

Test Report

No. CKGEC2300354103

Date: 21 Apr 2023

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Client Name : SICHUAN JINWAN ELECTRONIC CO.,LTD

Client Address : NO..88 MICRO-ELECTRONIC INDUSTRIAL PARK YULONG STREET,ECONOMIC
DEVELOPMENT ZONE,SUINING,SICHUAN

Sample Name : Lead frame
Model No. : TO-220FB-3L
Client Ref. Info. : See Remark
Lot No. : 20230417
Main Substance : Cu

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

SGS Job No. : 10029811 - CQ
Date of Sample Received : 18 Apr 2023
Testing Period : 18 Apr 2023 - 21 Apr 2023
Test Requested : Selected 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).

Result Summary :

| Test Requested | 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 |
| Elementary Analysis | See Results |

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

Tess Lv

Tess Lv

Approved Signatory

scan to see the report



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Test Result(s) :

Test Part Description :

| Specimen No. | SGS Sample ID | Description |
|--------------|------------------|----------------------|
| SN1 | CKG23-003541.002 | Copper-colored metal |

Remarks :

- (1) 1 mg/kg = 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+A1:2017 , IEC62321-5:2013, IEC 62321-7-1:2015, IEC62321-6:2015 and IEC62321-8:2017, analyzed by ICP-OES, UV-Vis and GC-MS .

| Test Item(s) | Limit | Unit | MDL | 002 |
|-------------------------------|-------|--------------------|-----|-----|
| 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))▼ | - | µg/cm ² | 0.1 | 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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| Test Item(s) | Limit | Unit | MDL | 002 |
|-------------------------------------|-------|-------|-----|-----|
| 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 |
| Dibutyl phthalate (DBP) | 1000 | mg/kg | 50 | ND |
| Butyl benzyl phthalate (BBP) | 1000 | mg/kg | 50 | ND |
| Bis (2-ethylhexyl) 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.
- (2) IEC 62321 series is equivalent to EN 62321 series.
- (3) ▼= a. The sample is positive for CrVI if the CrVI concentration is greater than 0.13 µg/cm². The sample coating is considered to contain CrVI
 b. The sample is negative for CrVI if CrVI is ND (concentration less than 0.10 µg/cm²). The coating is considered a non-CrVI 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.

Elementary Analysis

Test Method : SGS IN-house method(CQTC-CCL-TOP-002, With reference to US EPA Method 3050B:1996) analysis was performed by ICP-OES.

| Test Item(s) | Unit | MDL | 002 |
|----------------|-------|-----|-----|
| Antimony (Sb) | mg/kg | 10 | ND |
| Beryllium (Be) | mg/kg | 5 | ND |

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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REMARK :

TO-220FB3、TO-220FB4、TO-220FB5、TO-220HD、TO-220HW、TO-220C、TO-220CB、TO-263LF、
TO-220R、TO-263R、TO-220AB-DU-3L、TO-263-DU-3L、TO-220HF、TO-220HF-2L、TO-220F-3L、
TO-220F、TO-220F3、TO-220FL、TO-220FT5、TO-220F-2R、TO-220MF-DG-3L、TO-220FP、
TO-220MF-DGLP、TO-220MF-SG、TO-3P、TO-3PN、TO-252、TO-251、IPAK、IPAK-LP、NIPAK、
DPAK、TO-220AB、TO-220AB-M、TO-247、TO-220NF-SG-3L、TO-220IR-3L、TO-263NB-5L、
TO-220NB-5L、TO-263-5L、TO-220IX-3L、TO-263HD、HZIP-25B、TO-220FWS、TO-220NF-DG-3L、
TO-220FC、TO-3PB、TO-220IR-3L、TO-263-M、SOD-59、TO-220-2L、TO-220HDM、TO-220-2R、
IPAK-3-508、TO-3PB-1、TO-252-6R、TO-252-4RA、TO-220FDS、TO-220HWG、TO-220FB-LP、
TO-263HY、TO-263-2-212、TO-220HDMT、TO-263HDM、TO-263FB、TO-252-4RDP、IPAK-LP-2L、
TO-247-4L、TO-247-2L、TO-247Plus-3L、TO-220MF-3、TO-220JK、TO-263HDT、TO-252-6R-2L、
TO-263-2-214、TO-263US-7L、TO-263-7L、TO-263LV-7L、TO-220FJ、Clip-PPAK5X6、
Clip-TOLL-8-B01、DFN5×6-CLIP、TO-220FB 反冲、TO-220H、TO-263CB、TO-220FBJ、TO-252-4R、
TOLL、TOLT、STOLL、TO-220SF-3L、TO-247N-3L、TO-263S-5L、TO-220FW、TO-220HJH、
TO-220HJA、TO-220HBK、TO-220Thick



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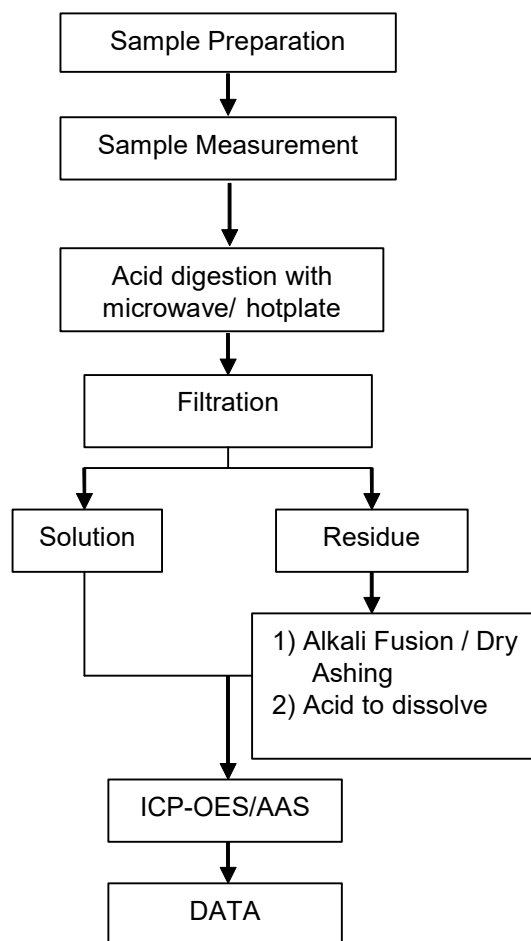
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Elements (IEC62321) Testing Flow Chart

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

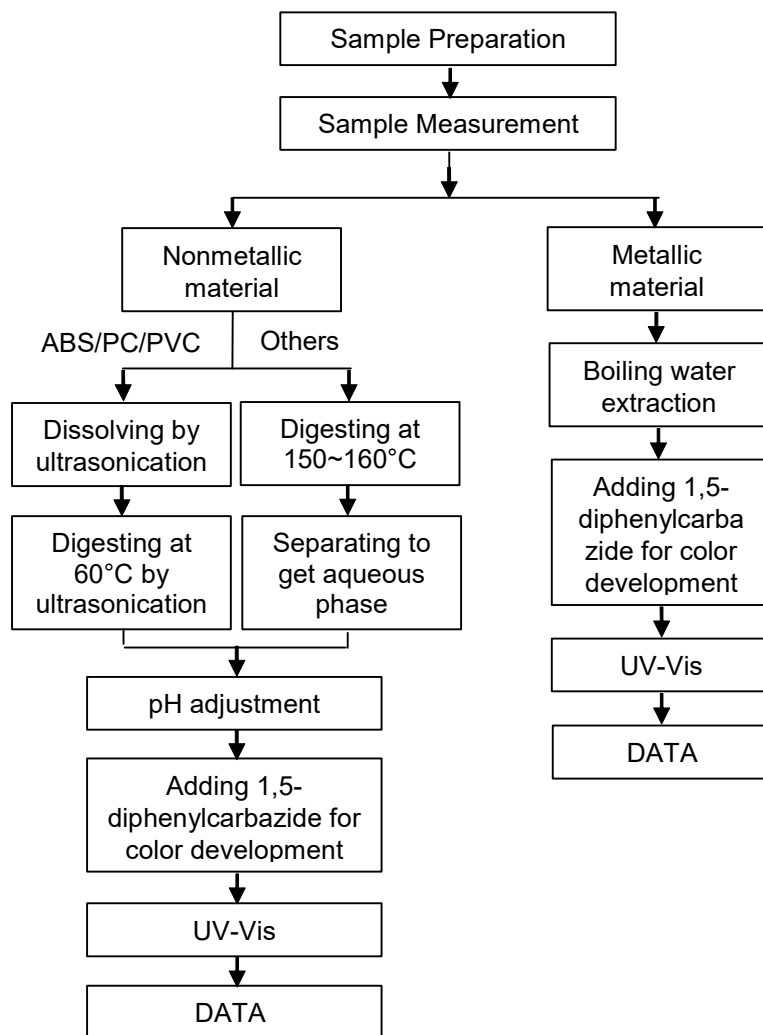


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Hexavalent Chromium (Cr(VI)) Testing Flow Chart

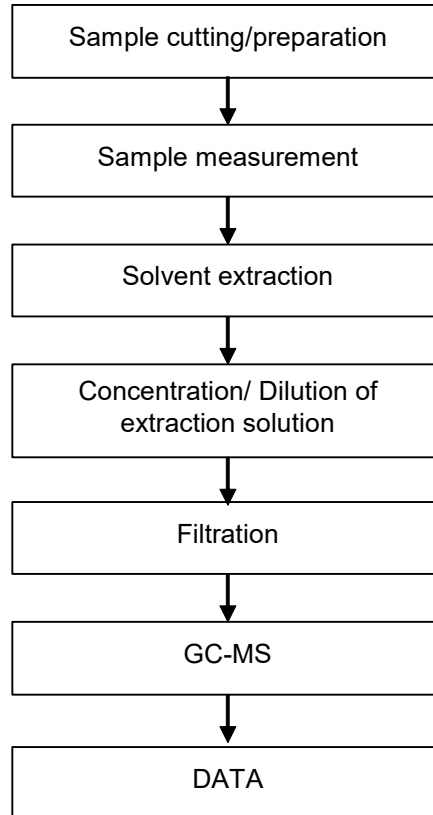


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PBBs/PBDEs Testing Flow Chart



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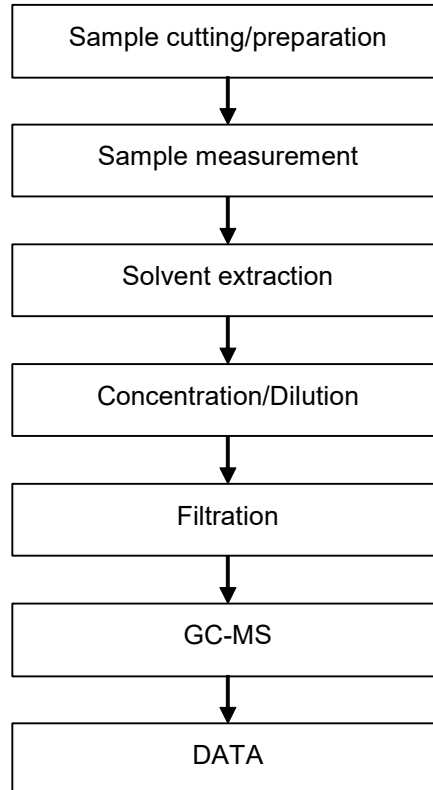
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Phthalates Testing Flow Chart

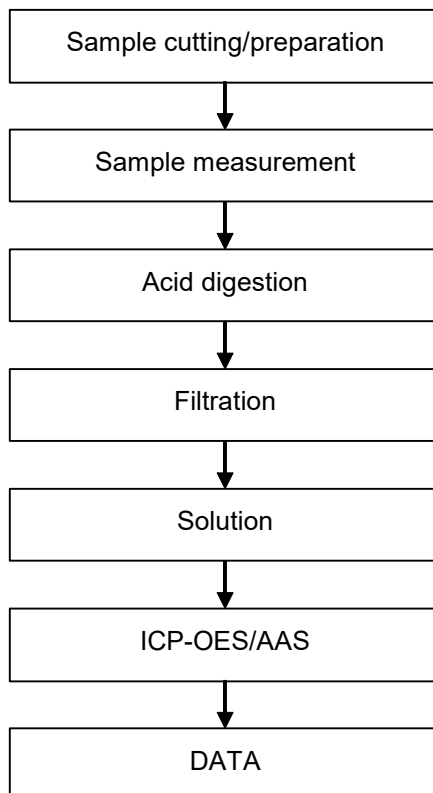


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Elements Testing Flow Chart



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