



Test Report

No.: SHAPH24013272207

Date: Jul 25, 2024

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Client Name: JIANGSU XINSHUN MICROELECTRONICS CO.,LTD  
Client Address: NO.78 CHANGSHAN RD.,JIANGYIN CITY,JIANGSU PRO.,CHINA

Sample Name: fast recovery diode  
The above sample(s) and information were provided by the client.

SGS Job No.: SHIN2406004632PL04  
Sample Receiving Date: Jun 18, 2024  
Testing Period: Jun 18, 2024 ~ Jun 26, 2024  
Test Requested: Select test(s) as requested by the client.  
Test Method(s): Please refer to next page(s).  
Test Result(s): Please refer to next page(s).

Test Requirement	Conclusion
EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU - Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBB), Polybrominated diphenyl ethers (PBDE), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP)	Pass
Element(s)	See Results
Halogen	See Results
Red Phosphorus	See Results
European Regulation POPs (EU) 2020/784 amending to Regulation (EU) 2019/1021 Annex I - Perfluorooctanoic acid (PFOA) and its salts, PFOA-Related Substances, Perfluorooctane	

Signed for and on behalf of  
SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.



Mei Shen  
Approved Signatory





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Test Item(s)	Limit	Unit(s)	MDL	004
Octabrominated diphenyl ether (OctaBDE)	-	mg/kg	5	ND
Nonabrominated diphenyl ether (NonaBDE)	-	mg/kg	5	ND
Decabrominated diphenyl ether (DecaBDE)	-	mg/kg	5	ND
Bis(2-ethylhexyl) phthalate (DEHP)	1000	mg/kg	50	ND
Butyl benzyl phthalate (BBP)	1000	mg/kg	50	ND
Dibutyl phthalate (DBP)	1000	mg/kg	50	ND
Diisobutyl phthalate (DIBP)	1000	mg/kg	50	ND

### Notes:

- (1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.
- (2) IEC 62321 series is equivalent to EN 62321 series.
- (3) 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.

### Element(s)

**Test Method:** With reference to US EPA 3052:1996, analysis was performed by ICP-OES/AAS.

Test Item(s)	Unit(s)	MDL	004
Arsenic(As)	mg/kg	10	1113
Antimony(Sb)	mg/kg	10	ND

### Halogen

**Test Method:** With reference to EN 14582:2016, analysis was performed by IC.

Test Item(s)	Unit(s)	MDL	004
Fluorine(F)	mg/kg	20	41
Chlorine(Cl)	mg/kg	50	ND
Bromine(Br)	mg/kg	50	ND
Iodine(I)	mg/kg	50	ND

### Red Phosphorus

**Test Method:** With reference to SGS In house method, analysis was performed by ICP-OES and Pyrolysis-GC-MS.

Test Item(s)	CAS No.	Unit(s)	MDL	004
Red Phosphorus	7723-14-0	mg/kg	500	ND

### Notes:

- (1) The testing result is based on the worst-case scenario, and confirmed by Pyrolysis-GC-MS.

**European Regulation POPs (EU) 2020/784 amending to Regulation (EU) 2019/1021 Annex I - Perfluorooctanoic acid (PFOA) and its salts, PFOA-Related Substances, Perfluorooctane sulfonic acid (PFOS) and its derivatives**

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**Test Method:** Modified CEN/TS 15968:2010, analysis was performed by LC-MS or LC-MS/MS and GC-MS.

Test Item(s)	CAS No.	Limit	Unit(s)	MDL	004
<b>PFOS, its salts and related compounds</b>					
Perfluorooctane sulfonic acid (PFOS), its salts^	1763-23-1	-	mg/kg	0.010	ND
N-ethylperfluoro-1-octanesulfonamide (N-EtFOSA)	4151-50-2	-	mg/kg	0.010	ND
N-methylperfluoro-1-octanesulfonamide (N-MeFOSA)	31506-32-8	-	mg/kg	0.010	ND
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol (N-EtFOSE)	1691-99-2	-	mg/kg	0.010	ND
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol (N-MeFOSE)	24448-09-7	-	mg/kg	0.010	ND
Perfluorooctane sulfonamide (PFOSA), its salts^	754-91-6	-	mg/kg	0.010	ND
Sum of Perfluorooctane sulfonic acid (PFOS) and its derivatives	-	10	mg/kg	-	ND
<b>PFOA, its salts</b>					
Perfluorooctanoic acid (PFOA), its salts^	335-67-1	0.025	mg/kg	0.010	ND
<b>PFOA-related compounds</b>					
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS), its salts^	39108-34-4	-	mg/kg	0.010	ND
Methyl perfluorooctanoate (Me-PFOA)	376-27-2	-	mg/kg	0.100	ND
Ethyl perfluorooctanoate (Et-PFOA)	3108-24-5	-	mg/kg	0.100	ND
1H,1H,2H,2H-Perfluorodecyl acrylate (8:2 FTA)	27905-45-9	-	mg/kg	0.100	ND



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Test Item(s)	CAS No.	Limit	Unit(s)	MDL	004
Conclusion					Pass

Notes:

Substance Name	CAS No.
PFOS, its salts & derivatives	
PFOSA, its salts	
PFOA, its salts & derivatives	
8:2 FTS, its salts	



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H <sub>2</sub> PFDA/8:2 FTCA, its salts	
8:2diPAP, its salts	
H <sub>4</sub> PFUnDA/ 8:3 FTCA, its salts	

### Persistent, Bioaccumulative, and Toxic (PBT) Chemicals under US EPA Toxic Substances Control Act (TSCA) Section 6(h)

**Test Method:** With reference to US EPA 3550C:2007, analysis was performed by GC-MS.

Test Item(s)	CAS No.	Limit	Unit(s)	MDL	004
Decabromodiphenyl ether (DecaBDE) <sup>1</sup>	1163-19-5	Prohibited	mg/kg	5	ND
Phenol, isopropylated phosphate (3:1) (PIP 3:1) <sup>2</sup>	68937-41-7	Prohibited	mg/kg	5	ND
2,4,6-Tris(tert-butyl)phenol (2,4,6-TTBP) <sup>3</sup>	732-26-3	3000	mg/kg	5	ND
Hexachlorobutadiene (HCBd)	87-68-3	Prohibited	mg/kg	5	ND
Pentachlorothiophenol (PCTP)	133-49-3	10000	mg/kg	5	ND
<b>Conclusion</b>					<b>Pass</b>

#### Notes:

(1) The regulation is available at the following link.

<https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/persistent-bioaccumulative-and-toxic-pbt-chemicals-under>

(2) <sup>1</sup>: The submitted sample is exempted if it is plastic for recycling from products or articles containing Deca-BDE.

(3) <sup>2</sup>: The submitted sample is exempted from the regulated scope if it is anyone of the following:

- Hydraulic fluids for aviation or military industry;
- Lubricants and grease;
- New and replacement parts for motor and aerospace vehicles;
- Intermediate in a closed system to produce cyanoacrylate adhesive;
- Specialized engine air filters for locomotive and marine applications;
- Plastic for recycling from products or articles containing PIP (3:1);
- Finished products or articles made of plastic recycled from products or articles containing PIP (3:1).

(4) <sup>3</sup>: The submitted sample is out of the regulated scope if it is not oil or lubricant.

### AfPS GS 2019:01 PAK-Polycyclic Aromatic Hydrocarbons (PAHs)

**Test Method:** With reference to AfPS GS 2019:01 PAK, analysis was performed by GC-MS.

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Benzo(e)pyrene (BeP) mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo(a)anthracene (BaA) mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo(b)fluoranthene (BbF) mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo(j)fluoranthene (BjF) mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo(k)fluoranthene (BkF) mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Chrysene (CHR) mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Dibenzo(a,h)anthracene (DBA) mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo(g,h,i)perylene (BPE) mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Indeno(1,2,3-cd)pyrene (IPY) mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Phenanthrene (PHE), pyrene (PYR), anthracene (ANT), fluoranthene (FLT), mg/kg	< 1 Sum	< 5 Sum	< 10 Sum	< 20 Sum	< 50 Sum
Naphthalene (NAP) mg/kg	< 1	< 2		< 10	
<b>Sum of 15 PAHs</b>	<1	< 5	< 10	< 20	< 50

## Notes:

<sup>a</sup> A

<sup>b</sup> Use by children includes both active and passive contact by children.

<sup>c</sup> -

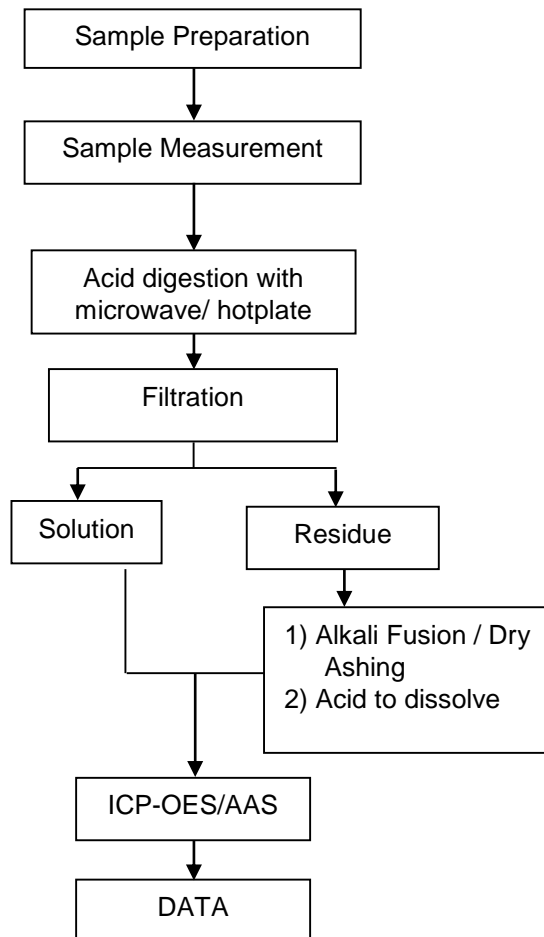
(EC) No.1272/2013)

<sup>d</sup>



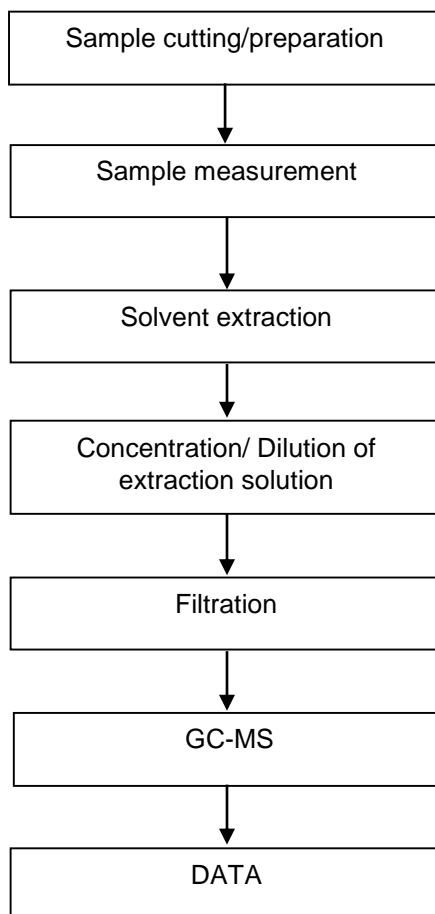
**Elements Testing Flow Chart**

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

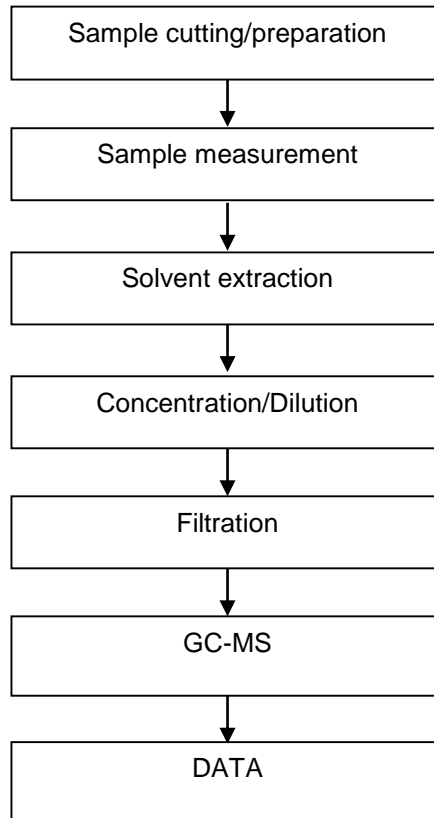




## PBB/PBDE Testing Flow Chart

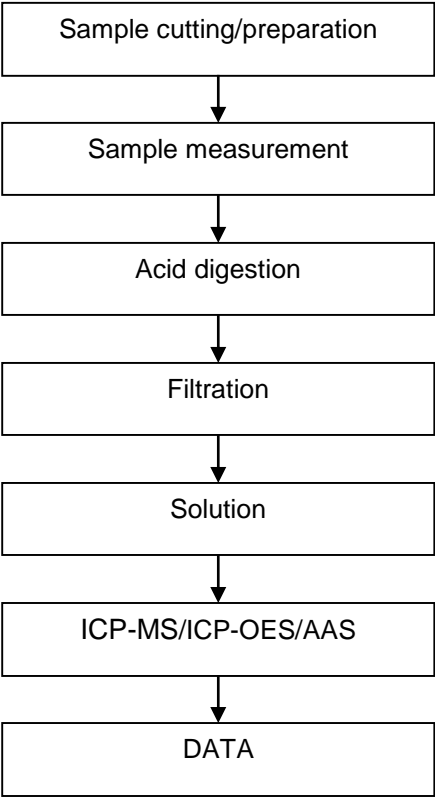


**Phthalates Testing Flow Chart**





Elements Testing Flow Chart



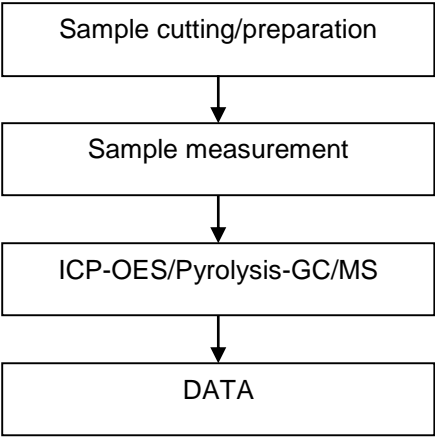
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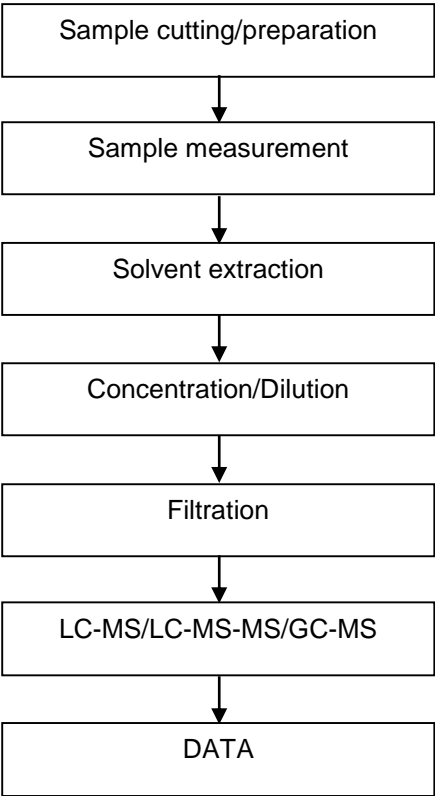


Red Phosphorus Testing Flow Chart





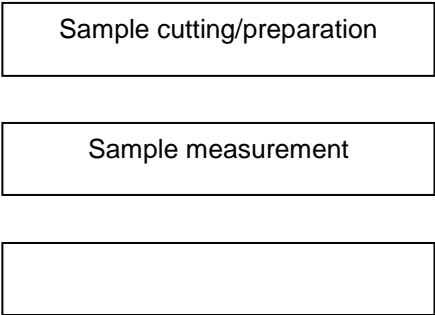
PFASs/ PFOS/PFOA Testing Flow Chart





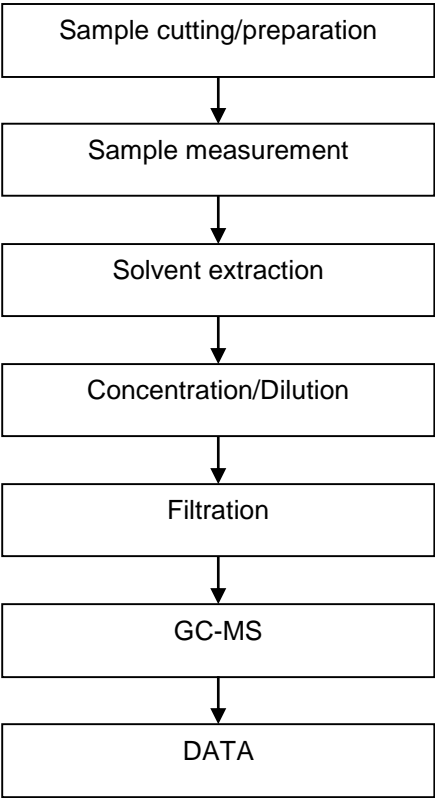


**Persistent, Bioaccumulative, and Toxic (PBT) Chemicals Testing Flow Chart**





PAHs Testing Flow Chart



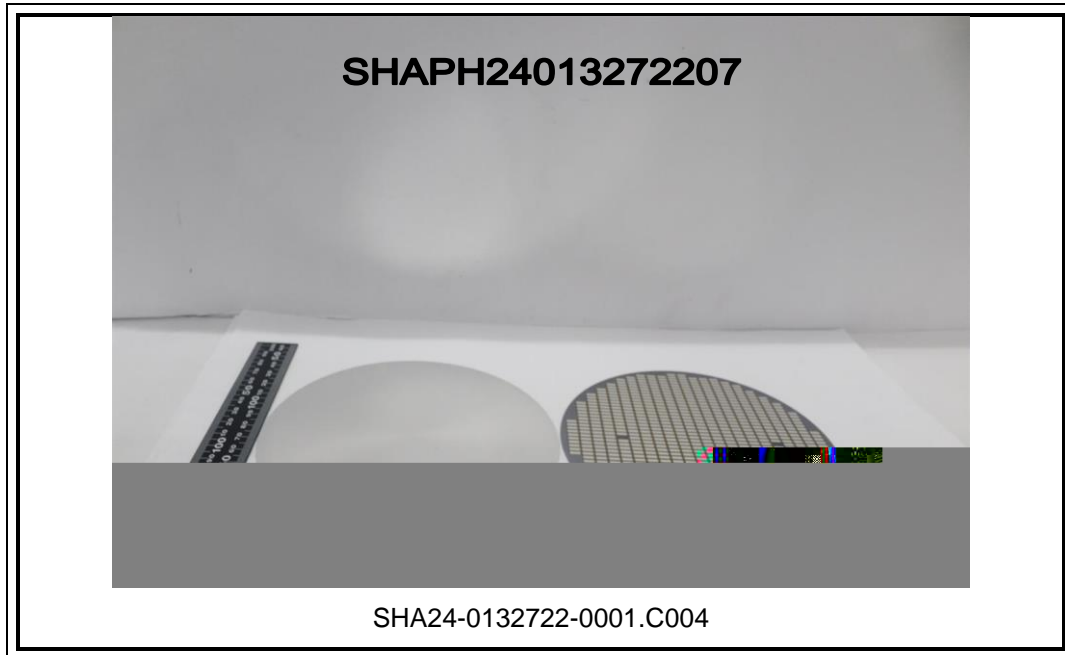
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Sample Photo:



SGS authenticate the photo on original report only  
 \*\*\* End of Report \*\*\*