



# Test Report

Report No. A2230338580101001

Company Name SEMICONDUCTOR MANUFACTURING NORTH CHINA (BEIJING) CORP.  
shown on Report

Address 18 WENCHANG ROAD, BEIJING ECONOMIC-TECHNOLOGICAL DEVELOPMENT  
AREA, CHINA, 100176

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

Sample Name Wafer  
Part No. SMNC(BJ) Cu Process 40nm Production Wafer  
Sample Received Date Jul. 12, 2023  
Testing Period Jul. 12, 2023 to Jul. 14, 2023

**Test Requested** As specified by client, to test Lead (Pb), Cadmium (Cd), Mercury (Hg), Hexavalent Chromium (Cr(VI)), Polybrominated Biphenyls (PBBs), Polybrominated Diphenyl Ethers (PBDEs), Phthalates (DBP, BBP, DEHP, DIBP) in the submitted sample(s).

**Test Method** Please refer to the following page(s).

**Test Result(s)** Please refer to the following page(s).

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**Conclusion**

| Tested Sample    | According to standard/directive                        | Result |
|------------------|--|--------|
| Submitted Sample | RoHS Directive 2011/65/EU with amendment (EU) 2015/863 | PASS   |

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PASS means that the results shown on the report comply with the limits set by RoHS Directive 2011/65/EU with amendment (EU) 2015/863.



Approved by

Date

Jul. 14, 2023

Chen kaimin

Lab Manager

No. R268854416

Centre Testing International Pinbiao(Shanghai) Co., Ltd.

No.1351, Wanfang Road, Minhang District, Shanghai, China

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**Test Method**

| Test Item(s)                           | Test Method   | Measured Equipment(s) |
|--|---|-----------------------|
| Lead (Pb)                              | IEC 62321-5:2013  | ICP-OES               |
| Cadmium (Cd)                           | IEC 62321-5:2013  | ICP-OES               |
| Mercury (Hg)                           | IEC 62321-4:2013+AMD1:2017 CSV  | ICP-OES               |
| Hexavalent Chromium (Cr(VI))           | IEC 62321-7-2:2017 and/or determination of Total Chromium by IEC 62321-5:2013 | UV-Vis/ICP-OES        |
| Polybrominated Biphenyls (PBBs)        | IEC 62321-6:2015  | GC-MS                 |
| Polybrominated Diphenyl Ethers (PBDEs) | IEC 62321-6:2015  | GC-MS                 |
| Phthalates (DBP, BBP, DEHP, DIBP)      | IEC 62321-8:2017  | GC-MS                 |

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**Test Result(s)**

| Tested Item(s)                                | Result | MDL     | Limit      |
|---|--------|---------|------------|
|   | 001    |         |            |
| Lead (Pb)                                     | N.D.   | 2 mg/kg | 1000 mg/kg |
| Cadmium (Cd)                                  | N.D.   | 2 mg/kg | 100 mg/kg  |
| Mercury (Hg)                                  | N.D.   | 2 mg/kg | 1000 mg/kg |
| Hexavalent Chromium (Cr(VI))                  | N.D.   | 8 mg/kg | 1000 mg/kg |
| Tested Item(s)                                | Result | MDL     | Limit      |
|   | 001    |         |            |
| <b>Polybrominated Biphenyls (PBBs)</b>        |        |         |            |
| Monobromobiphenyl                             | N.D.   | 5 mg/kg | 1000 mg/kg |
| Dibromobiphenyl                               | N.D.   | 5 mg/kg |            |
| Tribromobiphenyl                              | N.D.   | 5 mg/kg |            |
| Tetrabromobiphenyl                            | N.D.   | 5 mg/kg |            |
| Pentabromobiphenyl                            | N.D.   | 5 mg/kg |            |
| Hexabromobiphenyl                             | N.D.   | 5 mg/kg |            |
| Heptabromobiphenyl                            | N.D.   | 5 mg/kg |            |
| Octabromobiphenyl                             | N.D.   | 5 mg/kg |            |
| Nonabromobiphenyl                             | N.D.   | 5 mg/kg |            |
| Decabromobiphenyl                             | N.D.   | 5 mg/kg |            |
| Tested Item(s)                                | Result | MDL     | Limit      |
|   | 001    |         |            |
| <b>Polybrominated Diphenyl Ethers (PBDEs)</b> |        |         |            |
| Monobromodiphenyl ether                       | N.D.   | 5 mg/kg | 1000 mg/kg |
| Dibromodiphenyl ether                         | N.D.   | 5 mg/kg |            |
| Tribromodiphenyl ether                        | N.D.   | 5 mg/kg |            |
| Tetrabromodiphenyl ether                      | N.D.   | 5 mg/kg |            |
| Pentabromodiphenyl ether                      | N.D.   | 5 mg/kg |            |
| Hexabromodiphenyl ether                       | N.D.   | 5 mg/kg |            |
| Heptabromodiphenyl ether                      | N.D.   | 5 mg/kg |            |
| Octabromodiphenyl ether                       | N.D.   | 5 mg/kg |            |
| Nonabromodiphenyl ether                       | N.D.   | 5 mg/kg |            |
| Decabromodiphenyl ether                       | N.D.   | 5 mg/kg |            |

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**Test Result(s)**

| Tested Item(s)                                      | Result | MDL      | Limit      |
|---|--------|----------|------------|
|   | 001    |          |            |
| <b>Phthalates (DBP, BBP, DEHP, DIBP)</b>            |        |          |            |
| Dibutyl phthalate (DBP)<br>CAS#:84-74-2             | N.D.   | 50 mg/kg | 1000 mg/kg |
| Butyl benzyl phthalate (BBP)<br>CAS#:85-68-7        | N.D.   | 50 mg/kg | 1000 mg/kg |
| Di-(2-ethylhexyl) phthalate (DEHP)<br>CAS#:117-81-7 | N.D.   | 50 mg/kg | 1000 mg/kg |
| Diisobutyl phthalate (DIBP)<br>CAS#:84-69-5         | N.D.   | 50 mg/kg | 1000 mg/kg |

**Sample/Part Description**

| No. | CTI Sample ID | Description |
|-----|---------------|-------------|
| 1   | 001           | Wafer       |

**Remark:** The sample(s) had been dissolved totally tested for Lead, Cadmium, Mercury.

- MDL = Method Detection Limit
- N.D. = Not Detected (<MDL )
- mg/kg = ppm = parts per million
- 1000 mg/kg = 0.1%

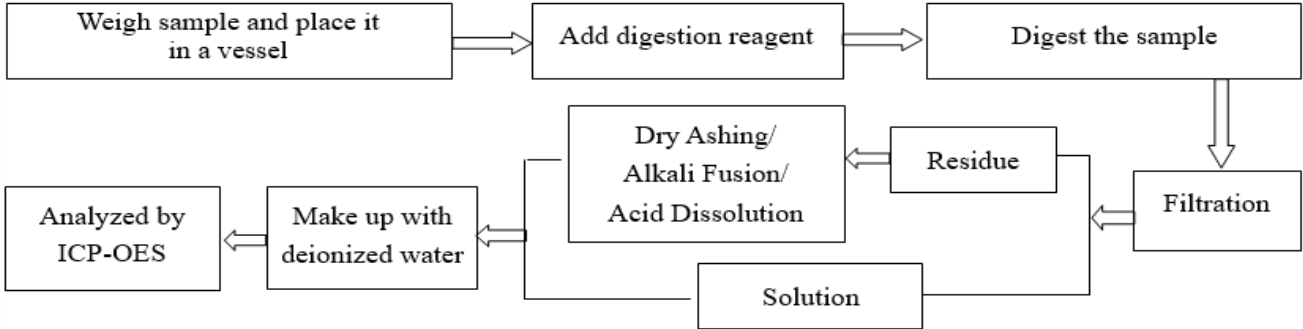
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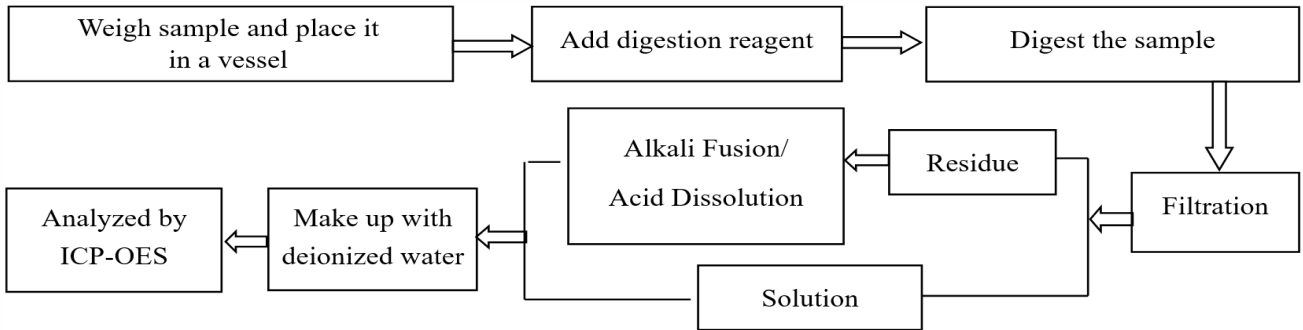
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**Test Process**

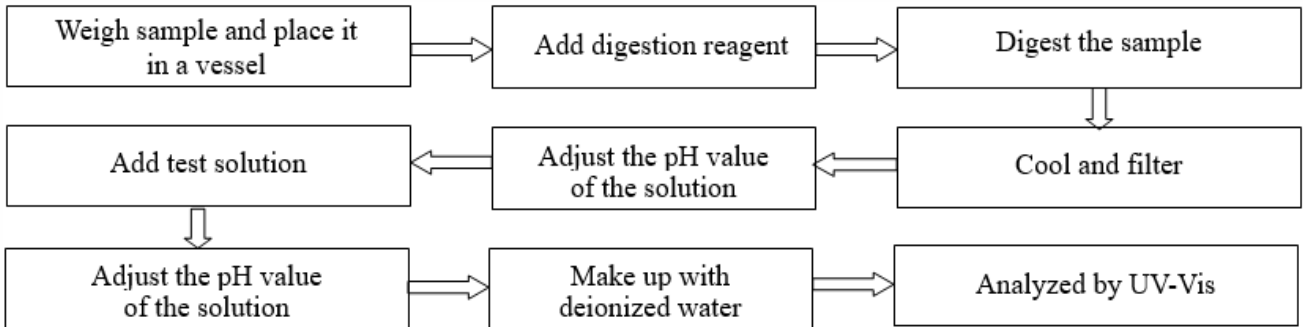
**1. Lead (Pb), Cadmium (Cd), Chromium (Cr)**



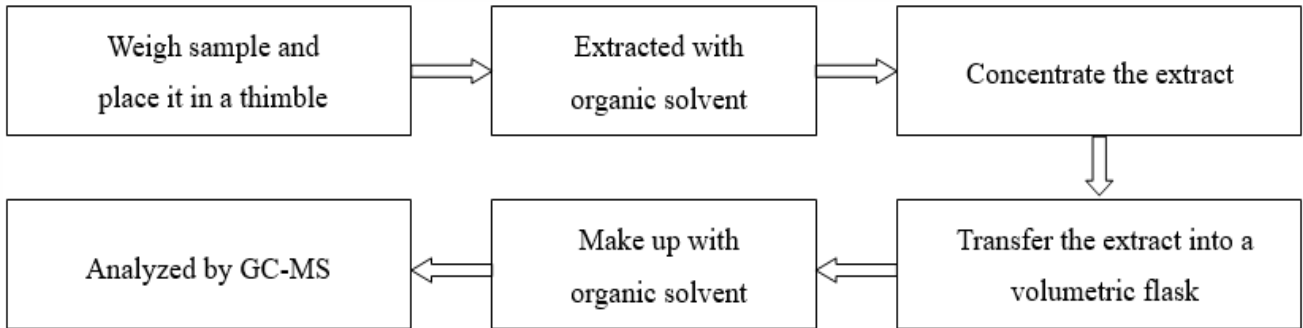
**2. Mercury (Hg)**



**3. Hexavalent Chromium (Cr(VI))**



**4. Polybrominated Biphenyls (PBBs), Polybrominated Diphenyl Ethers (PBDEs)**

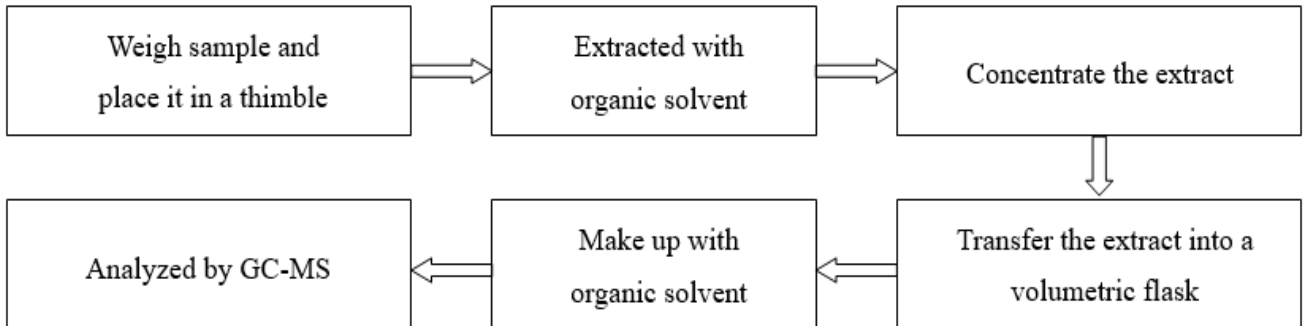


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## 5. Phthalates (DBP, BBP, DEHP, DIBP)

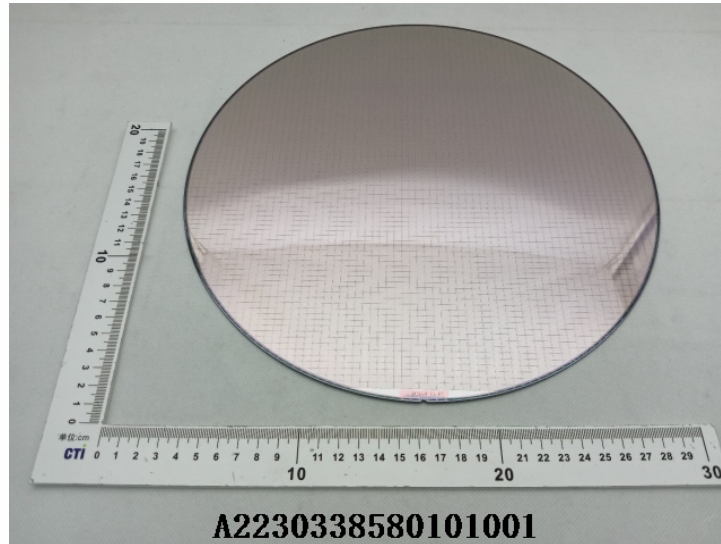


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## Photo(s) of the sample(s)



### Statement:

1. This report is considered invalid without approved signature, special seal and the seal on the perforation;
2. The Company Name shown on Report and Address, the sample(s) and sample information was/were provided by the applicant who should be responsible for the authenticity which CTI hasn't verified;
3. The result(s) shown in this report refer(s) only to the sample(s) tested;
4. Without written approval of CTI, this report can't be reproduced except in full;
5. In case of any discrepancy between the English version and Chinese version of the testing reports (if generated), the Chinese version shall prevail.

\*\*\* End of report \*\*\*