

Test Report

No.: SHAPH24013272205

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: epitaxy PNP chip

The above sample(s) and information were provided by the client.

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

Mei Shen

Mei Shen

Approved Signatory

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Test Result(s):

Test Part Description

SN ID	Sample No.	SGS Sample ID	Description
SN1	003	SHA24-0132722-0001.C003	Color silicon wafer

Remarks:

- (1) 1 mg/kg = 1 ppm = 0.0001%
- (2) MDL = Method Detection Limit
- (3) ND = Not Detected (< MDL)
- (4) %MDL [Å] ^ * ~ |æ^å

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)

Test Method: With reference to IEC 62321-4:2013+AMD1:2017, IEC 62321-5:2013, IEC 62321-7-2:2017, IEC 62321-6:2015 and IEC 62321-8:2017, analysis was performed by ICP-OES/AAS, UV-Vis and GC-MS.

Test Item(s)	Limit
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Test Item(s)	Limit	Unit(s)	MDL	003
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	003
Arsenic(As)	mg/kg		



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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	003
PFOS, its salts and related compounds					
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
PFOA, its salts					
Perfluorooctanoic acid (PFOA), its salts [^]	335-67-1	0.025	mg/kg	0.010	ND
PFOA-related compounds					
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
1H,1H,2H,2H-Perfluorodecyl methacrylate (8:2 FTMA)	1996-88-9	-	mg/kg	0.100	ND
Perfluoro-1-iodooctane (PFOI)	507-63-1	-	mg/kg	0.100	ND
2H,2H-Perfluorodecane Acid (H ₂ PFDA/8:2 FTCA), its salts [^]	27854-31-5	-	mg/kg	0.010	ND
1H,1H,2H,2H-Perfluoro-1-decanol (8:2 FTOH)	678-39-7	-	mg/kg	0.100	ND
1-Iodo-1H,1H,2H,2H-perfluorodecane (8:2 FTI)	2043-53-0	-	mg/kg	0.100	ND
1H,1H,2H,2H-Perfluorodecyltriethoxysilane (8:2 FTSi(OC ₂ H ₅) ₃)	101947-16-4	-	mg/kg	0.100	ND
bis(3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptafluorodecyl) hydrogen phosphate (8:2 diPAP), its salts [^]	678-41-1	-	mg/kg	0.010	ND
2H,2H,3H,3H-Perfluoroundecanoic Acid (H ₄ PFUnDA / 8:3 FTCA), its salts [^]	34598-33-9	-	mg/kg	0.010	ND
1H,1H,2H-Heptafluoro-1-decene (PFDE)	21652-58-4	-	mg/kg	0.100	ND
3-Perfluoroheptyl propanoic acid (7:3 FTCA)	812-70-4	-	mg/kg	0.010	ND
Sum of PFOA-related compounds	-	1.0	mg/kg	-	ND

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Test Item(s)	CAS No.	Limit	Unit(s)	MDL	003
Conclusion					Pass

Notes:

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Test Item(s)	CAS No.	Limit	Unit(s)	MDL	003
Benzo(a)pyrene (BaP)	50-32-8	1	mg/kg	0.1	ND
Benzo(e)pyrene (BeP)	192-97-2	1	mg/kg	0.1	ND
Benzo(a)anthracene (BaA)	56-55-3	1	mg/kg	0.1	ND
Benzo(b)fluoranthene (BbF)	205-99-2	1	mg/kg	0.1	ND
Benzo(j)fluoranthene (BjF)	205-82-3	1	mg/kg	0.1	ND
Benzo(k)fluoranthene (BkF)	207-08-9	1	mg/kg	0.1	ND
Chrysene (CHR)	218-01-9	1	mg/kg	0.1	ND
Dibenzo(a,h)anthracene (DBA)	53-70-3	1	mg/kg	0.1	ND
Benzo(g,h,i)perylene (BPE)	191-24-2	1	mg/kg	0.1	ND
Indeno(1,2,3-c,d)pyrene (IPY)	193-39-5	1	mg/kg	0.1	ND
Phenanthrene (PHE)	85-01-8	-	mg/kg	0.1	ND
Pyrene (PYR)	129-00-0				



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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	
Sum of 15 PAHs	<1	< 5	< 10	< 20	< 50

Notes:

- ^a A % of the total PAHs.
- ^b Use by children includes both active and passive contact by children.
- ^c According to the German Product Safety Act (ProdSG) (chapter 1 Article 2 No. 28) use of a product in a manner that the person placing it on the market, has not intended, but which could be reasonably foreseeable.
- ^d According to the definition of the German Product Safety Act (ProdSG) (chapter 1 Article 2 No. 28) use of a product in a manner that the person placing it on the market, has not intended, but which could be reasonably foreseeable.

Remark:

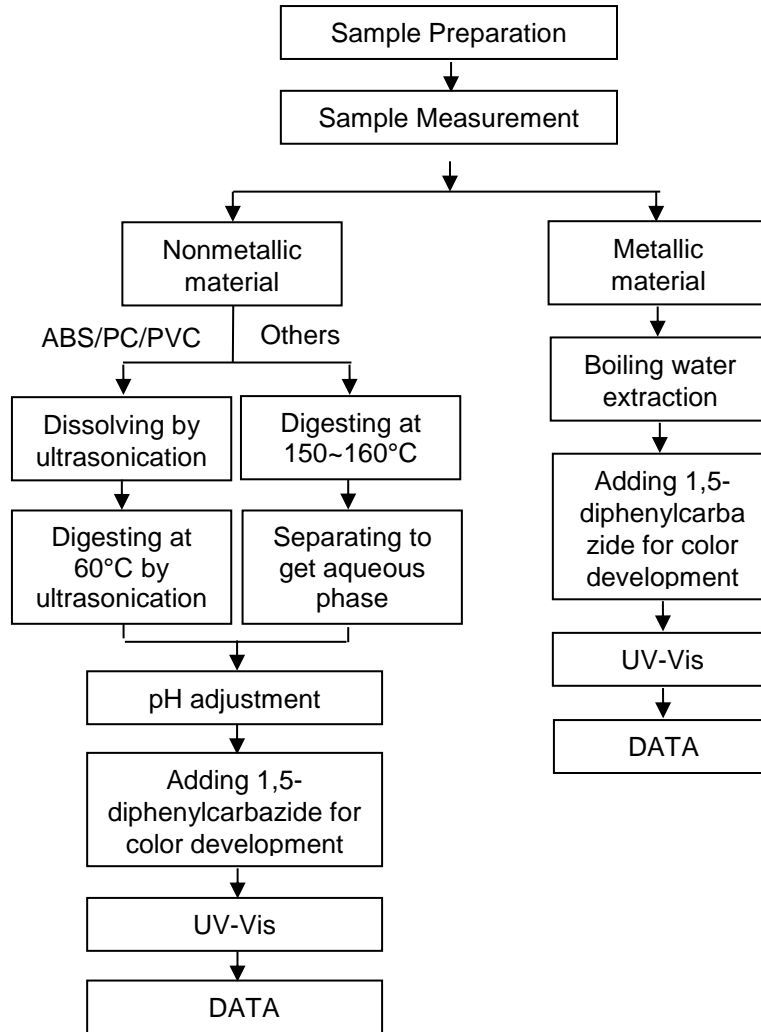
The German committee on Product Safety (AfPS) published a new PAHs document (AfPS GS 2019:01 PAK) on April 10, 2020, which will be binding for the issue of GS mark certificate from July 1, 2020.



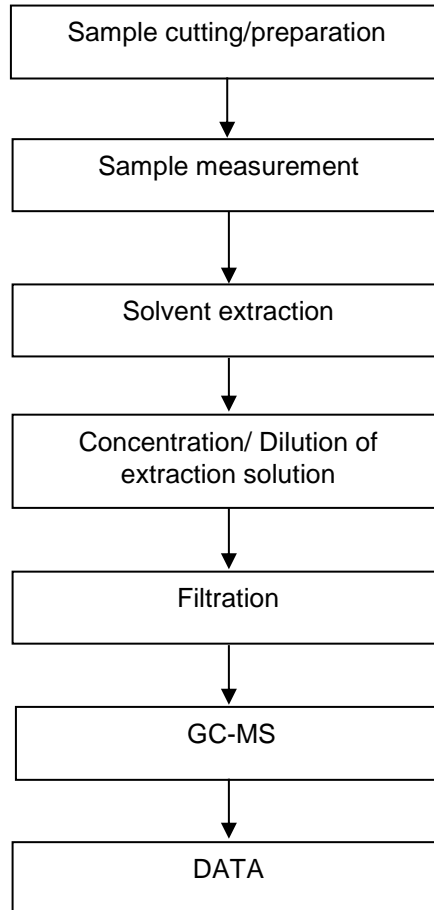
Elements Testing Flow Chart



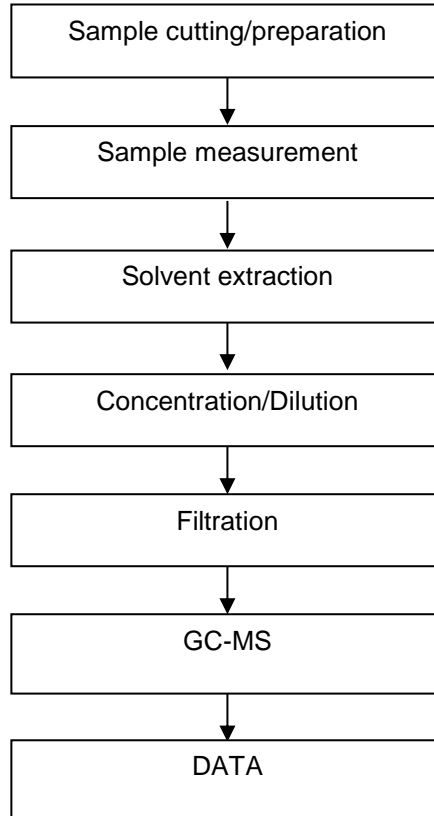
Hexavalent Chromium (Cr(VI)) Testing Flow Chart



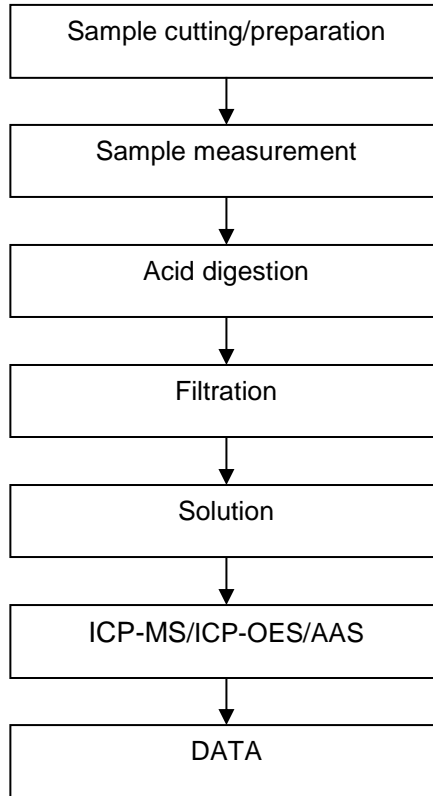
PBB/PBDE Testing Flow Chart



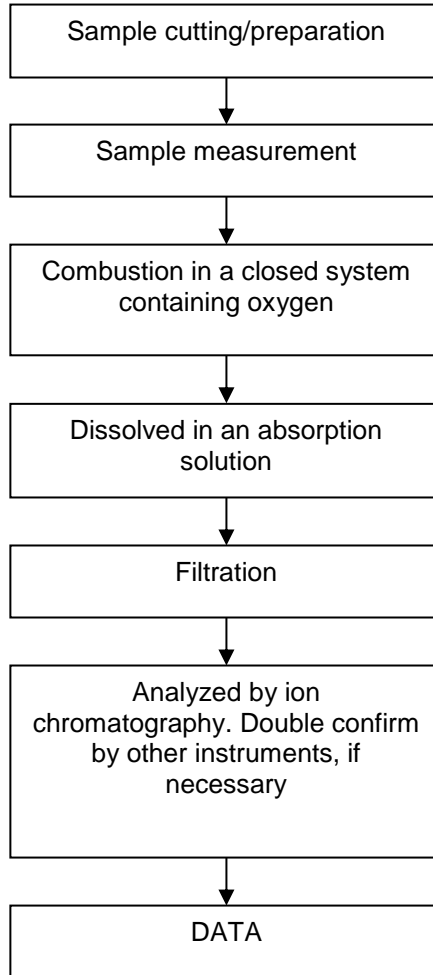
Phthalates Testing Flow Chart



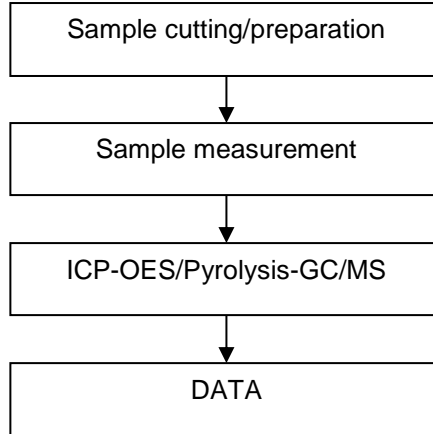
Elements Testing Flow Chart



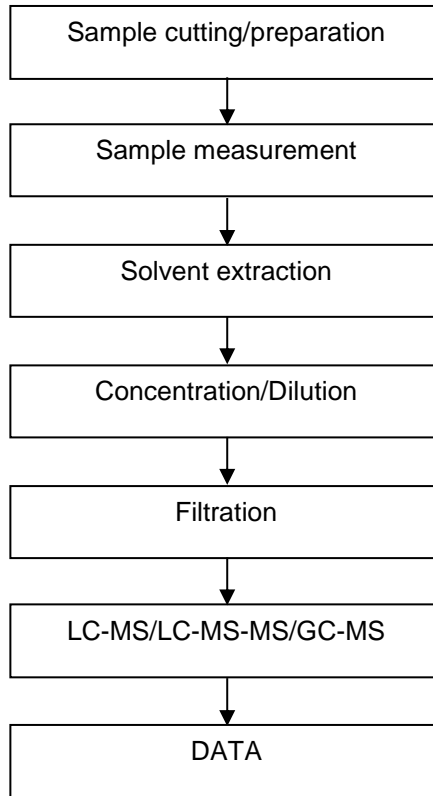
Halogen Testing Flow Chart



Red Phosphorus Testing Flow Chart



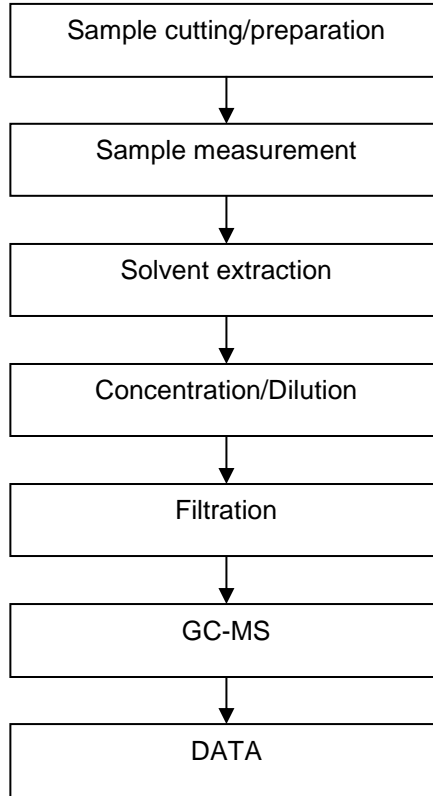
PFASs/ PFOS/PFOA Testing Flow Chart



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PAHs Testing Flow Chart



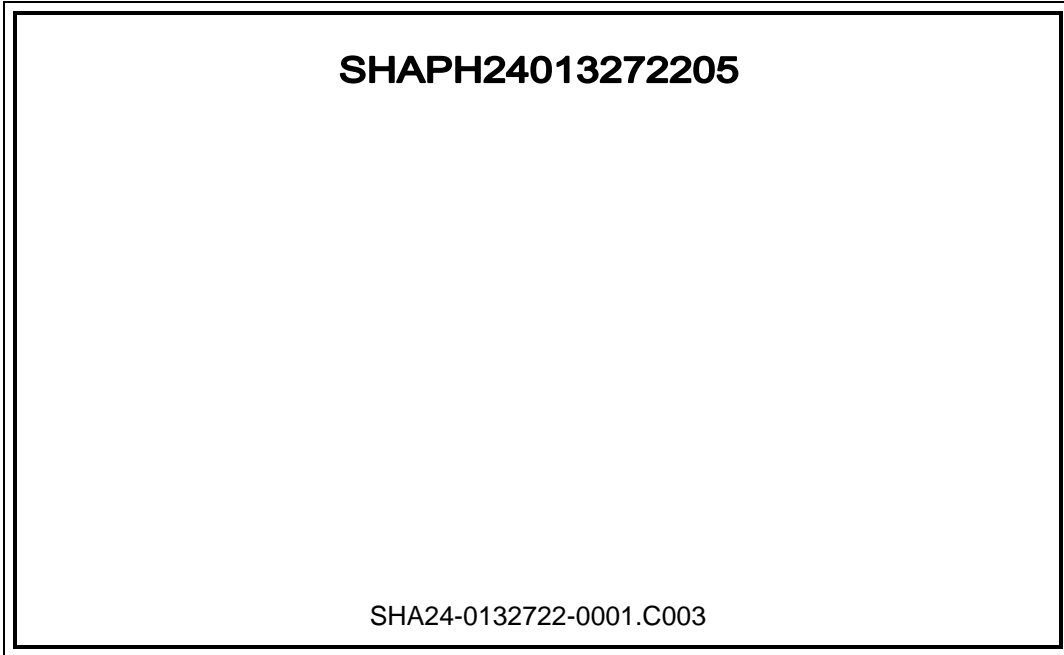
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Sample Photo:



SGS authenticate the photo on original report only
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