

Test Report

No. SHAEC2016887509

Date: 09 Sep 2020

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JIANGSU POPPULA SEMICONDUCTOR CO,LTD
36Huang Rd .,Siyang Economic Dev'tZone,Jiangsu,China

The following sample(s) was/were submitted and identified on behalf of the clients as : JD-36 Glass Tube

SGS Job No. : SP20-027302 - SH
Date of Sample Received : 26 Aug 2020
Testing Period : 26 Aug 2020 - 04 Sep 2020
Test Requested : Selected test(s) as requested by client.
Test Method : Please refer to next page(s).
Test Results : Please refer to next page(s).
Conclusion : Based on the performed tests on submitted sample(s), the results of Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs) and Phthalates such as Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP) comply with the limits as set by RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.

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

Sue Sheng

Sue Sheng
Approved Signatory



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中国·上海·徐汇区宜山路889号3号楼 邮编: 200233

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Test Results :

Test Part Description :

| Specimen No. | SGS Sample ID | Description |
|--------------|------------------|-------------------------|
| SN1 | SHA20-168875.005 | Transparent solid piece |

Remarks :

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

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

Test Method : With reference to IEC 62321-4:2013+AMD1:2017, IEC62321-5:2013, IEC62321-7-2:2017, IEC 62321-6:2015 and IEC62321-8:2017, analyzed by ICP-OES, UV-Vis and GC-MS.

| Test Item(s) | Limit | Unit | MDL | 005 |
|------------------------------|-------|-------|-----|----------|
| Cadmium (Cd) | 100 | mg/kg | 2 | ND |
| Lead (Pb) | 1000 | mg/kg | 2 | 544191▲* |
| Mercury (Hg) | 1000 | mg/kg | 2 | ND |
| Hexavalent Chromium (Cr(VI)) | 1000 | mg/kg | 8 | ND |
| Sum of PBBs | 1000 | mg/kg | - | ND |
| Monobromobiphenyl | - | mg/kg | 5 | ND |
| Dibromobiphenyl | - | mg/kg | 5 | ND |
| Tribromobiphenyl | - | mg/kg | 5 | ND |
| Tetrabromobiphenyl | - | mg/kg | 5 | ND |
| Pentabromobiphenyl | - | mg/kg | 5 | ND |
| Hexabromobiphenyl | - | mg/kg | 5 | ND |
| Heptabromobiphenyl | - | mg/kg | 5 | ND |
| Octabromobiphenyl | - | mg/kg | 5 | ND |
| Nonabromobiphenyl | - | mg/kg | 5 | ND |
| Decabromobiphenyl | - | mg/kg | 5 | ND |
| Sum of PBDEs | 1000 | mg/kg | - | ND |
| Monobromodiphenyl ether | - | mg/kg | 5 | ND |
| Dibromodiphenyl ether | - | mg/kg | 5 | ND |
| Tribromodiphenyl ether | - | mg/kg | 5 | ND |
| Tetrabromodiphenyl ether | - | mg/kg | 5 | ND |



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| <u>Test Item(s)</u> | <u>Limit</u> | <u>Unit</u> | <u>MDL</u> | <u>005</u> |
|-----------------------------------|--------------|-------------|------------|------------|
| Pentabromodiphenyl ether | - | mg/kg | 5 | ND |
| Hexabromodiphenyl ether | - | mg/kg | 5 | ND |
| Heptabromodiphenyl ether | - | mg/kg | 5 | ND |
| Octabromodiphenyl ether | - | mg/kg | 5 | ND |
| Nonabromodiphenyl ether | - | mg/kg | 5 | ND |
| Decabromodiphenyl ether | - | mg/kg | 5 | ND |
| Di-butyl Phthalate (DBP) | 1000 | mg/kg | 50 | ND |
| Benzyl Butyl Phthalate (BBP) | 1000 | mg/kg | 50 | ND |
| Di-2-Ethyl Hexyl Phthalate (DEHP) | 1000 | mg/kg | 50 | ND |
| Diisobutyl Phthalates (DIBP) | 1000 | mg/kg | 50 | ND |

Notes :

- (1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863. IEC 62321 series is equivalent to EN 62321 series
https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP_ORG_ID,FSP_LANG_ID:1258637,25
- (2) 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.
- (3) The restriction of DEHP, BBP, DBP and DIBP shall not apply to toys which are already subject to the restriction of DEHP, BBP, DBP and DIBP through entry 51 of Annex XVII to Regulation (EC) No 1907/2006.
- (4) *The reported result is for reference only.
- (5) ▲According to the declaration from the client, Lead (Pb) in No.005 is exempted by EU RoHS directive 2011/65/EU based on [ANNEX III 7(c)-I]: Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectronic devices, or in a glass or ceramic matrix compound.

Halogen

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

| <u>Test Item(s)</u> | <u>Unit</u> | <u>MDL</u> | <u>005</u> |
|---------------------|-------------|------------|------------|
| Fluorine (F) | mg/kg | 50 | ND |
| Chlorine (Cl) | mg/kg | 50 | ND |
| Bromine (Br) | mg/kg | 50 | ND |
| Iodine (I) | mg/kg | 50 | ND |

Element(s)



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

| Test Item(s) | Unit | MDL | 005 |
|----------------|-------|-----|-----|
| Antimony (Sb) | mg/kg | 10 | 779 |
| Beryllium (Be) | mg/kg | 5 | ND |
| Arsenic (As) | mg/kg | 10 | ND |
| Boron(B) | mg/kg | 10 | 32 |

Phthalates

Test Method : With reference to IEC 62321-8:2017, determination of phthalates by GC-MS.

| Test Item(s) | CAS NO. | Unit | MDL | 005 |
|-----------------------------|-------------|-------|-----|-----|
| Diisononyl Phthalate (DINP) | 28553-12-0 | mg/kg | 50 | ND |
| | /68515-48-0 | | | |



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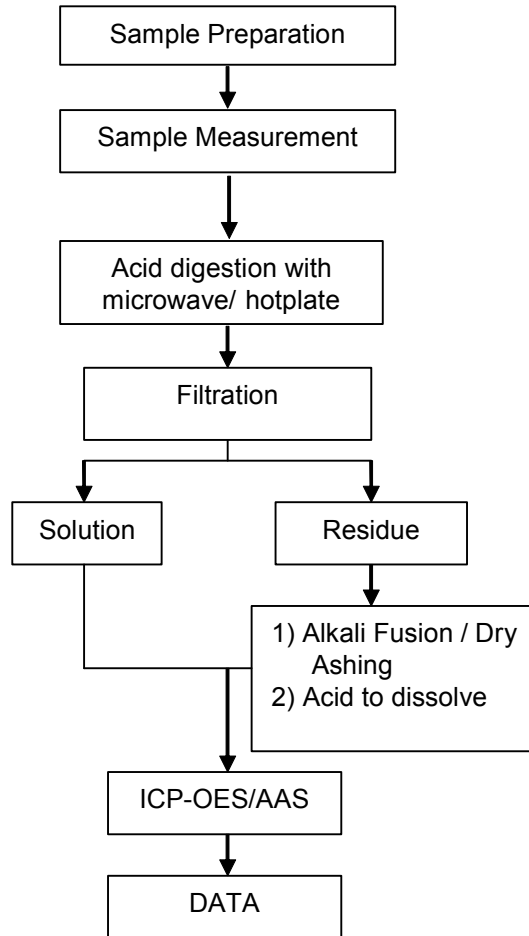
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Elements (IEC62321) Testing Flow Chart

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

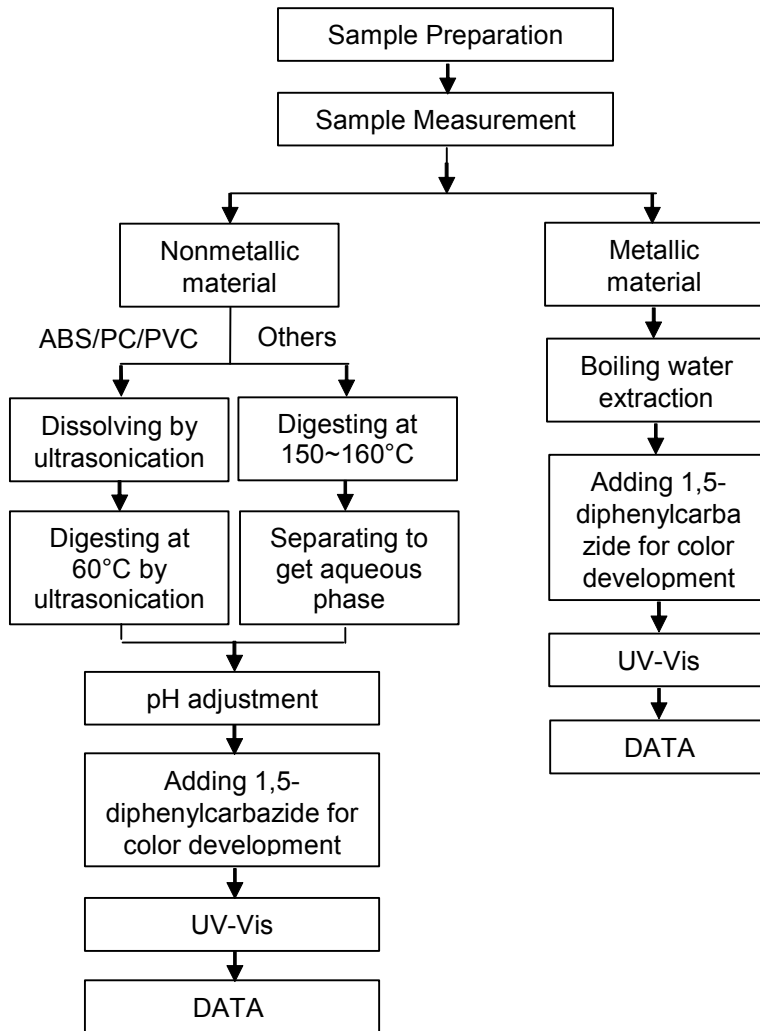


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Hexavalent Chromium (Cr(VI)) Testing Flow Chart

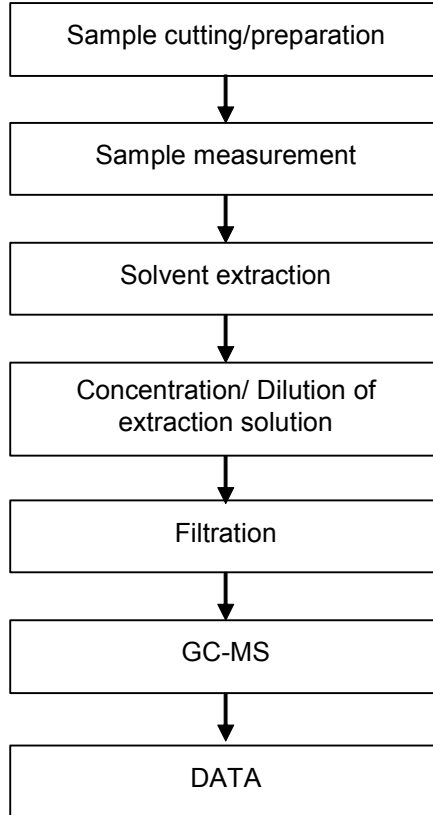


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PBBs/PBDEs Testing Flow Chart

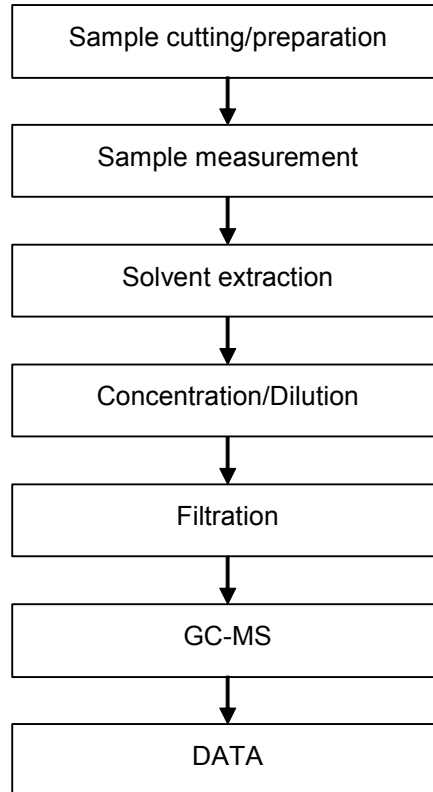


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Phthalates Testing Flow Chart

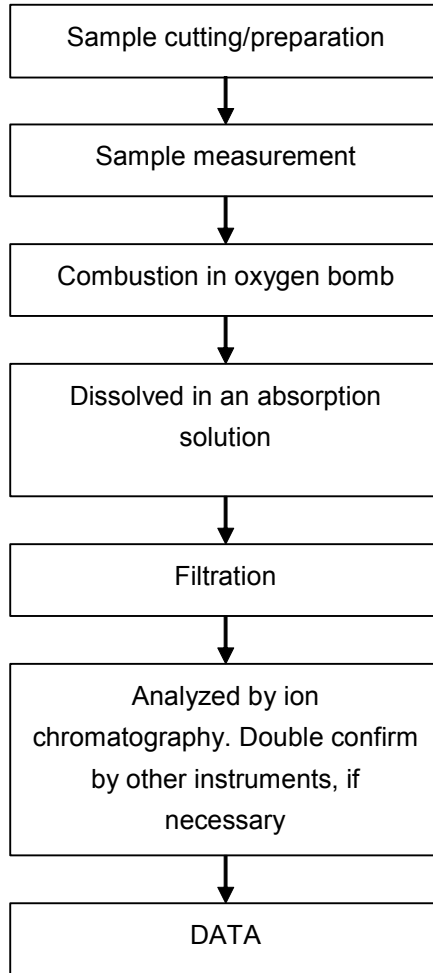


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Halogen Testing (oxygen bomb) Flow Chart

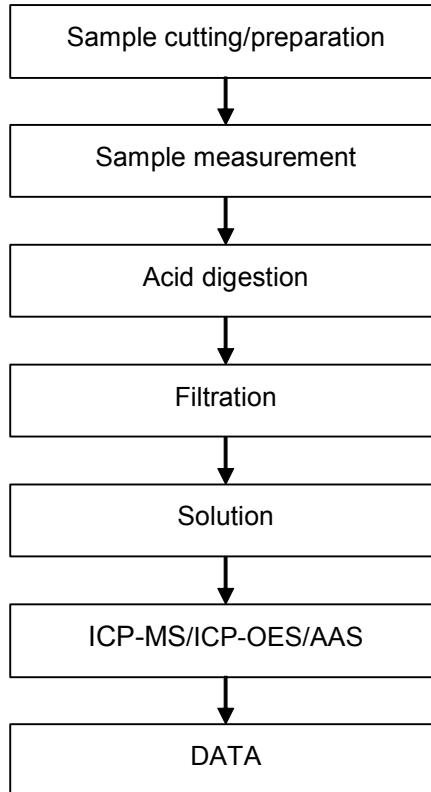


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Elements Testing Flow Chart



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