

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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Guangzhou Branch Standards Technical Services Co., Ltd. Guangzhou Branch

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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) “-” = Not Regulated

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	A18	A19
Nonabromodiphenylether (NonaBDE)	-	mg/kg	5	ND	ND
Decabromodiphenylether (DecaBDE)	-	mg/kg	5	ND	ND
Dibutyl Phthalate(DBP)	1000	mg/kg	50	ND	ND
Benzyl Butyl Phthalate(BBP)	1000	mg/kg	50	ND	ND
Bis-(2-ethylhexyl) Phthalate(DEHP)	1000	mg/kg	50	ND	ND
Diisobutyl Phthalate(DIBP)	1000	mg/kg	50	ND	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.

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	A22
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	-	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
Tribromodiphenylether (TriBDE)	-	mg/kg	5	ND
Tetrabromodiphenylether (TetraBDE)	-	mg/kg	5	ND
Pentabromodiphenylether (PentaBDE)	-	mg/kg	5	ND
Hexabromodiphenylether (HexaBDE)	-	mg/kg	5	ND
Heptabromodiphenylether (HeptaBDE)	-	mg/kg	5	ND
Octabromodiphenylether (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



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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
Hexavalent Chromium (Cr(VI)) ▼	-	µg/cm ²	0.10	ND	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) ▼ =
 - a. The sample is positive for Cr(VI) if the Cr(VI) concentration is greater than 0.13 µg/cm². The sample coating is considered to contain Cr(VI)
 - b. The sample is negative for Cr(VI) if Cr(VI) is ND (concentration less than 0.10 µg/cm²). The coating is considered a non-Cr(VI) based coating
 - c. The result between 0.10 µg/cm² and 0.13 µg/cm² is considered to be inconclusive-unavoidable coating variations may influence the determination.

Information on storage conditions and production date of the tested sample is unavailable and thus Cr(VI) results represent status of the sample at the time of testing.

Remark : The result(s) A22 shown is/are of the total weight of dried sample.
 Unless otherwise stated, the decision rule for conformity reporting is based on Binary Statement for Simple Acceptance Rule (w=0) stated in ILAC-G8:09/2019.



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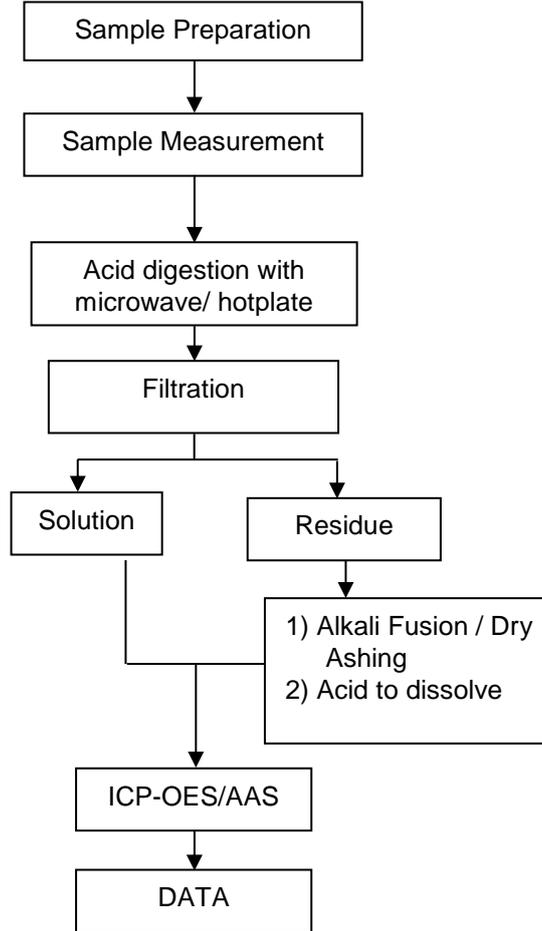
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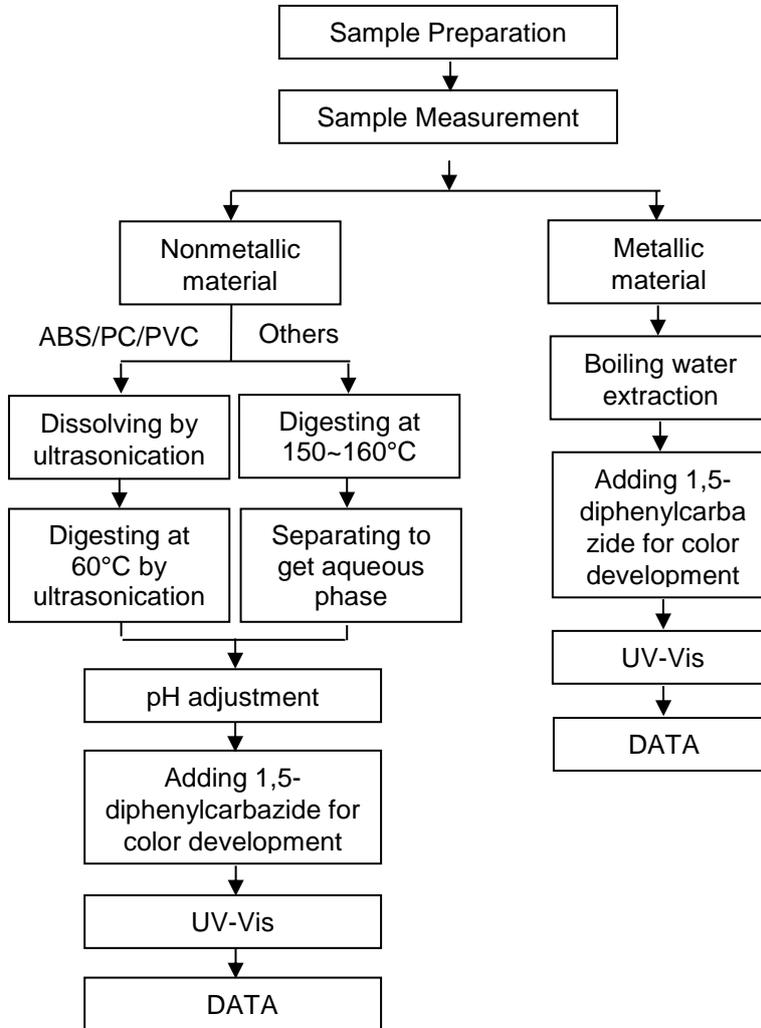
Elements Testing Flow Chart

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



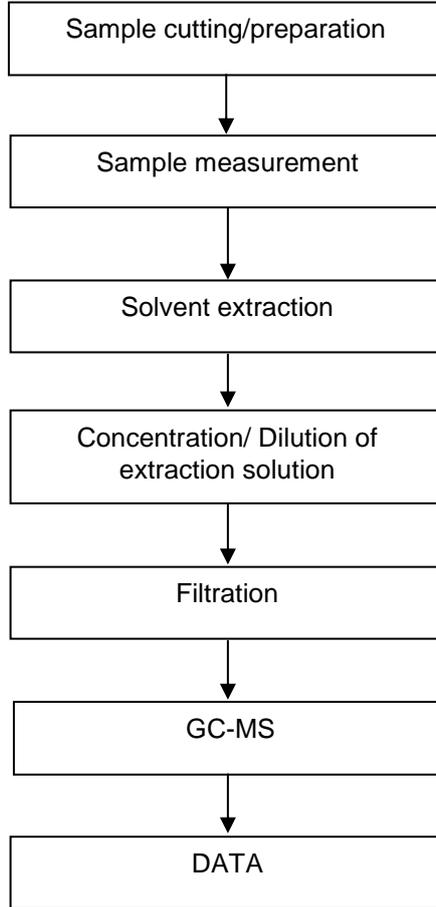
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Hexavalent Chromium (Cr(VI)) Testing Flow Chart



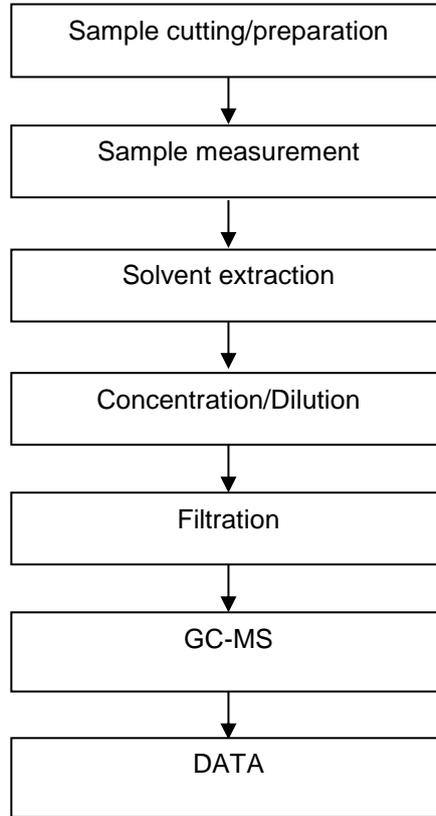
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PBBs/PBDEs Testing Flow Chart



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Phthalates Testing Flow Chart



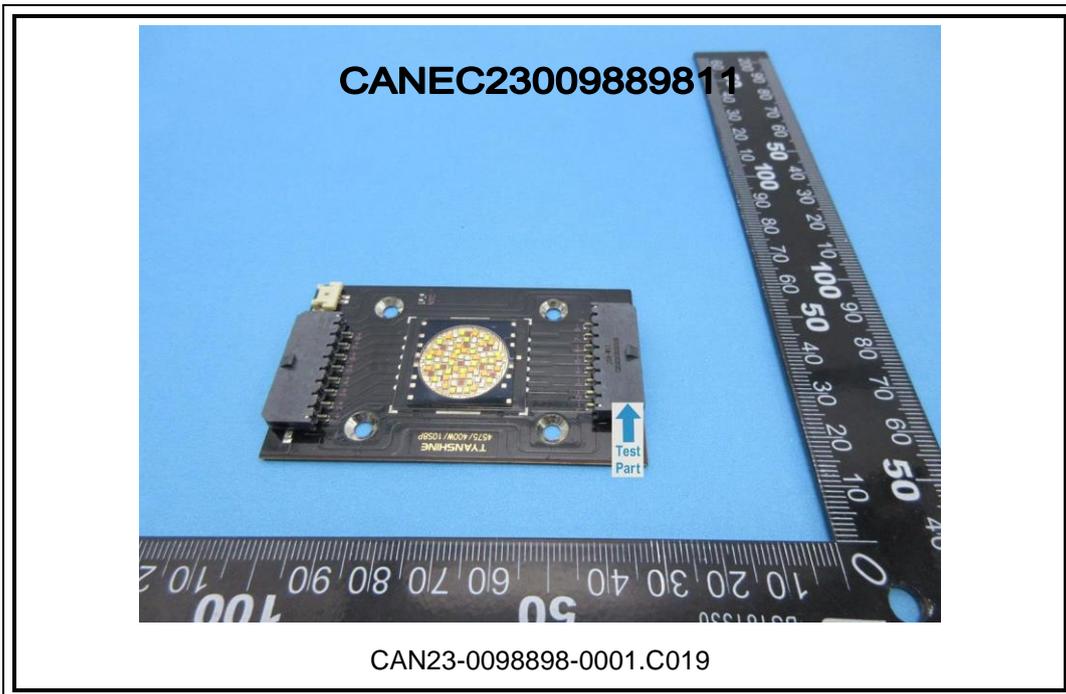
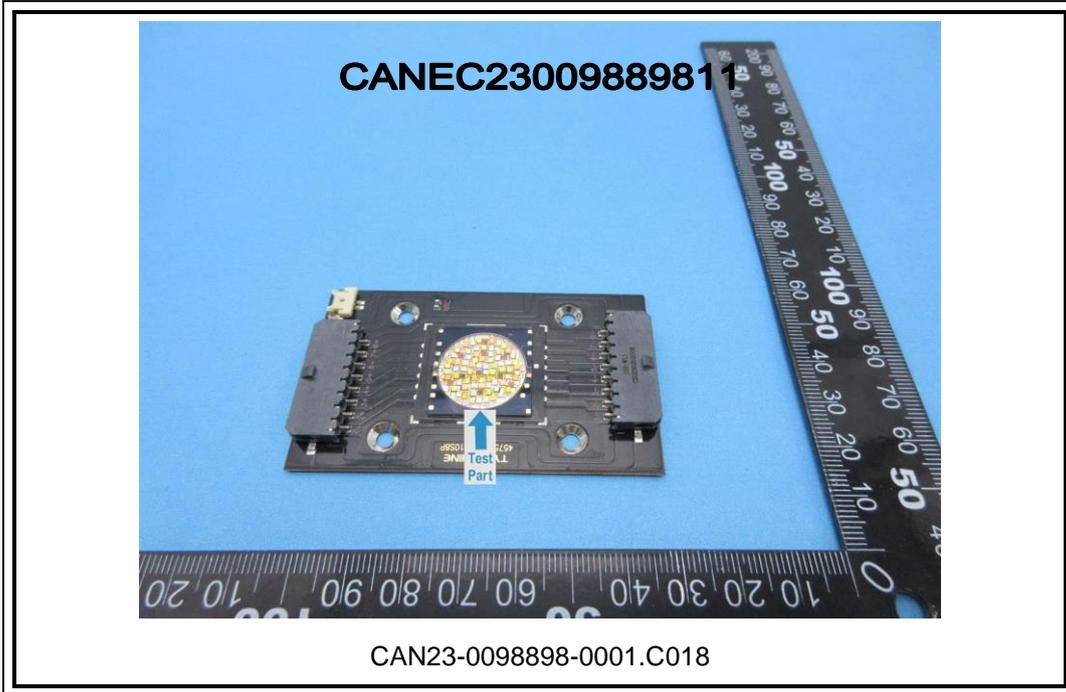
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Sample Photo:



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