

Test Report

No. : CE/2017/24803

Date : 2017/03/02

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TAIWAN TAIYO INK CO., LTD.

NO. 7, DATONG 2ND RD., GUANYIN INDUSTRY PARK, GUANYIN DIST., TAOYUAN CITY 32849, TAIWAN (R.O.C.)



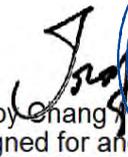
The following sample(s) was/were submitted and identified by/on behalf of the applicant as :

Sample Submitted By : TAIWAN TAIYO INK CO., LTD.
Sample Description : PHOTOIMAGEABLE SOLDER RESIST
Style/Item No. : PSR-2000 BL500/CA-25 KX50
UL : PSR-2000AN/CA-25AA
Color : BLUE
Sample Receiving Date : 2017/02/18
Testing Period : 2017/02/18 TO 2017/03/02

=====
Test Requested : (1) As specified by client, with reference to RoHS 2011/65/EU Annex II and amending Directive (EU) 2015/863 to determine Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP contents in the submitted sample.
(2) As specified by client, to test PFOA, PFOS contents in the submitted sample.

Test Result(s) : Please refer to next page(s).

Conclusion : (1) Based on the performed tests on submitted samples, the test results of Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP comply with the limits as set by RoHS and amending Directive (EU) 2015/863.



Troy Chang, Manager - Tech
Signed for and on behalf of
SGS TAIWAN LTD
Chemical Laboratory - Taipei

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Test Result(s)

PART NAME No.1 : BLUE INK

| Test Item(s) | Unit | Method | MDL | Result | Limit |
|----------------------------|-------|--|------|--------|-------|
| | | | | No.1 | |
| Cadmium (Cd) | mg/kg | With reference to IEC 62321-5 (2013) and performed by ICP-AES. | 2 | n.d. | 100 |
| Lead (Pb) | mg/kg | With reference to IEC 62321-5 (2013) and performed by ICP-AES. | 2 | n.d. | 1000 |
| Mercury (Hg) | mg/kg | With reference to IEC 62321-4 (2013) and performed by ICP-AES. | 2 | n.d. | 1000 |
| Hexavalent Chromium Cr(VI) | mg/kg | With reference to IEC 62321 (2008) and performed by UV-VIS. | 2 | n.d. | 1000 |
| Sum of PBBs | mg/kg | With reference to IEC 62321-6 (2015) and performed by GC/MS. | - | n.d. | 1000 |
| Monobromobiphenyl | mg/kg | | 5 | n.d. | - |
| Dibromobiphenyl | mg/kg | | 5 | n.d. | - |
| Tribromobiphenyl | mg/kg | | 5 | n.d. | - |
| Tetrabromobiphenyl | mg/kg | | 5 | n.d. | - |
| Pentabromobiphenyl | mg/kg | | 5 | n.d. | - |
| Hexabromobiphenyl | mg/kg | | 5 | n.d. | - |
| Heptabromobiphenyl | mg/kg | | 5 | n.d. | - |
| Octabromobiphenyl | mg/kg | | 5 | n.d. | - |
| Nonabromobiphenyl | mg/kg | | 5 | n.d. | - |
| Decabromobiphenyl | mg/kg | | 5 | n.d. | - |
| Sum of PBDEs | mg/kg | | - | n.d. | 1000 |
| Monobromodiphenyl ether | mg/kg | | 5 | n.d. | - |
| Dibromodiphenyl ether | mg/kg | | 5 | n.d. | - |
| Tribromodiphenyl ether | mg/kg | | 5 | n.d. | - |
| Tetrabromodiphenyl ether | mg/kg | | 5 | n.d. | - |
| Pentabromodiphenyl ether | mg/kg | | 5 | n.d. | - |
| Hexabromodiphenyl ether | mg/kg | | 5 | n.d. | - |
| Heptabromodiphenyl ether | mg/kg | | 5 | n.d. | - |
| Octabromodiphenyl ether | mg/kg | | 5 | n.d. | - |
| Nonabromodiphenyl ether | mg/kg | 5 | n.d. | - | |
| Decabromodiphenyl ether | mg/kg | 5 | n.d. | - | |

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| Test Item(s) | Unit | Method | MDL | Result | Limit |
|---|-------|---|-----|--------|-------|
| | | | | No.1 | |
| BBP (Butyl Benzyl phthalate) (CAS No.: 85-68-7) | mg/kg | With reference to IEC 62321-8/CD (2013). Analysis was performed by GC/MS. | 50 | n.d. | 1000 |
| DBP (Dibutyl phthalate) (CAS No.: 84-74-2) | mg/kg | | 50 | n.d. | 1000 |
| DIBP (Di-isobutyl phthalate) (CAS No.: 84-69-5) | mg/kg | | 50 | n.d. | 1000 |
| DEHP (Di- (2-ethylhexyl) phthalate) (CAS No.: 117-81-7) | mg/kg | | 50 | n.d. | 1000 |
| Perfluorooctane sulfonates (PFOS-Acid, Metal Salt, Amide) | mg/kg | With reference to US EPA 3550C (2007). Analysis was performed by LC/MS. | 10 | n.d. | - |
| PFOA (CAS No.: 335-67-1) | mg/kg | With reference to US EPA 3550C (2007). Analysis was performed by LC/MS. | 10 | n.d. | - |

Note :

1. mg/kg = ppm ; 0.1wt% = 1000ppm
2. n.d. = Not Detected
3. MDL = Method Detection Limit
4. " - " = Not Regulated

PFOS Reference Information : POPs - (EU) 757/2010

Outlawing PFOS as substances or preparations in concentrations above 0.001% (10ppm), in semi-finished products or articles or parts at a level above 0.1%(1000ppm), in textiles or other coated materials above 1µg/m².

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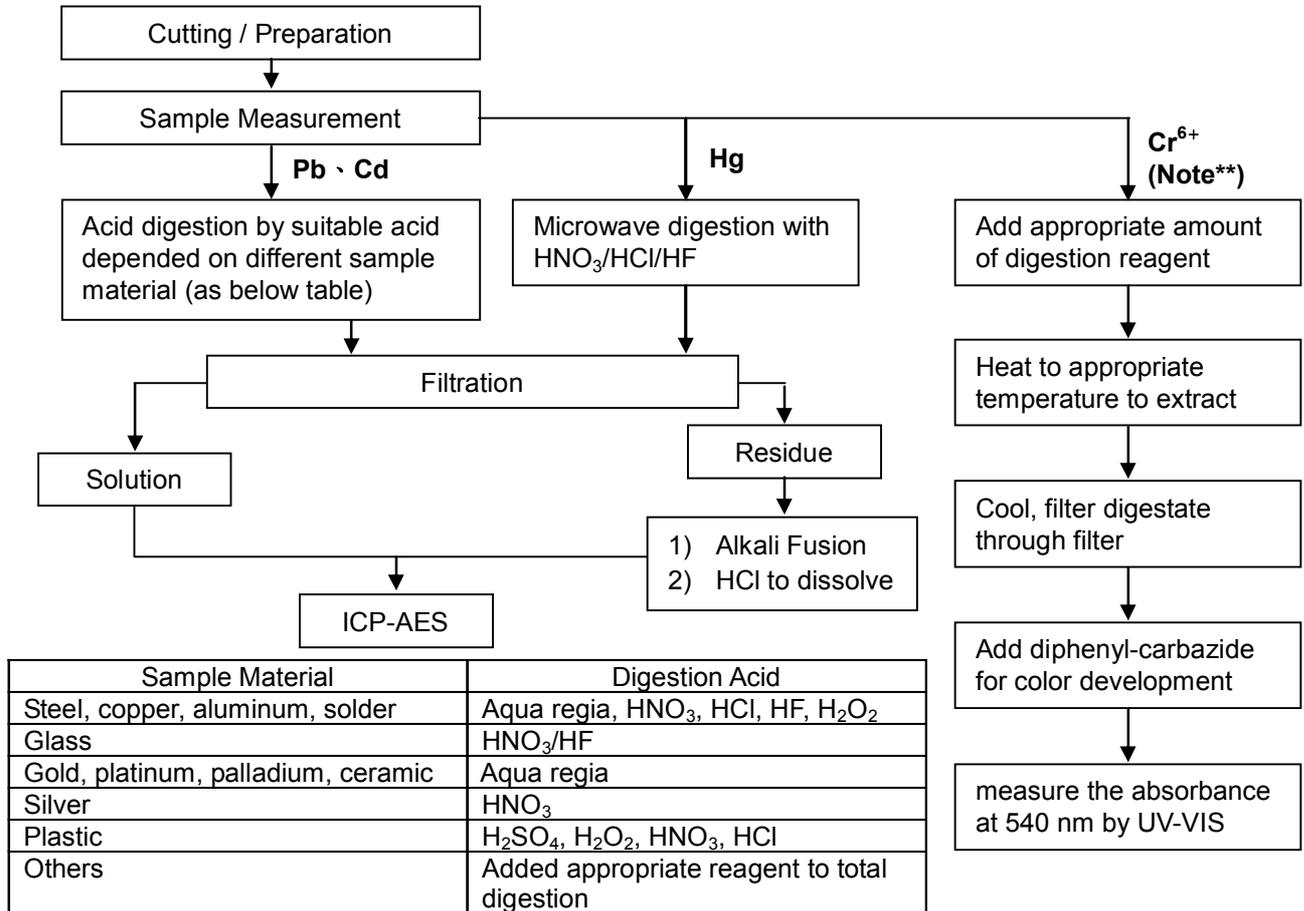
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Analytical flow chart of Heavy Metal

These samples were dissolved totally by pre-conditioning method according to below flow chart.
(Cr⁶⁺ test method excluded)

- Technician: JR Wang
- Supervisor: Troy Chang



Note (For IEC 62321)**

- (1) For non-metallic material, add alkaline digestion reagent and heat to 90~95 °C.
- (2) For metallic material, add pure water and heat to boiling.

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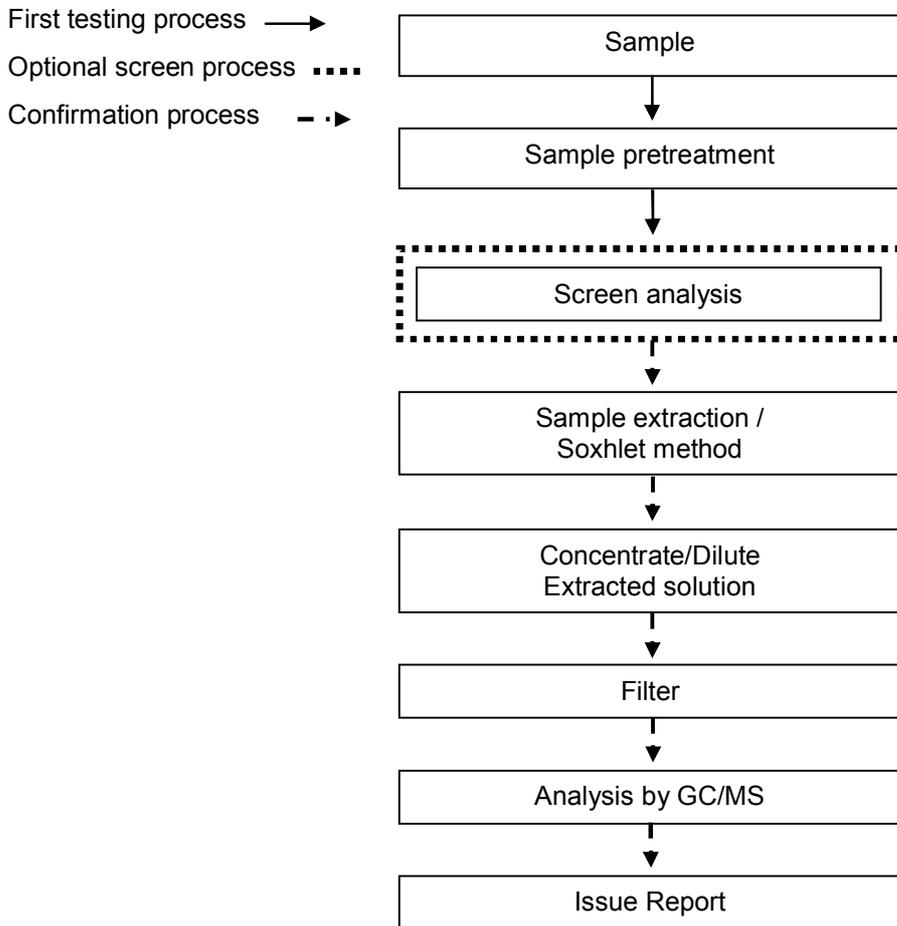
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Analytical flow chart – PBB / PBDE

- Technician : Yaling Tu
- Supervisor: Troy Chang



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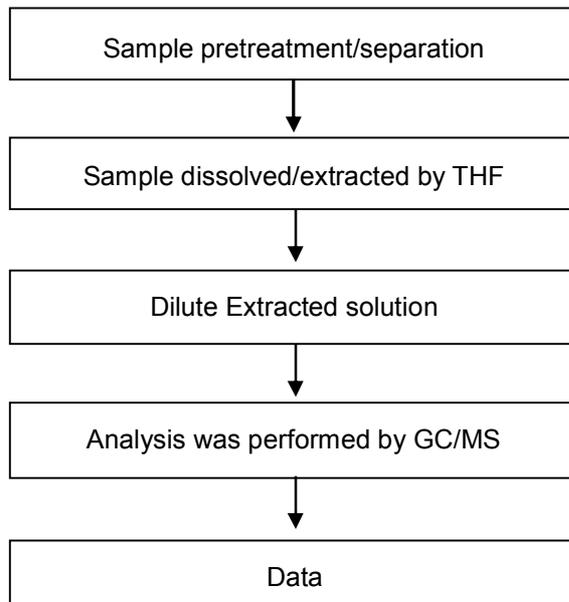
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Analytical flow chart - Phthalate

- Technician: Andy Shu
- Supervisor: Troy Chang

【Test method: IEC 62321-8】



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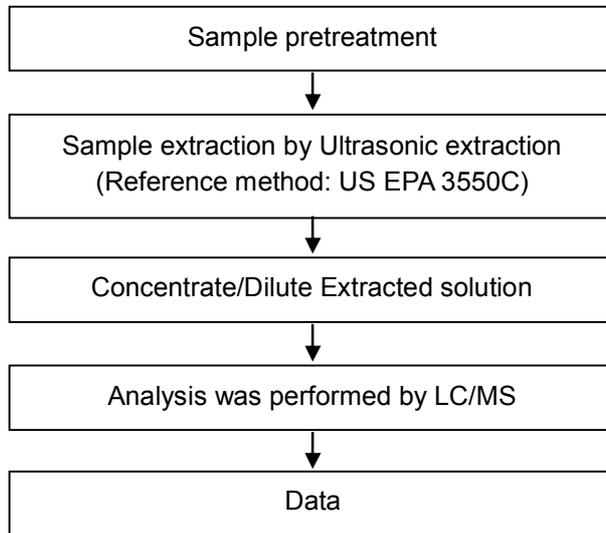
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Analytical flow chart - PFOA/PFOS

- Technician: Yaling Tu
- Supervisor: Troy Chang



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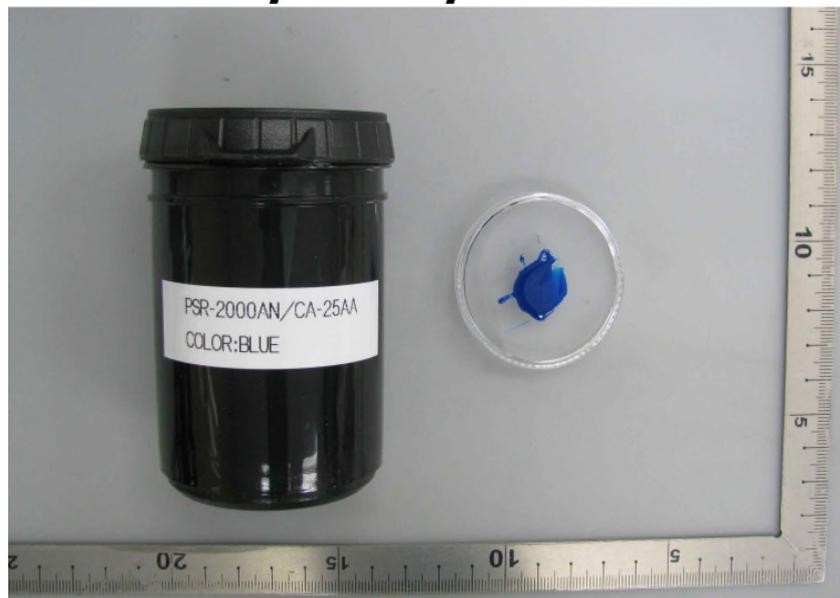
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* The tested sample / part is marked by an arrow if it's shown on the photo. *

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** End of Report **

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