

Test Report

No. TAOEC2306454802

Date: 15 Sep 2023

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Client Name : Shengyi Technology (Changshu) Co., Ltd.

Client Address : No.99 Xiangyuan Rd.Hi-tech Industrial Development Zone, Changshu, Jiangsu, China

Sample Name : Copper Clad Laminates & Prepreg

Model No. : CCL-SI13U(WITHOUT COPPER FOIL), CCL-SI13N(WITHOUT COPPER FOIL), PP-SI13NB

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

SGS Job No. : SUP23-001393 - QD

Date of Sample Received : 05 Sep 2023

Testing Period : 05 Sep 2023 - 14 Sep 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 |
| Halogen | See Results |
| Element(s) | See Results |
| Perfluorooctanesulfonate (PFOS) and its derivatives and Perfluorooctanoic Acid (PFOA) and its salts | See Results |
| Hexabromocyclododecane (HBCDD) | See Results |
| Phthalates | See Results |



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

Justin

Zhang Bo, Justin
Approved Signatory

scan to see the report



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Test Result(s) :

Test Part Description :

| Specimen No. | SGS Sample ID | Description |
|--------------|------------------|-------------|
| SN1 | TAO23-064548.002 | Black sheet |

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

| <u>Test Item(s)</u> | <u>Limit</u> | <u>Unit</u> | <u>MDL</u> | <u>002</u> |
|------------------------------|--------------|-------------|------------|------------|
| Cadmium (Cd) | 100 | mg/kg | 2 | ND |
| Lead (Pb) | 1000 | mg/kg | 2 | 8 |
| 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>002</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 |
| 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) 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.

Halogen

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

| <u>Test Item(s)</u> | <u>Unit</u> | <u>MDL</u> | <u>002</u> |
|---------------------|-------------|------------|------------|
| Fluorine (F) | mg/kg | 20 | 332 |
| Chlorine (Cl) | mg/kg | 50 | 168 |
| Bromine (Br) | mg/kg | 50 | ND |
| Iodine (I) | mg/kg | 50 | ND |

Element(s)

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

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

Perfluorooctanesulfonate (PFOS) and its derivatives and Perfluorooctanoic Acid (PFOA) and its salts



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Test Method : With reference to CEN/TS 15968:2010, analysis was performed by LC- MS-MS.

| Test Item(s) | CAS NO. | Unit | MDL | 002 |
|--|-----------|-------|------|-----|
| Perfluorooctanoic Acid (PFOA) | | mg/kg | 0.01 | ND |
| Perfluorooctane Sulfonates (PFOS) [^] | 1763-23-1 | mg/kg | 0.01 | ND |

Notes :

(1) [^] PFOS refer to its acid, salts/derivatives including PFOS (CAS No.: 1763-23-1) , PFOS-K (CAS No.: 2795-39-3) , PFOS-Li (CAS No.: 29457-72-5), PFOS-NH₄ (CAS No.: 29081-56-9), PFOS-NH(OH)₂ (CAS No.: 70225-14-8) and PFOS-N(C₂H₅)₄ (CAS No.: 56773-42-3), PFOS-N(CH₃)₂(C₁₀H₂₁)₂ (CAS No.:251099-16-8) and POSF (CAS No.: 307-35-7).

(2) PFOA and its salts+ refer to its acid / salts including PFOA (CAS No.: 335-67-1), PFOA-Na (CAS No.: 335-95-5), PFOA-K (CAS No.: 2395-00-8), PFOA-Ag (CAS No.: 335-93-3), PFOA-F (CAS No.: 335-66-0) and APFO (CAS No.: 3825-26-1)

Hexabromocyclododecane (HBCDD)

Test Method : With reference to IEC 62321-9:2021, analysis was performed by GC-MS.

| Test Item(s) | Unit | MDL | 002 |
|--------------------------------|-------|-----|-----|
| Hexabromocyclododecane (HBCDD) | mg/kg | 20 | ND |

Phthalates

Test Method : With reference to EN14372: 2004, analysis was performed by GC-MS.

| Test Item(s) | CAS NO. | Unit | MDL | 002 |
|-------------------------------------|---------------------------|------|-------|-----|
| Dibutyl Phthalate (DBP) | 84-74-2 | % | 0.003 | ND |
| Benzylbutyl Phthalate (BBP) | 85-68-7 | % | 0.003 | ND |
| Bis-(2-ethylhexyl) Phthalate (DEHP) | 117-81-7 | % | 0.003 | ND |
| Diisononyl Phthalate (DINP) | 28553-12-0/ 68515-48-0 | % | 0.01 | ND |
| Di-n-octyl Phthalate (DNOP) | 117-84-0 | % | 0.003 | ND |
| Diisodecyl Phthalate (DIDP) | 26761-40-0/ 68515-49-1 | % | 0.01 | ND |
| Dimethyl Phthalate (DMP) | 131-11-3 | % | 0.003 | ND |
| Diethyl Phthalate (DEP) | 84-66-2 | % | 0.003 | ND |
| Diisobutyl Phthalate (DIBP) | 84-69-5 | % | 0.003 | ND |
| Dicyclohexyl Phthalate (DCHP) | 84-61-7 | % | 0.003 | ND |
| Diphenyl Phthalate (DPhP) | 84-62-8 | % | 0.003 | ND |
| Dibenzyl Phthalate (DBzP) | 523-31-9 | % | 0.003 | ND |



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| <u>Test Item(s)</u> | <u>CAS NO.</u> | <u>Unit</u> | <u>MDL</u> | <u>002</u> |
|------------------------------|----------------|-------------|------------|------------|
| Diisooctyl Phthalate (DiOP) | 27554-26-3 | % | 0.01 | ND |
| Dipropyl Phthalate (DPrP) | 131-16-8 | % | 0.003 | ND |
| Di-n-hexyl Phthalate (DnHP) | 84-75-3 | % | 0.003 | ND |
| Dinonyl Phthalate (DNP) | 84-76-4 | % | 0.003 | ND |
| Di-n-pentyl Phthalate (DnPP) | 131-18-0 | % | 0.003 | 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.

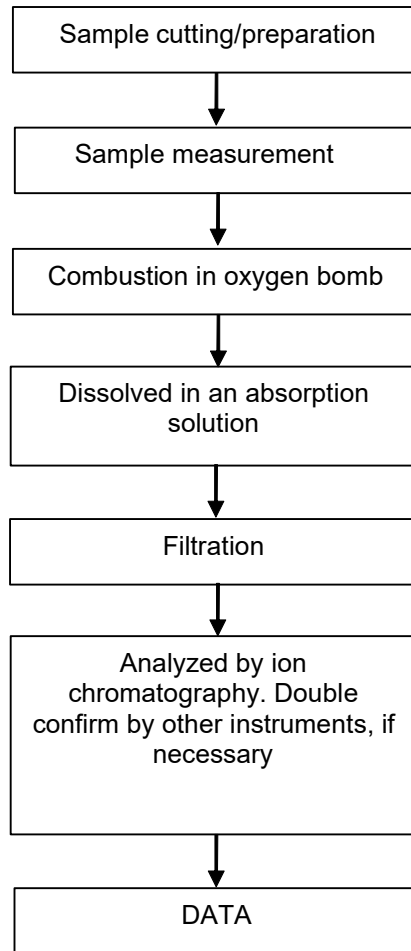


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Halogen Testing Flow Chart

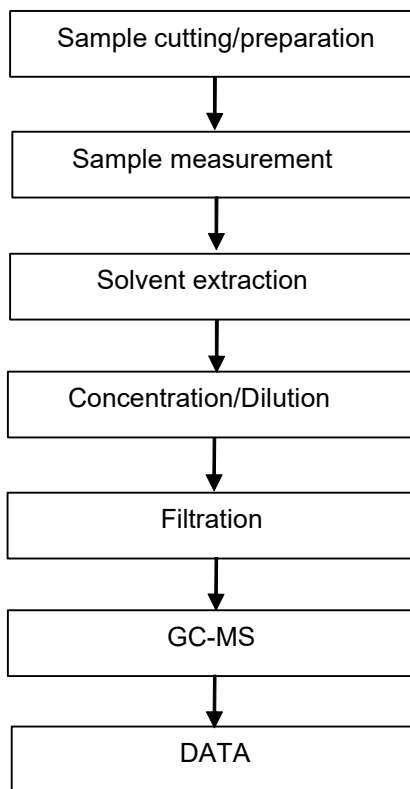


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HBCDD Testing Flow Chart

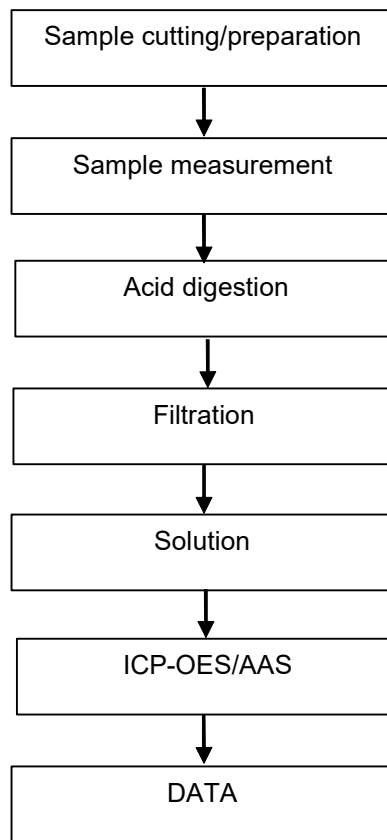


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Elementary Testing Flow Chart

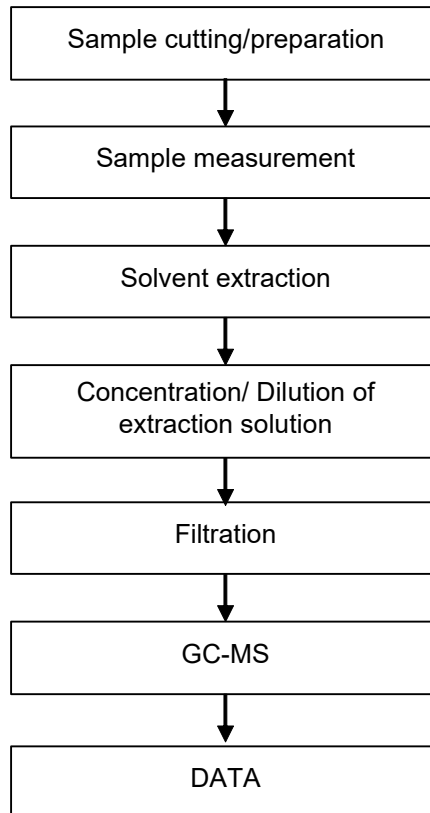


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PBBs/PBDEs Testing Flow Chart

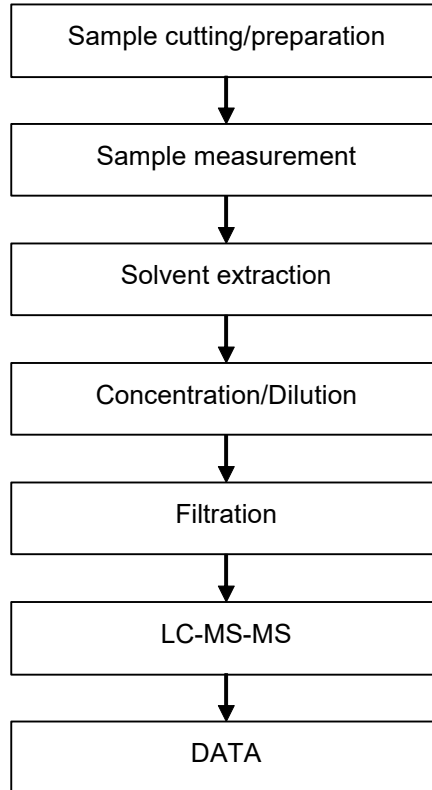


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PFOS/PFOA Testing Flow Chart

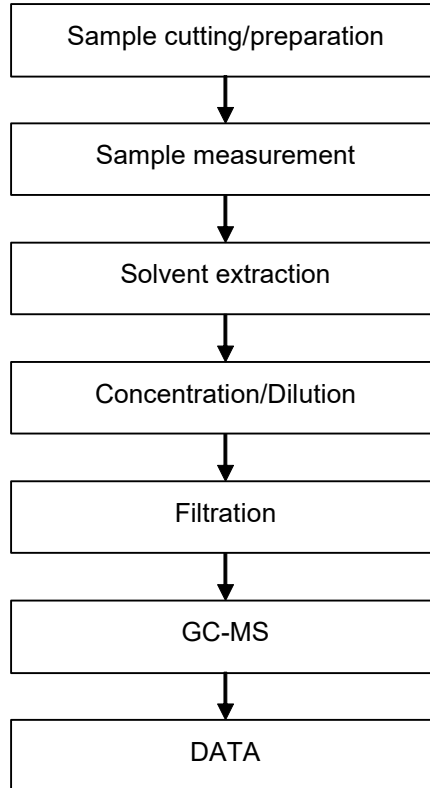


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Phthalates Testing Flow Chart

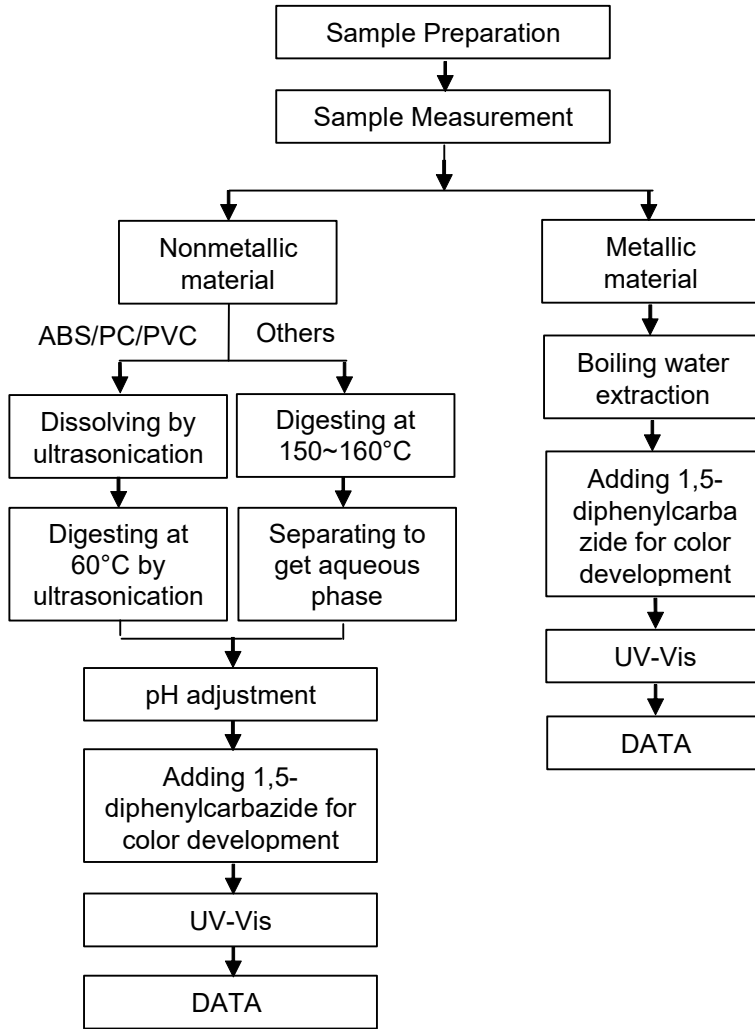


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Hexavalent Chromium (Cr(VI)) Testing Flow Chart



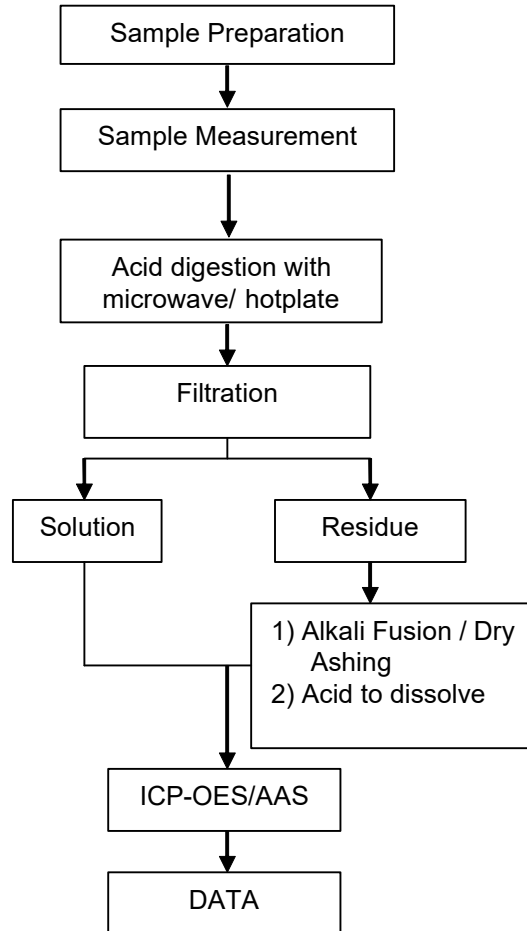
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Elements (IEC62321) Testing Flow Chart

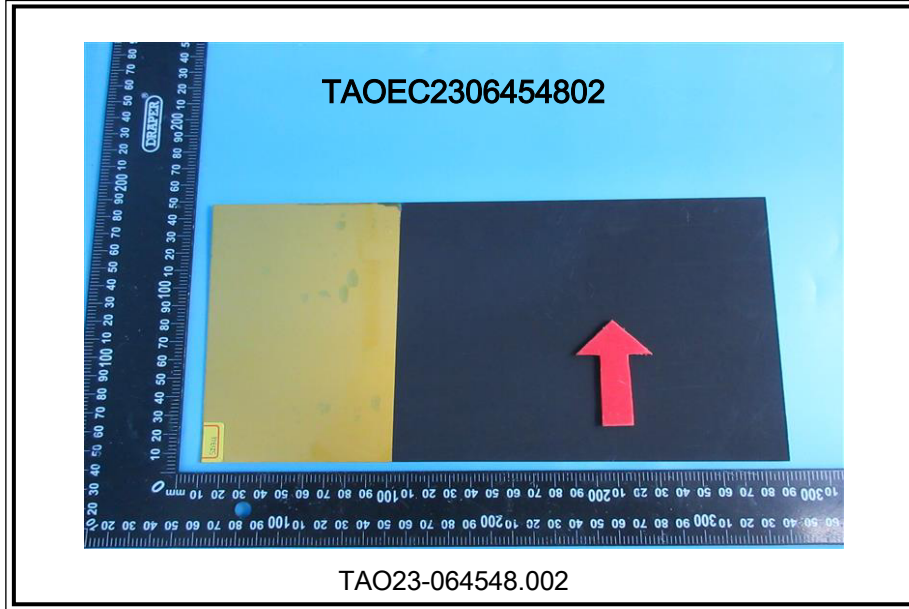
1) These samples were dissolved totally by pre-conditioning method according to below flow chart.



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