

Test Report

No. : CE/2018/16385A

Date : 2018/01/30

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KESTER AN ILLINOIS TOOL WORKS COMPANY
800 W. THORNDALE AVE. ITASCA, IL 60143



The following samples was/were submitted and identified by/on behalf of the applicant as :

Sample Submitted By : KESTER AN ILLINOIS TOOL WORKS COMPANY
Sample Description : TSF 6502JCR
Style/Item No. : 735305
Sample Receiving Date : 2018/01/26
Testing Period : 2018/01/26 TO 2018/01/30

=====
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(s).
- (2) Please refer to next pages for the other item(s).

Test Result(s) : Please refer to following pages.

Conclusion : (1) Based on the performed tests on submitted sample(s), 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 : TRANSPARENT-YELLOW PASTE

| 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 | | 2 | n.d. | 1000 |
| Mercury (Hg) | mg/kg | | 2 | n.d. | 1000 |
| Hexavalent Chromium Cr(VI) | mg/kg | With reference to IEC 62321-7-2 (2017) and performed by UV-VIS. | 8 | 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. | - | |
| PFOA (CAS No.: 335-67-1) | mg/kg | With reference to US EPA 3550C (2007). Analysis was performed by LC/MS. | 10 | n.d. | - |
| 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. | - |

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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 (2017). Analysis was performed by GC/MS. | 50 | n.d. | 1000 |
| DBP (Dibutyl phthalate) (CAS No.: 84-74-2) | mg/kg | With reference to IEC 62321-8 (2017). Analysis was performed by GC/MS. | 50 | n.d. | 1000 |
| DIBP (Di-isobutyl phthalate) (CAS No.: 84-69-5) | mg/kg | With reference to IEC 62321-8 (2017). Analysis was performed by GC/MS. | 50 | n.d. | 1000 |
| DEHP (Di- (2-ethylhexyl) phthalate) (CAS No.: 117-81-7) | mg/kg | With reference to IEC 62321-8 (2017). Analysis was performed by GC/MS. | 50 | n.d. | 1000 |
| DIDP (Di-isodecyl phthalate) (CAS No.: 26761-40-0; 68515-49-1) | mg/kg | With reference to IEC 62321-8 (2017). Analysis was performed by GC/MS. | 50 | n.d. | - |
| DINP (Di-isononyl phthalate) (CAS No.: 28553-12-0; 68515-48-0) | mg/kg | With reference to IEC 62321-8 (2017). Analysis was performed by GC/MS. | 50 | n.d. | - |
| DNOP (Di-n-octyl phthalate) (CAS No.: 117-84-0) | mg/kg | With reference to IEC 62321-8 (2017). Analysis was performed by GC/MS. | 50 | n.d. | - |
| Halogen | | | | | |
| Halogen-Fluorine (F) (CAS No.: 14762-94-8) | mg/kg | With reference to BS EN 14582 (2016). Analysis was performed by IC. | 50 | n.d. | - |
| Halogen-Chlorine (Cl) (CAS No.: 22537-15-1) | mg/kg | With reference to BS EN 14582 (2016). Analysis was performed by IC. | 50 | n.d. | - |
| Halogen-Bromine (Br) (CAS No.: 10097-32-2) | mg/kg | With reference to BS EN 14582 (2016). Analysis was performed by IC. | 50 | 6330 | - |
| Halogen-Iodine (I) (CAS No.: 14362-44-8) | mg/kg | With reference to BS EN 14582 (2016). Analysis was performed by IC. | 50 | n.d. | - |
| Antimony (Sb) | mg/kg | With reference to US EPA 3052 (1996). Analysis was performed by ICP-AES. | 2 | n.d. | - |

Note :

1. mg/kg = ppm ; 0.1wt% = 1000ppm
2. MDL = Method Detection Limit
3. n.d. = Not Detected = less than MDL
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.

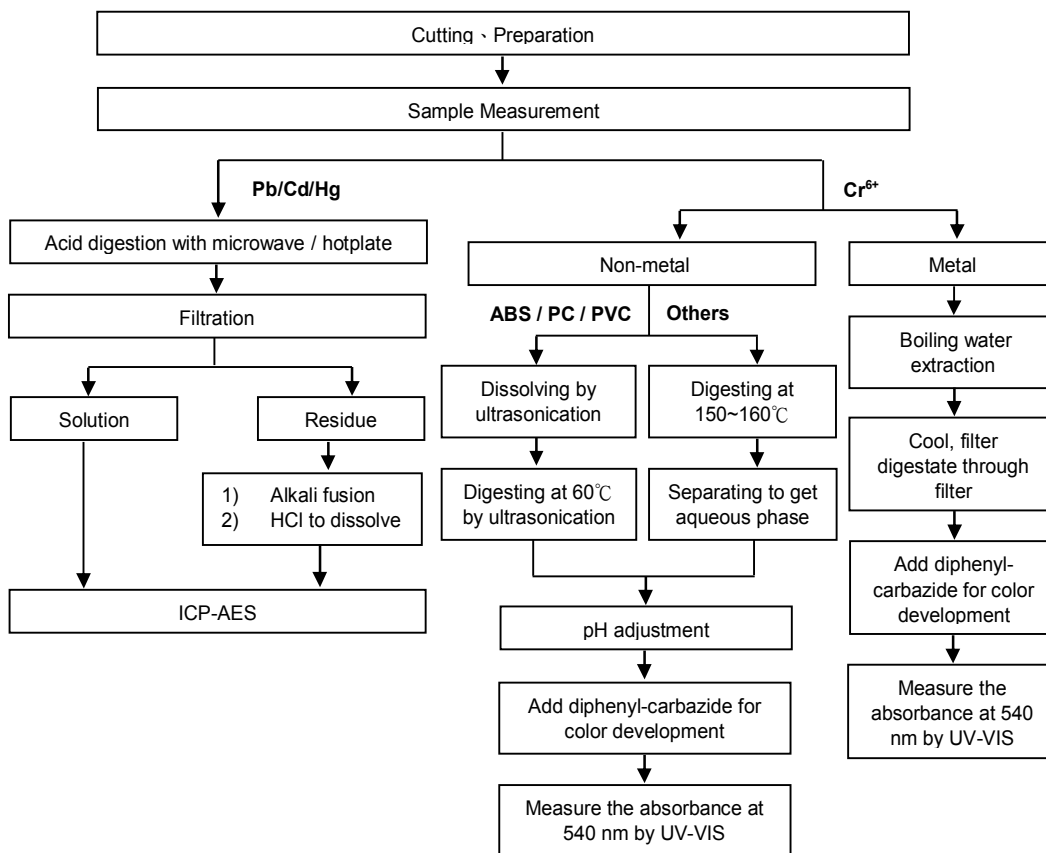
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Analytical flow chart of Heavy Metal

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

- Technician : JR Wang
- Supervisor: Troy Chang



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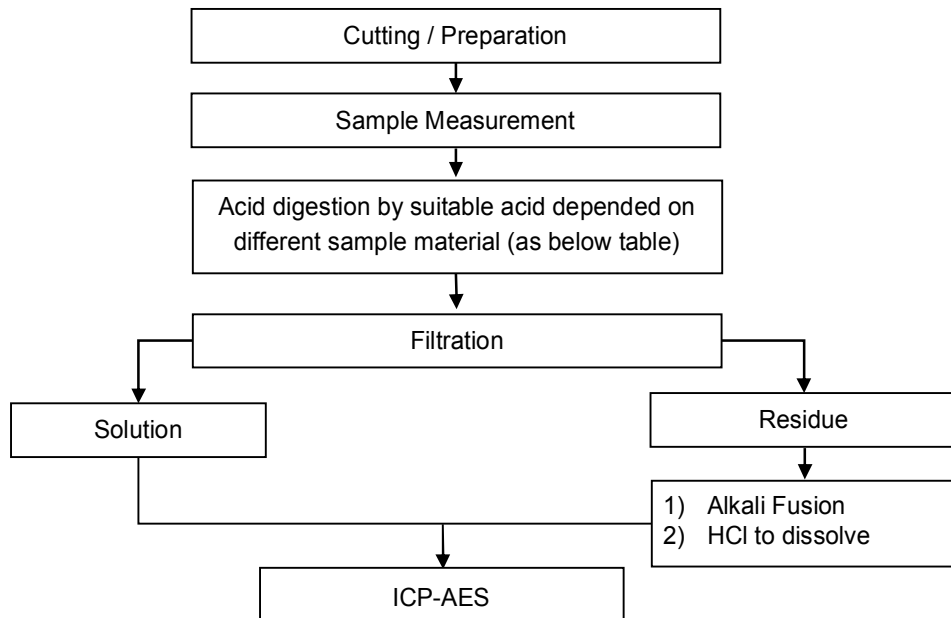
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These samples were dissolved totally by pre-conditioning method according to below flow chart.

- Technician: JR Wang
- Supervisor: Troy Chang

Flow Chart of digestion for the elements analysis performed by ICP-AES



| | |
|------------------------------------|---|
| Steel, copper, aluminum, solder | Aqua regia, HNO ₃ , HCl, HF, H ₂ O ₂ |
| Glass | HNO ₃ /HF |
| Gold, platinum, palladium, ceramic | Aqua regia |
| Silver | HNO ₃ |
| Plastic | H ₂ SO ₄ , H ₂ O ₂ , HNO ₃ , HCl |
| Others | Added appropriate reagent to total digestion |

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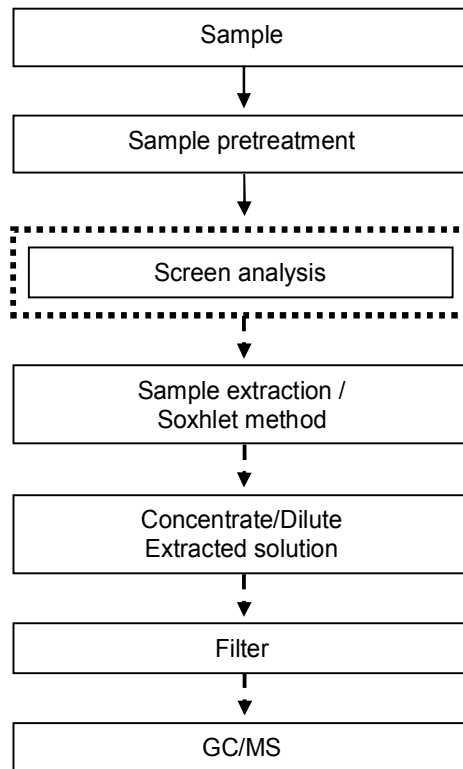
Analytical flow chart – PBB / PBDE

- Technician : Yaling Tu
- Supervisor: Troy Chang

First testing process →

Optional screen process ▯

Confirmation process - ▯



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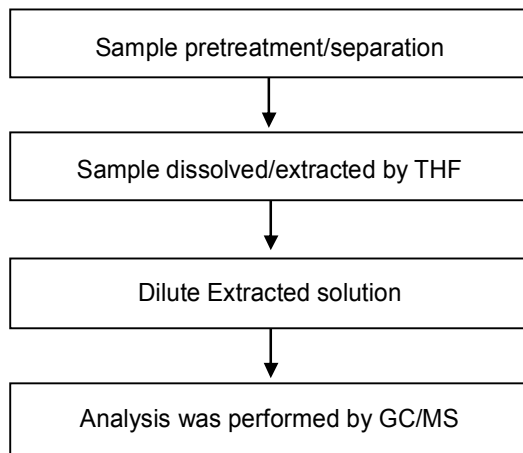
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Analytical flow chart - Phthalate

- Technician: Andy Hsu
- Supervisor: Troy Chang

【Test method: IEC 62321-8】



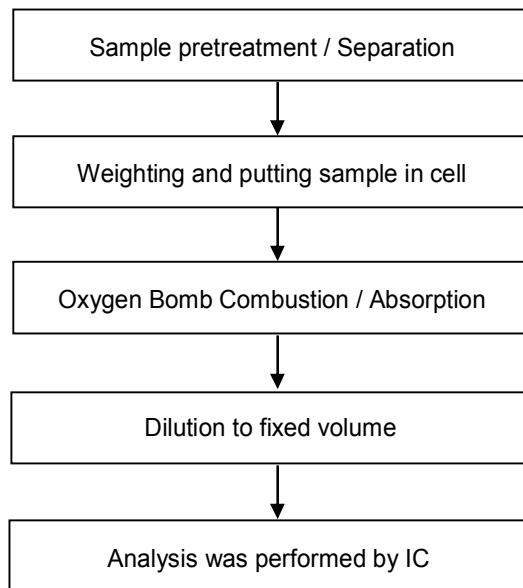
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Analytical flow chart - Halogen

- Technician: Rita Chen
- Supervisor: Troy Chang



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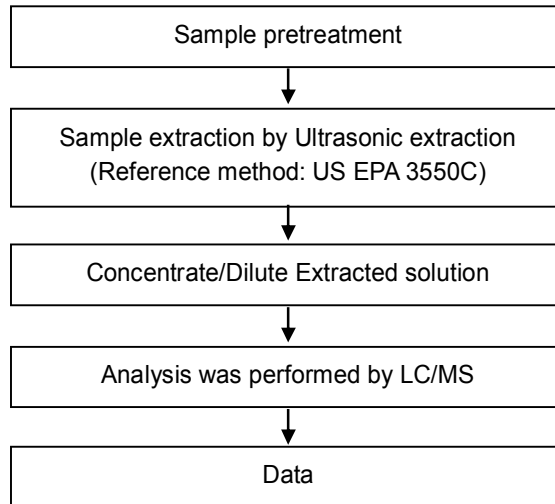
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Analytical flow chart - PFOA/PFOS

- Technician: Yaling Tu
- Supervisor: Troy Chang



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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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