

Test Report

No.: CANEC23009889811

Date: Sep 22, 2023

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Client Name: GUANGZHOU TIANXIN PHOTOELECTRIC CO.,LTD

Client Address: #15-1, JINGU ROAD SOUTH,XIUTANG,HUADONG TOWN,HUADU DISTRICT,GUANGZHOU

Sample Name: High power density LED with copper substrate

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

SGS Job No.: GZP23-013561

Sample Receiving Date: Sep 13, 2023

Testing Period: Sep 13, 2023 ~ Sep 21, 2023

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 (PBBs), Polybrominated diphenyl ethers (PBDEs), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP) | Pass |
| EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU- Lead, Mercury, Cadmium and Hexavalent chromium | Pass |

Signed for and on behalf of
SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch

Jessie Li

Jessie-JX Li
Approved Signatory

scan to see the report



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Test Result(s):

Test Part Description

| SN ID | Sample No. | SGS Sample ID | Description |
|-------|------------|-------------------------|-----------------------------|
| SN1 | A18 | CAN23-0098898-0001.C018 | Colorless transparent glass |
| SN2 | A19 | CAN23-0098898-0001.C019 | Dk-grey material |
| SN3 | A20 | CAN23-0098898-0001.C020 | Copper-colored metal sheet |
| SN4 | A21 | CAN23-0098898-0001.C021 | Silvery metal pin |
| SN5 | A22 | CAN23-0098898-0001.C022 | Black paste |

Remarks:

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

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 | A18 | A19 |
|------------------------------------|-------|---------|-----|-----|-----|
| Cadmium(Cd) | 100 | mg/kg | 2 | ND | ND |
| Lead (Pb) | 1000 | mg/kg | 2 | ND | 5 |
| Mercury (Hg) | 1000 | mg/kg | 2 | ND | ND |
| Hexavalent Chromium (Cr(VI)) | 1000 | mg/kg | 8 | ND | ND |
| Polybromobiphenyl (PBBs) | 1000 | mg/kg | - | ND | ND |
| Monobromobiphenyl (MonoBB) | - | mg/kg | 5 | ND | ND |
| Dibromobiphenyl (DiBB) | - | mg/kg | 5 | ND | ND |
| Tribromobiphenyl (TriBB) | - | mg/kg | 5 | ND | ND |
| Tetrabromobiphenyl (TetraBB) | - | mg/kg | 5 | ND | ND |
| Pentabromobiphenyl (PentaBB) | - | mg/kg | 5 | ND | ND |
| Hexabromobiphenyl (HexaBB) | - | mg/kg | 5 | ND | ND |
| Heptabromobiphenyl (HeptaBB) | - | mg/kg | 5 | ND | ND |
| Octabromobiphenyl (OctaBB) | - | mg/kg | 5 | ND | ND |
| Nonabromobiphenyl (NonaBB) | - | mg/kg | 5 | ND | ND |
| Decabromobiphenyl (DecaBB) | - | mg/kg | 5 | ND | ND |
| Polybromodiphenyl ether(PBDEs) | 1000 | mg/kg | - | ND | ND |
| Monobromodiphenylether (MonoBDE) | - | mg/kg | 5 | ND | ND |
| Dibromodiphenylether (DiBDE) | - | mg/kg | 5 | ND | ND |
| Tribromodiphenylether (TriBDE) | - | mg/kg | 5 | ND | ND |
| Tetrabromodiphenylether (TetraBDE) | - | mg/kg | 5 | ND | ND |
| Pentabromodiphenylether (PentaBDE) | - | mg/kg | 5 | ND | ND |
| Hexabromodiphenylether (HexaBDE) | - | mg/kg | 5 | ND | ND |
| Heptabromodiphenylether (HeptaBDE) | - | mg/kg | 5 | ND | ND |
| Octabromodiphenylether (OctaBDE) | - | mg/kg | 5 | ND | ND |

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| Test Item(s) | Limit | Unit(s) | MDL | A22 |
|------------------------------------|-------|---------|-----|-----|
| 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.

EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU- Lead, Mercury, Cadmium and Hexavalent chromium

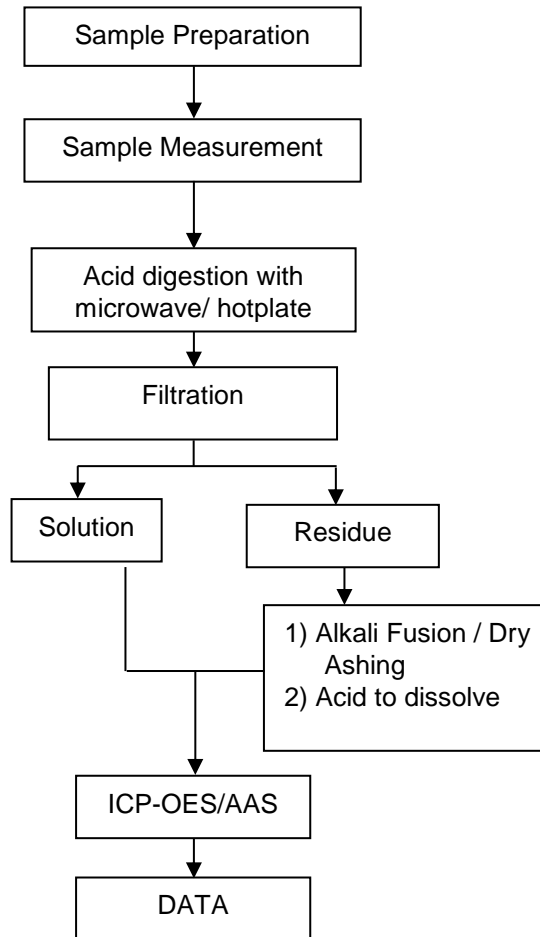
Test Method: With reference to IEC 62321-4:2013+AMD1:2017, IEC 62321-5:2013 and IEC 62321-7-1:2015, analysis was performed by ICP-OES and UV-Vis .

| Test Item(s) | Limit | Unit(s) | MDL | A20 | A21 |
|--------------|-------|--------------------|------|-----|-----|
| Cadmium(Cd) | 100 | mg/kg | 2 | ND | 4 |
| Lead(Pb) | 1000 | mg/kg | 2 | ND | 168 |
| Mercury(Hg) | 1000 | mg/kg | 2 | ND | ND |
| | - | µg/cm ² | 0.10 | ND | ND |

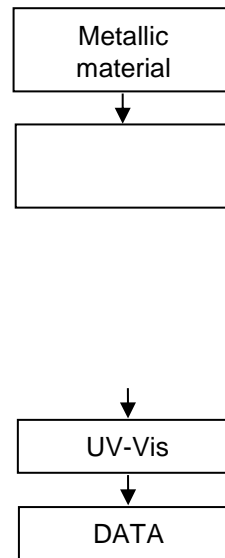
Notes:

Elements Testing Flow Chart

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



Hexavalent Chromium (Cr(VI)) Testing Flow Chart



Phthalates Testing Flow Chart



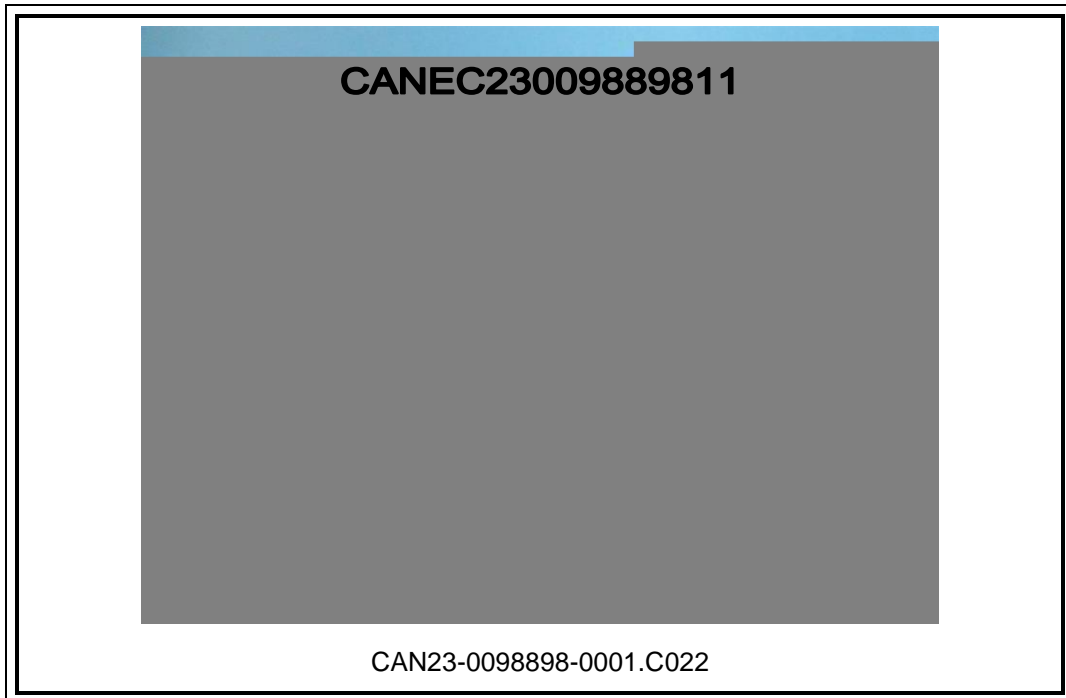
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