	140429-92-1
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-$NH(OH)_2$)	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

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Taiwan Semiconductor Manufacturing Company, Ltd.
8, Li-Hsin Rd. 6, Hsinchu Science Park, Hsinchu 300-096, Taiwan, R.O.C.

Group Name	Substance Name	CAS No.
PFOS, its salts & derivatives	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
	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
PFOSA, its salts	Perfluorooctanesulfonamide (PFOSA)	754-91-6
	Perfluorooctanesulfonamide lithium salt (1:1) (PFOSA-Li)	76752-79-9
	Perfluorooctanesulfonamide Sodium salt (1:1) (PFOSA-Na)	76752-78-8
	Perfluorooctanesulfonamide Potassium salt (1:1) (PFOSA-K)	76752-70-0
	Perfluorooctanesulfonamide Ammonium salt (1:1) (PFOSA-NH_4)	76752-72-2
	heptadecafluorooctane-1-sulphonamide, compound with triethylamine(1:1) (PFOSA-$C_6H_{15}N$)	76752-82-4

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Taiwan Semiconductor Manufacturing Company, Ltd.
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Group Name	Substance Name	CAS No.
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
	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) (9Cl) (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
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
	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

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Group Name	Substance Name	CAS No.
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) PFNA-$NH_2(C_2H_5)_2$)	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) (PFNA-$NH_2(CH_3)_2$)	77032-24-7
	Nonanoic acid, heptadecafluoro-, compd. with N,N-diethylethanamine (1:1) (9CI) (PFNA-$NH(C_2H_5)_3$)	327176-80-7
	Nonanoic acid, heptadecafluoro-, compd. with piperidine (1:1) (9CI) (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) (9CI) (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
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
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

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Group Name	Substance Name	CAS No.
PFUnDA, its salts	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
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
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
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
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
10:2 monoPAP, its salts	10:2 Fluortelomerphosphatemonoester (10:2 monoPAP)	57678-05-4
	10:2 Fluorotelomer diammonium dihydrogen phosphate	93857-45-5
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

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Group Name	Substance Name	CAS No.
PFODA, its salts	Perfluorooctadecanoic acid (PFODA, C18)	16517-11-6
	Perfluorooctadecanoate anion (PFODA (anion))	798556-82-8
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
H2PFDA, its salts	2H,2H-Perfluorodecane acid (H2PFDA)	27854-31-5
	Tetrabutylphosphonium 2H,2H-Perfluorodecanoate	882489-14-7
ADONA, its salts	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4
	Ammonium 4,8-dioxa-3H-perfluorononanoate (ADONA-NH_4)	958445-44-8
	Sodium 4,8-dioxa-3H-perfluorononanoate (ADONA-Na)	2250081-67-3
HFPO-DA, its salts & derivatives	2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propionic acide (HFPO-DA)	13252-13-6
	Propanoic acid, 2,3,3,3-tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-(2R)-	75579-39-4
	Propanoic acid, 2,3,3,3-tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-(2S)-	75579-40-7
	2,3,3,3-tetrafluoro-2-(heptafluoropropoxy) propionicacid, K-salts	67118-55-2
	2,3,3,3-tetrafluoro-2-(heptafluoropropoxy) propionicacid, ammonium salts	62037-80-3
	Propanoic acid, 2,3,3,3-tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-, sodium salt (1:1)	67963-75-1
	Propanoic acid, 2,3,3,3-tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-, ion(1-)	122499-17-6
	Propanoic acid, 2,3,3,3-tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-, compd. with N-propyl-1-propanamine (1:1)	165951-17-7
	Propanoic acid, 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)-, compd. with N,N-diethylethanamine (1:1) (9CI)	165951-18-8
	4-[(6-Methoxy-3-pyridazinyl)sulfamoyl]anilinium 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propanoate	298703-31-8
	2,3,3,3-tetrafluoro-2-(heptafluoropropoxy) propionicacid, its acyl halides	2062-98-8

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Group Name	Substance Name	CAS No.
HFPO-DA, its salts & derivatives	Benzoic acid, 2,3,6-triiodo-, (1-methyl-3-piperidinyl)methyl ester, compd. with 2,3,3,3-tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoro propoxy)propanoate (1:1) (HFPO-$C_{14}H_{16}I_3NO_2$)	2412106-69-3
4:2 FTS, its salts	1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS)	757124-72-4
	1H,1H,2H,2H-perfluorohexane sulfonate acid sodium salt	27619-93-8
	4: 2 Fluorotelomer sulfonate (4:2FTS(anion))	414911-30-1
FOSAA, its salts	Perfluorooctane sulfonamidoacetic acid (FOSAA)	2806-24-8
	N-[(Perfluorooctyl)sulfonyl]glycinate (FOSAA(anion))	909405-47-6
	N-[(Perfluorooctyl)sulfonyl]glycine potassium salt (1:1) (FOSAA-K)	75260-69-4
	N-[(Perfluorooctyl)sulfonyl]glycine sodium salt (1:1) (FOSAA-Na)	115716-87-5
N-MeFOSAA, its salts	N-methylperfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	2355-31-9
	2-(N-Methylperfluorooctanesulfonamido)acetate (N-Me-FOSAA(anion))	909405-48-7
	Potassium N-((heptadecafluorooctyl)sulphonyl)-N-methylglycinate (N-Me-FOSAA-K)	70281-93-5
N-EtFOSAA, its salts	N-ethylperfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	2991-50-6
	Potassium N-ethyl-N-((heptadecafluorooctyl)sulphonyl)glycinate (N-Et-FOSAA-K)	2991-51-7
	2-(N-Ethyl-perfluorooctanesulfonamido)acetate (N-Et-FOSAA(anion))	909405-49-8
	Ammonium 2-(N-ethylperfluorooctanesulfonamido)acetate (N-Et-FOSAA-NH_4)	2991-52-8
	Sodium 2-(N-ethylperfluorooctanesulfonamido)acetate (N-Et-FOSAA-Na)	3871-50-9
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
PFPeS, its salts	Perfluoropentane sulfonic acid (PFPeS)	2706-91-4
	Sodium perfluoro-1-pentanesulfonate (PFPeS-Na*)	630402-22-1
	Potassium perfluoropentane-1-sulphonate (PFPeS-K)	3872-25-1
	Ammonium perfluoropentanesulfonate (PFPeS-NH_4*)	68259-09-6
	Bis(2-hydroxyethyl) ammonium 1,1,2,2,3,3,4,4,5,5,5-undecafluoropentane-1-sulphonate	70225-17-1
	Undecafluoropentane-1-sulfonic acid lithium salt (PFPeS-Li)	1046864-81-6

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Group Name	Substance Name	CAS No.
PFPeS, its salts	Perfluoropentane sulfonate (anion)	175905-36-9
	Triethylammonium perfluoropentane sulfonate	72033-42-2
	Perfluoropentane sulfonic anhydride (PFPeSA)	161877-72-1
9Cl-PF_3ONS, its salts	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF_3ONS and its salts)	756426-58-1
	Potassium 9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (9Cl-PF_3ONS-K)	73606-19-6
	Ammonium perfluoro-2-[(6-chlorohexyl)oxy]ethane-1-sulfonate (9Cl-PF_3ONS-NH_4)	1383434-28-3
11Cl-PF_3OUdS, its salts	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF_3OUdS)	763051-92-9
	Potassium 11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (11Cl-PF_3OUdS-K)	83329-89-9
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
11H-PFUnDA, its salts	11H-Perfluoroundecanoic acid (11H-PFUnDA)	1765-48-6
	potassium 2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11-icosafluoroundecanoate (11H-PFUnDA-K)	307-71-1
	Ammonium 2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11-icosafluoroundecanoate (11H-PFUnDA-NH_4)	5081-02-7
	11-H-Perfluoroundecanoate (11H-PFUnDA(anion))	69681-37-4
PFPrA, its salts	Pentafluoropropionate acid (PFPrA)	422-64-0
	Sodium pentafluoropropionate (PFPrA-Na)	378-77-8
	Silver pentafluoropropionate (PFPrA-Ag)	509-09-1
	Potassium pentafluoropropionate (PFPrA-K)	378-76-7
	Ammonium pentafluoropropionate (PFPrA-NH_4)	2730-58-7
6:6 PFPi, its salts	6:6 Perfluorophosphinic acid (6:6 PFPi)	40143-77-9
	Sodium bis(perfluorohexyl)phosphinate (6:6 PFPi-Na)	70609-44-8
	Bis(perfluorohexyl) phosphinic acid ytterbium(3+) salt (6:6 PFPi-Yb)	500776-72-7
	Bis(perfluorohexyl) phosphinic acid erbium(3+) salt (6:6 PFPi-Er)	500776-73-8

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Group Name	Substance Name	CAS No.
8:8 PFPi, its salts	8:8 Perfluorophosphinic acid (8:8 PFPi)	40143-79-1
	Sodium bis(perfluorooctyl)phosphinate (8:8 PFPi-Na)	500776-69-2
	Bis(perfluorooctyl) phosphinic acid erbium(3+) salt (8:8 PFPi-Er)	500776-70-5
	Bis(perfluorooctyl) phosphinic acid ytterbium(3+) salt (8:8 PFPi-Yb)	500776-71-6
6:2 monoPAP, its salts	Mono[2-(perfluorohexyl)ethyl] Phosphate (6:2 monoPAP)	57678-01-0
	Diammonium 6:2 fluorotelomer phosphate monoester (6:2 monoPAP-NH_4NH_4)	1000852-37-8
8:2 monoPAP, its salts	Mono-[2-(perfluorooctyl)ethyl]phosphate (8:2 monoPAP)	57678-03-2
	8:2 Fluorotelomer diammonium phosphate	93857-44-4
	Disodium 1H,1H,2H,2H-perfluorodecylphosphate	438237-75-3
	Ammonium bis[2-(perfluorohexyl)ethyl] phosphate	1764-95-0
	3,3,4,4,5,5,6,6,7,7,8,8,8-Tridecafluorooctanol phosphate ammonium salt	92401-44-0
	Sodium 1H,1H,2H,2H-perfluorooctylphosphate	144965-22-0
	Monopotassium monoperfluorohexyl ethylphosphate	150033-28-6
	Ammonium 2-(perfluorohexyl)ethyl hydrogen phosphate	2353-52-8
6:2 FTPA, its salts	1H,1H,2H,2H-Perfluorooctanephosphonic acid (6:2 FTPA)	252237-40-4
	Sodium hydrogen ((perfluorohexyl)ethyl)phosphonate (Cheminox FHP 2OH-Na(PFHEPA-Na))	1189052-95-6
HFPO-TA, its salts	Perfluoro-2,5-dimethyl-3,6-dioxanonanoic acid (HFPO-TA)	13252-14-7
	Potassium perfluoro(2-(2-propoxypropoxy)propanoate) (HFPO-TA-K)	67118-57-4
	Perfluoro-2,5-dimethyl-3,6-dioxanonanoic acid, sodium salt (HFPO-TA-Na)	67963-76-2
	2,3,3,3-Tetrafluoro-2-[1,1,2,3,3,3-hexafluoro-2-(heptafluoropropoxy)propoxy]propanoic acid--ammonia (HFPO-TA-NH_4)	13043-05-5
	Hexafluoropropene oxide trimer (HFPO-TA-F)	2641-34-1
6:2 diPAP, its salts	Bis[2-(perfluorohexyl)ethyl] Phosphate (6:2 diPAP)	57677-95-9
	Sodium bis[2-(perfluorohexyl)ethyl] phosphate (6:2 diPAP-Na)	407582-79-0
	Bis(3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl) phosphate ion (6:2 diPAP(anion))	667465-18-1
TFSI, its salts	Trifluoromethanesulfonimide (TFSI)	82113-65-3
	Pyrrolidinium, 1-butyl-1-methyl-, salt with 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]methanesulfonamide (1:1)	223437-11-4

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Group Name	Substance Name	CAS No.
TFSI, its salts	Tributylmethyl Ammonium Bis(trifluoromethanesulfonyl) Imide	405514-94-5
	Lithium bis((trifluoromethyl)sulfonyl)azanide (TFSI-Li)	90076-65-6
	1-Decyl-3-methylimidazolium Bis(trifluoromethylsulfonyl)imide	433337-23-6
TFMS, its salts	Trifluoromethane sulfonic acid (TFMS)	1493-13-6
	Trifluoromethane sulfonic acid Sodium salt (TFMS-Na)	2926-30-9
	Silver trifluoromethanesulfonate (TFMS-Ag)	2923-28-6
	Zinc trifluoromethanesulfonate (TFMS-Zn)	54010-75-2
	Scandium trifluoromethanesulfonate (TFMS-Sc)	144026-79-9
	Trifluoromethanesulfonic anhydride	358-23-6
	Lithium trifluoromethanesulfonate (TFMS-Li)	33454-82-9
	Copper(II) trifluoromethanesulfonate (TFMS-Cu)	34946-82-2
	Barium trifluoromethanesulfonate (TFMS-Ba)	2794-60-7
	Cerium(IV) trifluoromethanesulfonate (TFMS-Ce)	107792-63-2
	Magnesium trifluoromethanesulfonate (TFMS-Mg)	60871-83-2
	Potassium trifluoromethanesulfonate (TFMS-K)	2926-27-4
	Nickel(II) Trifluoromethanesulfonate (TFMS-Ni)	60871-84-3
	Tin(II) trifluoromethanesulfonate (TFMS-Sn)	62086-04-8
	Yttrium(III) trifluoromethanesulfonate (TFMS-Y)	52093-30-8
	Iron(III) trifluoromethanesulfonate (TFMS-Fe)	63295-48-7
	Cerium(III) Trifluoromethanesulfonate (TFMS-Ce)	76089-77-5
PFPrS, its salts	Perfluoropropate sulfonic acid (PFPrS)	423-41-6
	Perfluoropropanesulfonic acid sodium salt (PFPrS-Na)	359868-82-9
PFHpSi, its salts	Perfluoroheptane-1-sulfinic acid (PFHpSi)	769067-51-8
	1-heptanesulfinic Acid Sodium Salt (PFHpSi-Na)	68555-66-8
PFOPA, its salts	Perfluorooctylphosphoic acid (PFOPA)	40143-78-0
	(Heptadecafluorooctyl)phosphonic acid--4-methylaniline (1/1)	1263361-03-0
Ethyl perfluoroisobutyl ether and its isomers	Ethyl perfluoroisobutyl ether and its isomers	163702-05-4
	Perfluoroisobutyl ethyl ether	163702-06-5

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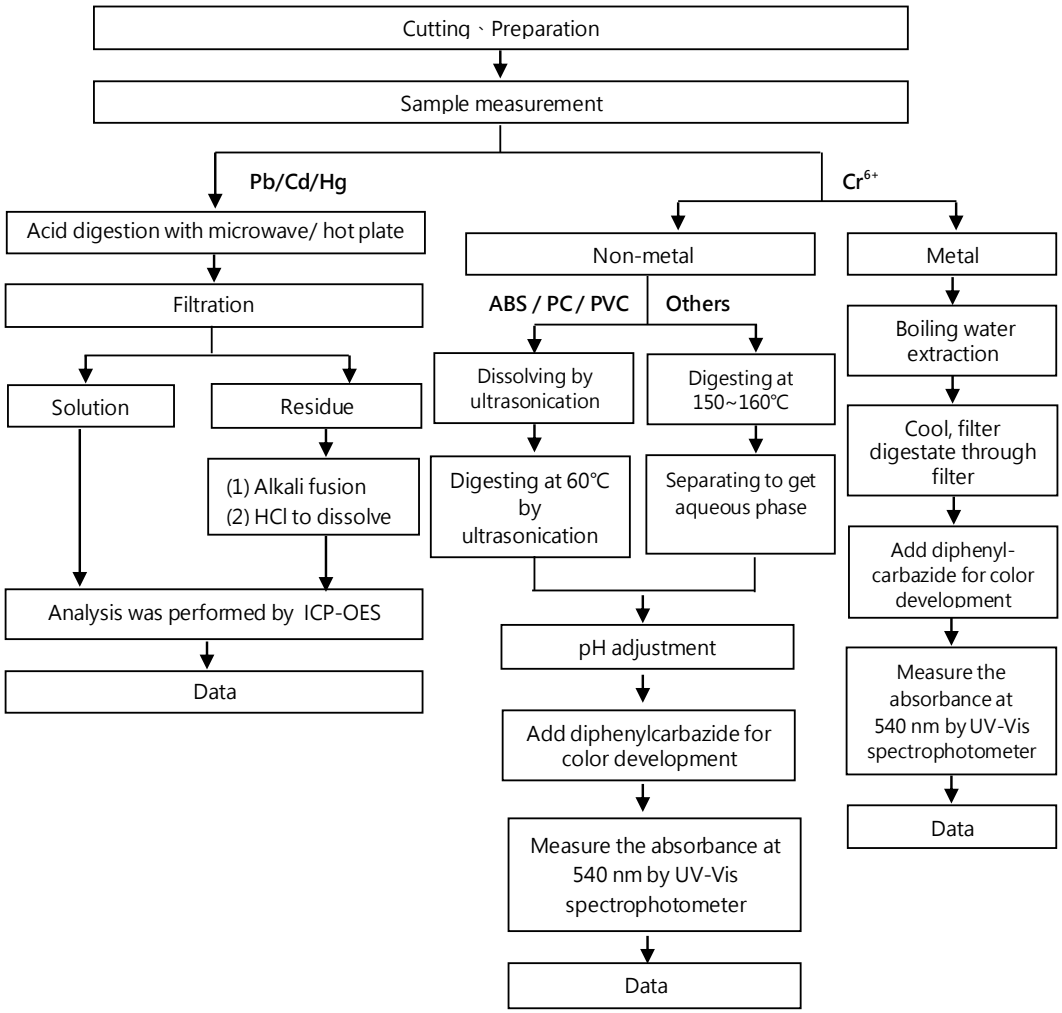
Analytical flow chart of heavy metal

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

(Cr^{6+} test method excluded)



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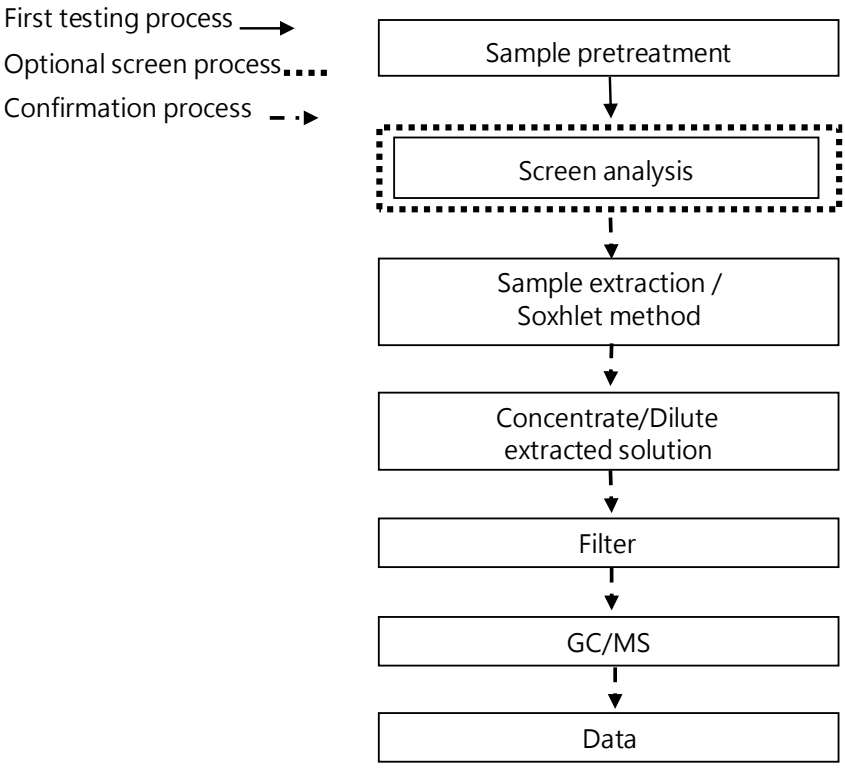
Analytical flow chart – PBBs / PBDEs



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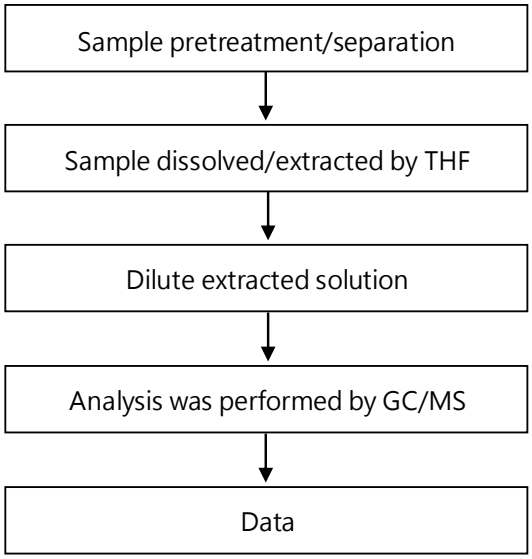
Analytical flow chart - Phthalate

【Test method: IEC 62321-8】



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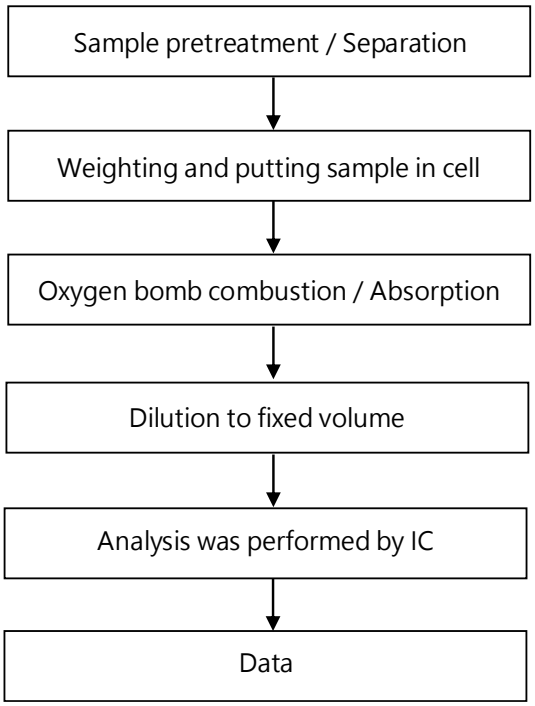
Analytical flow chart - Halogen



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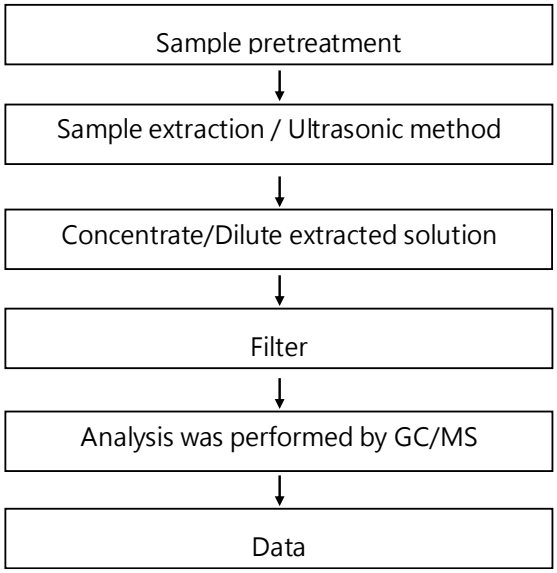
Analytical flow chart - HBCDD



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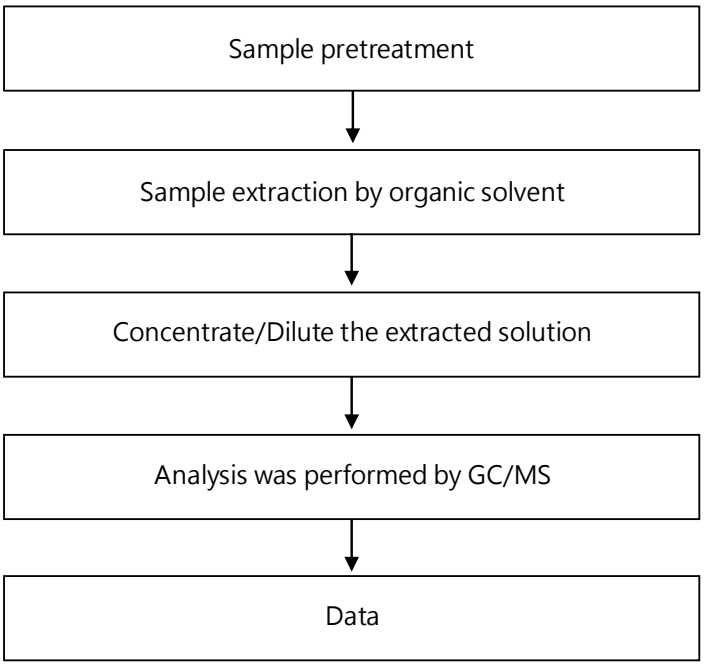
Analytical flow chart

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



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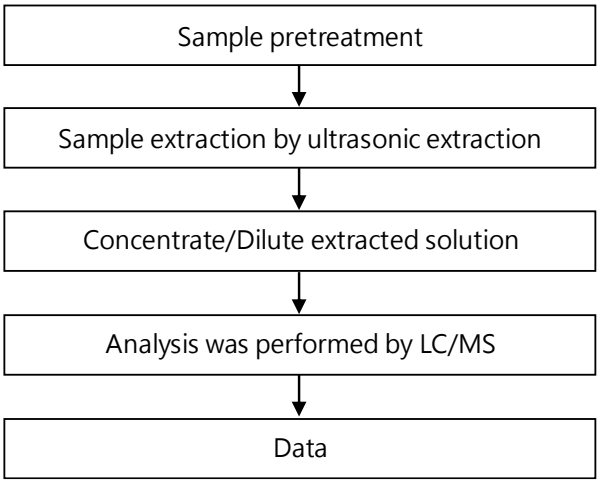
Analytical flow chart - TBBP-A



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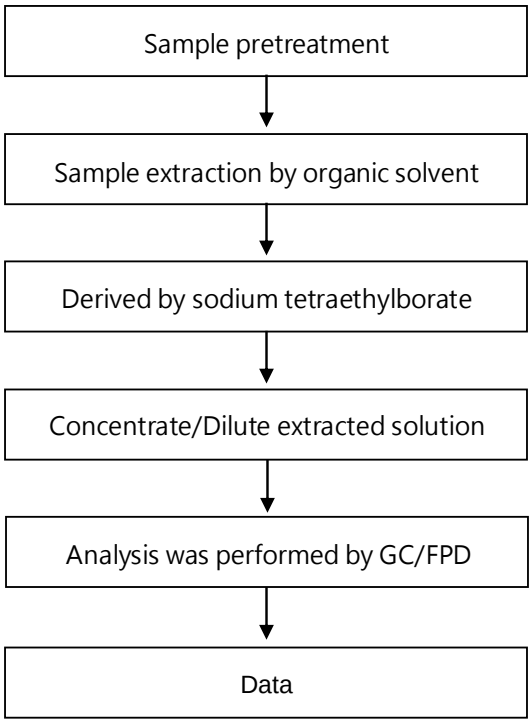
Analytical flow chart - Organic-Tin



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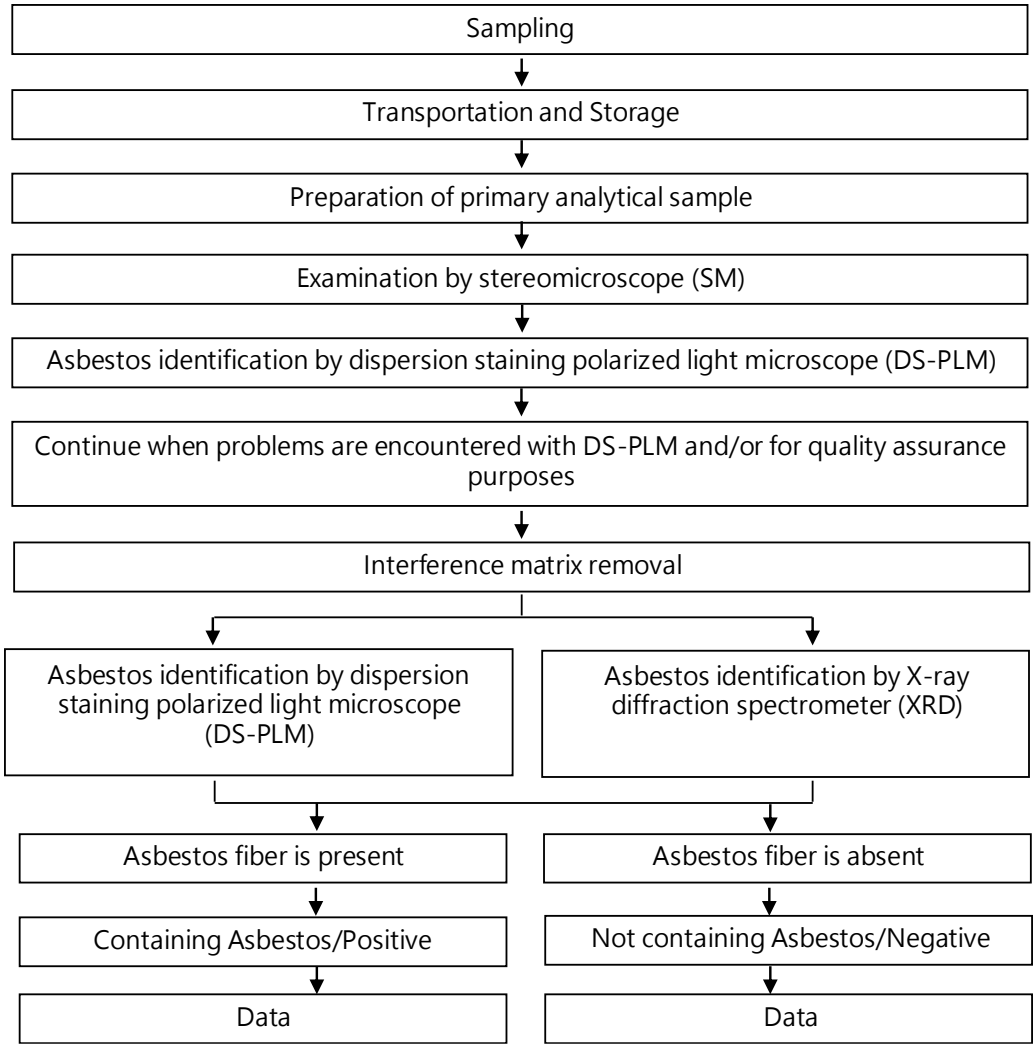
Analysis flow chart for determination of Asbestos

【Reference method: EPA 600/R-93/116】



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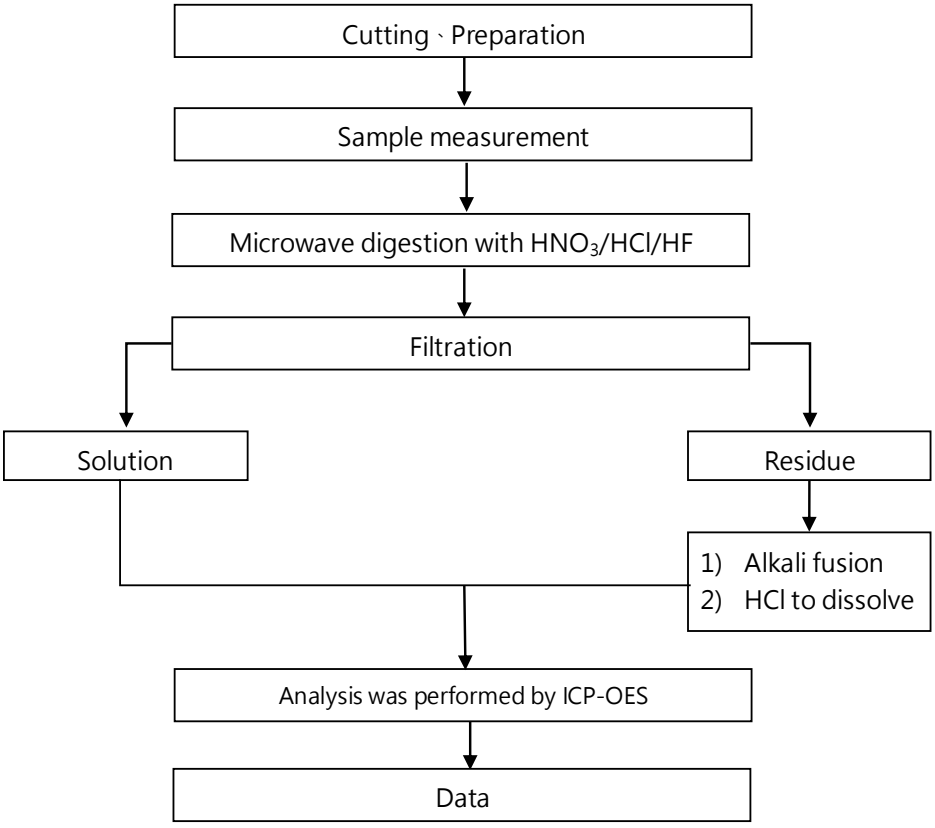
Analytical flow chart of elements (Heavy metal included)

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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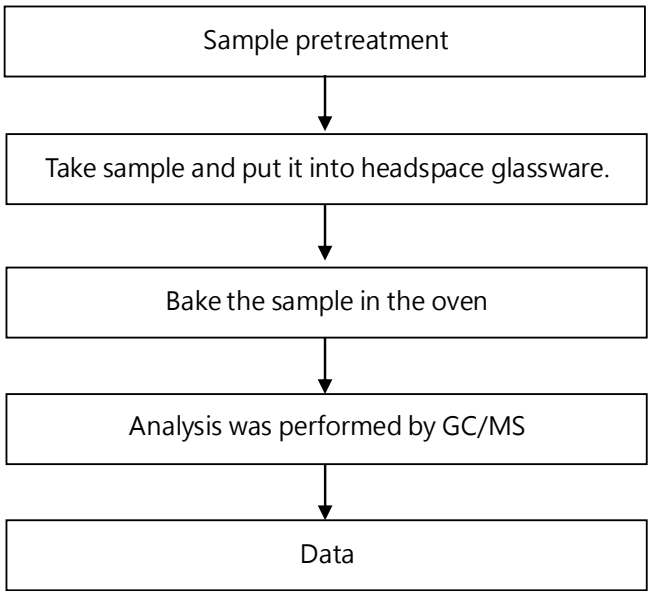
Taiwan Semiconductor Manufacturing Company, Ltd.
8, Li-Hsin Rd. 6, Hsinchu Science Park, Hsinchu 300-096, Taiwan, R.O.C.

Analytical flow chart of volatile organic compounds (VOCs)

【Reference method：US EPA 5021A】



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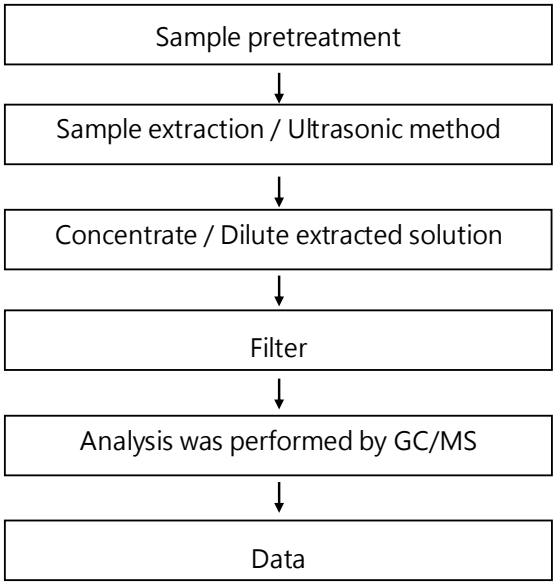
8, Li-Hsin Rd. 6, Hsinchu Science Park, Hsinchu 300-096, Taiwan, R.O.C.

Analytical flow chart - Persistent, Bioaccumulative, Toxic (PBTs)



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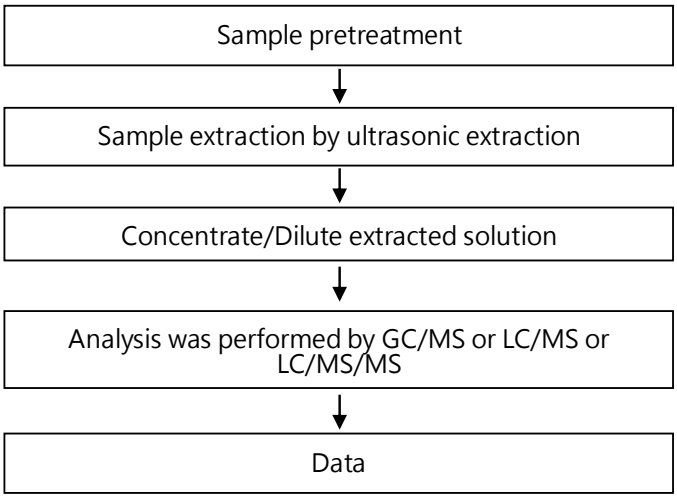
Taiwan Semiconductor Manufacturing Company, Ltd.
8, Li-Hsin Rd. 6, Hsinchu Science Park, Hsinchu 300-096, Taiwan, R.O.C.

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



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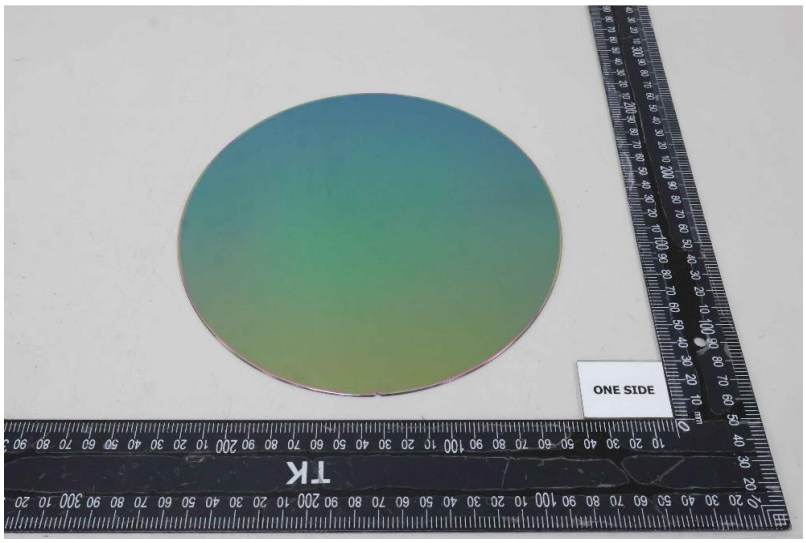
Taiwan Semiconductor Manufacturing Company, Ltd.
8, Li-Hsin Rd. 6, Hsinchu Science Park, Hsinchu 300-096, Taiwan, R.O.C.

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

ETR24C00159



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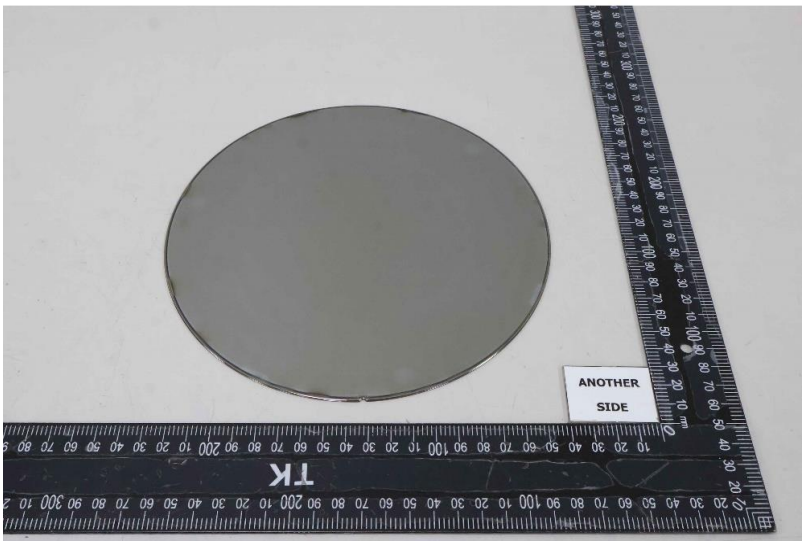

** End of Report **

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6024 Silver Creek Valley Road
San Jose, CA 95138

Certificate of Compliance - RoHS Compliance Declaration

The European Union (EU) Directive 2002/95/EC issued on January 27th, 2003 applies to the restriction of the use of certain hazardous substances (RoHS) in electrical and electronic equipment. The EU has subsequently reviewed and recast the directive as RoHS Directive 2011/65/EU (RoHS 2) on June 8th, 2011. RoHS 2 repealed and replaced the original RoHS Directive on January 3, 2013. Commission Delegated Directive (EU) 2015/863 of 31 March 2015 amends Annex II to Directive 2011/65/EU of the European Parliament and of the Council as regards to the list of restricted substances.

This declaration is to certify that all REN-Analog Green Parts meet the requirements of Directive 2011/65/EU and Delegated Directive (EU) 2015/863 with no exemptions.

As shown in Appendix A and pursuant to Article 4 of the RoHS directive and Annex II of (EU) 2015/863, REN-Analog Green parts do not contain the restricted materials above their respective limits. Also, this declaration confirms that REN-Analog's Green parts comply with the additional package material limits of RoHS 2 and other industry related substance restrictions.

This information concerning the substances contained in products is based on information provided by third parties. REN-Analog does not routinely conduct destructive testing or chemical analysis of incoming material, and does not warranty and guarantee the accuracy of the information. REN-Analog does, however, possess a reasonable belief that the information herein is representative and accurate.

This declaration refers to the product and does not include packing materials, such as trays, plastic bands, plastic tubes, cardboard boxes, etc.

Signature: MW Kwan Date: Oct 31, 2022

Name: MW Kwan Title: QA Engineer

APPENDIX A:
REN-Analog Green Parts Restricted Substance Limits (No Exemptions)

RoHS Restricted Substance		Allowable Limit
Cadmium and its compounds		100 ppm (0.01 weight %)
Mercury and its compounds		1000 ppm (0.1 weight %)
Hexavalent chromium and its compounds		1000 ppm (0.1 weight %)
Lead and its compounds		1000 ppm (0.1 weight %)
Polybrominated biphenyls (PBB)		1000 ppm (0.1 weight %)
Polybrominated diphenyl ethers (PBDE) (including DecaBDE)		1000 ppm (0.1 weight %)
Perflurooctane Sulfonates (PFOS) CAS# 1763-23-1		Not Contained
Perfluorooctanoic acid (PFOA) CAS# 335-67-1		Not Contained
Ozone Depleting Substances (ODS)		Not Used in Manufacturing/ Not Intentionally Added
Polyvinyl chloride (PVC) and PVC blends		Not Used in Manufacturing/ Not Intentionally Added
HBCDD – Hexabromocyclododecane, CAS# 25637-99-4, 3194-55-6		Not Contained
DEHP – Bis (2-ethylhexyl) phthalate, CAS# 117-81-7		Not Contained
BBP – Butyl benzyl phthalate, CAS# 85-68-7		Not Contained
DBP – Dibutyl phthalate, CAS# 84-74-2		Not Contained
DIBP – Diisobutyl phthalate, CAS #84-69-5		Not Used in Manufacturing/ Not Intentionally Added
Other Restricted Substances		**Allowable Limit**
Halogen Free	Bromine (Br) CAS# 7726-95-6*	900 ppm
	Chlorine (Cl) CAS# 7782-50-5	900 ppm
	Bromine (Br) CAS# 7726-95-6 + Chlorine (Cl) CAS# 7782-50-5	1500 ppm
Antimony (Sb) CAS# 7440-36-0*		750 ppm
Antimony Trioxide (Sb2O3) CAS# 1309-64-4		ND
Red Phosphorus (P4) CAS# 7723-14-0		100 ppm
TBTO (Tributyltin Oxide) CAS# 56-35-9		Not Used in Manufacturing/ Not Intentionally Added

*Concentration limit is applicable to polymeric material only such as mold compound

APPENDIX B: Manufacturing Part Number

QS3VH257QG8