

Test Report No.: SHAEC22002935601 **Date:** Nov 02, 2022 Page 1 of 12

Client Name: CSMC TECHNOLOGIES FAB2 CO.,LTD

Client Address: 14 LIANGXI ROAD, WUXI, JIANGSU 214061, CHINA

Sample Name: 6 IN WAFER

Model No.: Bipolar-BASED (contain Al Process)
The above sample(s) and information were provided by the client.

.....

SGS Job No.: SP22-024577 Sample Receiving Date: Oct 27, 2022

Testing Period: Oct 27, 2022 - Nov 02, 2022

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
Hexabromocyclododecane (HBCDD)	See Results
EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU- Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP)	Pass
Halogen	See Results
Perfluorooctanesulfonate (PFOS) and its derivatives and Perfluorooctanoic Acid (PFOA)	See Results
Tetrabromobisphenol A (TBBP-A)	See Results

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

Sue Sheng

Approved Signatory





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Test Result(s):

Test Part Description:

SN ID	Sample No.	SGS Sample ID	Description
SN1	A1	SHA22-0029356-0001.C001	Colorful silicon wafer

Remarks:

- (1) 1 mg/kg = 1 ppm = 0.0001%
- (2) MDL = Method Detection Limit
- (3) ND = Not Detected (< MDL)
- (4) "-" = Not Regulated

Hexabromocyclododecane (HBCDD)

Test Method: With reference to IEC 62321-9:2021, analysis was performed by GC-MS.

Test Item(s)	CAS No.	Unit(s)	MDL	A1
Hexabromocyclododecane (HBCDD)	134237-50-6 /134237-51-7 /134237-52-8 /25637-99-4 /3194-55-6	mg/kg	20	ND

EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU- Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs), 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, UV-Vis

and GC-MS.

Test Item(s)	Limit	Unit(s)	MDL	A1
Cadmium(Cd)	100	mg/kg	2	ND
Lead (Pb)	1000	mg/kg	2	ND
Mercury (Hg)	1000	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))	1000	mg/kg	8	ND
Polybromobiphenyl (PBBs)	1000	mg/kg	1	ND
Monobromobiphenyl (MonoBB)	-	mg/kg	5	ND
Dibromobiphenyl (DiBB)	-	mg/kg	5	ND
Tribromobiphenyl (TriBB)	-	mg/kg	5	ND
Tetrabromobiphenyl (TetraBB)	-	mg/kg	5	ND
Pentabromobiphenyl (PentaBB)	-	mg/kg	5	ND
Hexabromobiphenyl (HexaBB)	-	mg/kg	5	ND
Heptabromobiphenyl (HeptaBB)	-	mg/kg	5	ND
Octabromobiphenyl (OctaBB)	-	mg/kg	5	ND
Nonabromobiphenyl (NonaBB)	-	mg/kg	5	ND
Decabromobiphenyl (DecaBB)	-	mg/kg	5	ND
Polybromodiphenyl ether(PBDEs)	1000	mg/kg	-	ND
Monobromodiphenylether (MonoBDE)	-	mg/kg	5	ND
Dibromodiphenylether (DiBDE)	-	mg/kg	5	ND



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Test Item(s)	Limit	Unit(s)	MDL	A1
Tribromodiphenylether (TriBDE)	•	mg/kg	5	ND
Tetrabromodiphenylether (TetraBDE)	•	mg/kg	5	ND
Pentabromodiphenylethers (PentaBDE)	•	mg/kg	5	ND
Hexabromodiphenylether (HexaBDE)	•	mg/kg	5	ND
Heptabromodiphenylether (HeptaBDE)	•	mg/kg	5	ND
Octabromodiphenylethers (OctaBDE)	•	mg/kg	5	ND
Nonabromodiphenylether (NonaBDE)	•	mg/kg	5	ND
Decabromodiphenylether (DecaBDE)	•	mg/kg	5	ND
Dibutyl Phthalate(DBP)	1000	mg/kg	50	ND
Benzyl Butyl Phthalate(BBP)	1000	mg/kg	50	ND
Bis-(2-ethylhexyl) Phthalate(DEHP)	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.

Halogen

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

Test Item(s)	Unit(s)	MDL	A1
Fluorine(F)	mg/kg	50	ND
Chlorine(CI)	mg/kg	50	ND
Bromine(Br)	mg/kg	50	ND
lodine(I)	mg/kg	50	ND

Perfluorooctanesulfonate (PFOS) and its derivatives and Perfluorooctanoic Acid (PFOA)

Test Method: With reference to CEN/TS 15968:2010, analysis was performed by HPLC-MS.

Test Item(s)	CAS No.	Unit(s)	MDL	A1
PFOS and Its Derivatives	-	mg/kg	ı	ND
Perfluorooctanesulfonic acid (PFOS)^	1763-23-1	mg/kg	0.01	ND
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	mg/kg	0.01	ND
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	mg/kg	0.01	ND
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol (EtFOSE)	1691-99-2	mg/kg	0.01	ND
2-(N-methylperfluoro-1-octanesulfonamido)- ethanol (MeFOSE)	24448-09-7	mg/kg	0.01	ND
Perfluorooctane Sulfonamide (PFOSA)	754-91-6	mg/kg	0.01	ND
Perfluorooctanoic Acid (PFOA) and its salts+	335-67-1	mg/kg	0.01	ND

Notes:

(1) + PFOA refer to its salts including PFOA-Na (CAS No.: 335-95-5), PFOA-K (CAS No.: 2395-00-8), PFOA-Ag (CAS No.: 335-93-3), PFOA-F (CAS No.: 335-66-0) and APFO (CAS No.: 3825-26-1);



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(2) ^ PFOS including PFOS-K (CAS No.: 2795-39-3), PFOS-Li (CAS No.: 29457-72-5), PFOS-NH4 (CAS No.: 29081-56-9), PFOS-NH(OH)₂ (CAS No.: 70225-14-8), PFOS-N(C₂H₅)₄ (CAS No.: 56773-42-3), PFOS-

DDA(CAS No.:251099-16-8) and POSF (CAS No.: 307-35-7).

Tetrabromobisphenol A (TBBP-A)

Test Method: With reference to US EPA 3540C:1996, analysis was performed by GC-MS.

Test Item(s)	CAS No.	Unit(s)	MDL	A1
Tetrabromobisphenol A (TBBPA)	79-94-7	mg/kg	10	ND

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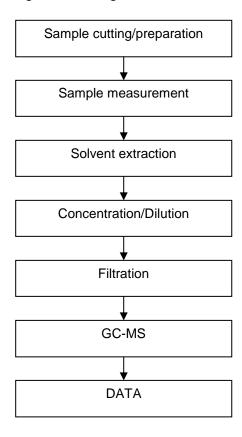


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ATTACHMENTS

HBCDD Testing Flow Chart

Name of the person who made testing: Gary Xu Name of the person in charge of testing: Jason Zhang





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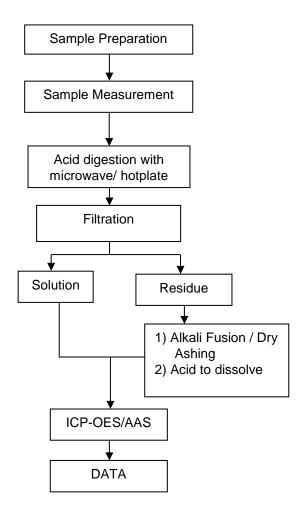
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ATTACHMENTS

Elements (IEC62321) Testing Flow Chart

Name of the person who made testing: Meria Jin/Sielina Song Name of the person in charge of testing: Luna Xu/Bob Zhang

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





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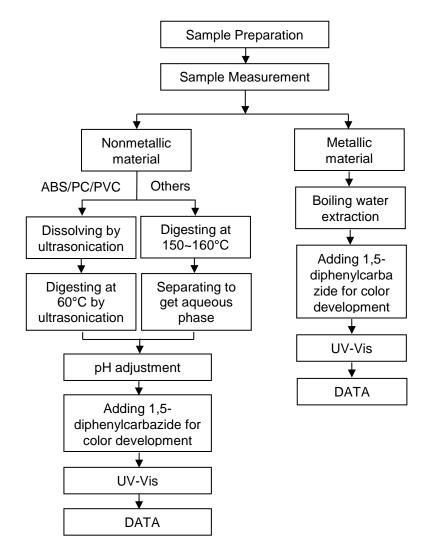
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ATTACHMENTS

Hexavalent Chromium (Cr(VI)) Testing Flow Chart

Name of the person who made testing: Alex Wang Name of the person in charge of testing: Xiaolong Yang





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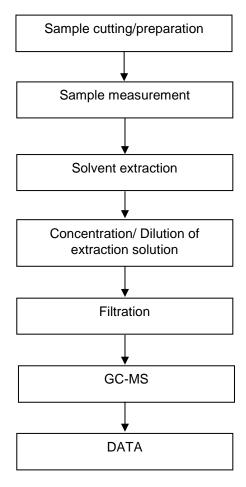


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PBBs/PBDEs Testing Flow Chart

Name of the person who made testing: Gary Xu Name of the person in charge of testing: Jason Zhang





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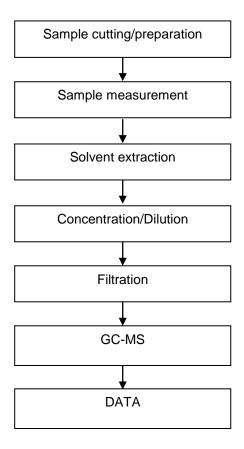


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Phthalates Testing Flow Chart

Name of the person who made testing: Iris Han Name of the person in charge of testing: Jason Zhang





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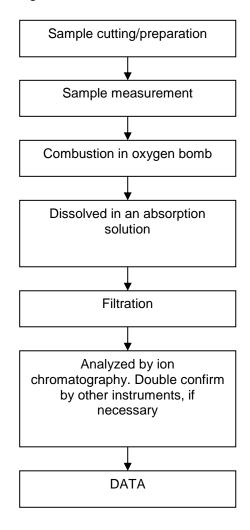


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Halogen Testing (oxygen bomb) Flow Chart

Name of the person who made testing: Andy Zhang Name of the person in charge of testing: Allen Chen





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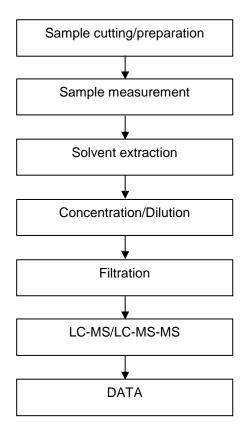


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ATTACHMENTS

PFASs/ PFOS/PFOA Testing Flow Chart

Name of the person who made testing: Mia Zeng Name of the person in charge of testing: Richer Yu





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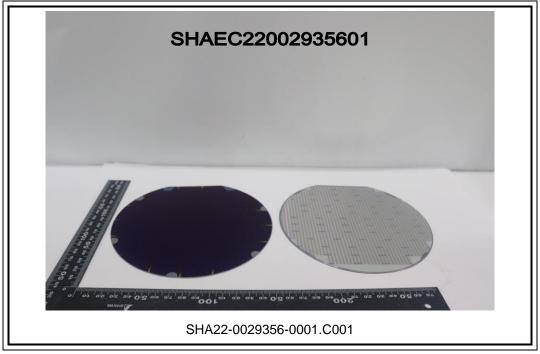
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Sample Photo:



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