Test Report No. F690101/LF-CTSAYGU20-07287

Issued Date : 2020. 07. 22

POONGSAN CORPORATION
94 Sanam-ro,Onsan-eup
Ulju-gun,Ulsan
Korea

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

SGS File No.	:	AYGU20-07287
Product Name	:	C194
Item No./Part No.	:	C194
Received Date	:	2020. 07. 02
Test Period	:	2020. 07. 02 to 2020. 07. 22
Conclusion	:	Based on the performed tests on selected part of submitted samples, the results of Cadmium, Lead, Mercury, Hexavalent chromium, Polybrominated biphenyls (PBB), Polybrominated diphenyl ethers (PBDE), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP), and Diisobutyl phthalate (DIBP) comply with the limits as set by RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.
Test Results	:	For further details, please refer to following page(s)

SGS Korea Co., Ltd.
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Dongju Lee / Technical Manager

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Sample No. : AYGU20-07287.001
Sample Description : C194
Item No./Part No. : C194
Materials : N/A

Heavy Metals

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	With reference to IEC 62321-4 : 2013+A1:2017, With reference to IEC 62321-5 : 2013, by ICP-OES	0.5	N.D.
Lead (Pb)	mg/kg	With reference to IEC 62321-4 : 2013+A1:2017, With reference to IEC 62321-5 : 2013, by ICP-OES	5	7.76
Mercury (Hg)	mg/kg	With reference to IEC 62321-4 : 2013+A1:2017, With reference to IEC 62321-5 : 2013, by ICP-OES	2	N.D.
Hexavalent Chromium (Cr VI) *	μg/cm²	With reference to IEC 62321-7-1 : 2015, by UV-Vis	0.1	N.D.
Antimony (Sb)	mg/kg	With reference to EPA 3052 : 1996,With reference to EPA 6010B : 1996, by ICP-OES	10	N.D.
Beryllium (Be)	mg/kg	With reference to EPA 3052 : 1996,With reference to EPA 6010B : 1996, by ICP-OES	5	N.D.
Arsenic (As)	mg/kg	With reference to EPA 3052 : 1996,With reference to EPA 6010B : 1996, by ICP-OES	10	N.D.

Flame Retardants-PBBs/PBDEs

Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	With reference to IEC 62321-6 : 2015, by GC-MS	5	N.D.
Dibromobiphenyl	mg/kg	With reference to IEC 62321-6 : 2015, by GC-MS	5	N.D.
Tribromobiphenyl	mg/kg	With reference to IEC 62321-6 : 2015, by GC-MS	5	N.D.
Tetrabromobiphenyl	mg/kg	With reference to IEC 62321-6 : 2015, by GC-MS	5	N.D.
Pentabromobiphenyl	mg/kg	With reference to IEC 62321-6 : 2015, by GC-MS	5	N.D.
Hexabromobiphenyl	mg/kg	With reference to IEC 62321-6 : 2015, by GC-MS	5	N.D.
Heptabromobiphenyl	mg/kg	With reference to IEC 62321-6 : 2015, by GC-MS	5	N.D.
Octabromobiphenyl	mg/kg	With reference to IEC 62321-6 : 2015, by GC-MS	5	N.D.
Nonabromobiphenyl	mg/kg	With reference to IEC 62321-6 : 2015, by GC-MS	5	N.D.
Decabromobiphenyl	mg/kg	With reference to IEC 62321-6 : 2015, by GC-MS	5	N.D.
Monobromodiphenyl ether	mg/kg	With reference to IEC 62321-6 : 2015, by GC-MS	5	N.D.
Dibromodiphenyl ether	mg/kg	With reference to IEC 62321-6 : 2015, by GC-MS	5	N.D.
Tribromodiphenyl ether	mg/kg	With reference to IEC 62321-6 : 2015, by GC-MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	With reference to IEC 62321-6 : 2015, by GC-MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	With reference to IEC 62321-6 : 2015, by GC-MS	5	N.D.
Hexabromodiphenyl ether	mg/kg	With reference to IEC 62321-6 : 2015, by GC-MS	5	N.D.
Heptabromodiphenyl ether	mg/kg	With reference to IEC 62321-6 : 2015, by GC-MS	5	N.D.
Octabromodiphenyl ether	mg/kg	With reference to IEC 62321-6 : 2015, by GC-MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	With reference to IEC 62321-6 : 2015, by GC-MS	5	N.D.

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Materials : N/A

Flame Retardants-PBBs/PBDEs

Test Items	Unit	Test Method	MDL	Results
Decabromodiphenyl ether	mg/kg	With reference to IEC 62321-6 : 2015, by GC-MS	5	N.D.

Phthalates

Test Items	Unit	Test Method	MDL	Results
Di-(2-ethylhexyl) phthalate (DEHP)	mg/kg	With reference to IEC 62321-8 : 2017, by GC-MS	50	N.D.
Di-butyl phthalate (DBP)	mg/kg	With reference to IEC 62321-8 : 2017, by GC-MS	50	N.D.
Benzyl butyl phthalate (BBP)	mg/kg	With reference to IEC 62321-8 : 2017, by GC-MS	50	N.D.
Di-isobutyl phthalate (DIBP)	mg/kg	With reference to IEC 62321-8 : 2017, by GC-MS	50	N.D.
[di(C6-C8 alkyl)phthalate] branched (DIHP)	mg/kg	With reference to IEC 62321-8 : 2017, by GC-MS	50	N.D.
[di(C7-C11 alkyl)phthalate] linear and branched (DHNUP)	mg/kg	With reference to IEC 62321-8 : 2017, by GC-MS	50	N.D.
Bis(2-methoxyethyl) phthalate (BMP, BMEP, DMEP)	mg/kg	With reference to IEC 62321-8 : 2017, by GC-MS	50	N.D.
Di-isononyl phthalate (DINP)	mg/kg	With reference to IEC 62321-8 : 2017, by GC-MS	50	N.D.
Di-isodecyl phthalate (DIDP)	mg/kg	With reference to IEC 62321-8 : 2017, by GC-MS	50	N.D.
Di-n-octyl phthalate (DNOP)	mg/kg	With reference to IEC 62321-8 : 2017, by GC-MS	50	N.D.
Di-n-hexyl phthalate (DNHP)	mg/kg	With reference to IEC 62321-8 : 2017, by GC-MS	50	N.D.

Halogen Contents

Test Items	Unit	Test Method	MDL	Results
Bromine(Br)	mg/kg	With reference to ASTM D 7359-14a : 2014 by IC	30	N.D.
Chlorine(Cl)	mg/kg	With reference to ASTM D 7359-14a : 2014 by IC	30	N.D.
Fluorine(F)	mg/kg	With reference to ASTM D 7359-14a : 2014 by IC	30	N.D.
Iodine(I)	mg/kg	With reference to ASTM D 7359-14a : 2014 by IC	50	N.D.

Flame Retardants

Test Items	Unit	Test Method	MDL	Results
Hexabromocyclododecane (HBCDD, HBCD)	mg/kg	With reference to IEC EPA 3540C : 1996, by GC-MS	5	N.D.

Other(s)

Test Items	Unit	Test Method	MDL	Results

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Materials : N/A

Other(s)

Test Items	Unit	Test Method	MDL	Results
PFOA	μg/kg	With reference to CEN/TS 15968 : 2010, by LC-MS-MS	10	N.D.
PFOS	μg/kg	With reference to CEN/TS 15968 : 2010, by LC-MS-MS	10	N.D.

NOTE:
(1) N.D. = Not detected.(<MDL)
(2) mg/kg = ppm
(3) μg/kg = ppb
(4) MDL = Method Detection Limit
(5) - = No regulation
(6) Negative = Undetectable / Positive = Detectable
(7) ** = Qualitative analysis (No Unit)
(8) * = a. The sample is positive for CrVI if the CrVI concentration is greater than 0.13 ug/cm2. The sample coating is considered to contain CrVI.
b. The sample is negative for CrVI if CrVI is n.d. (concentration less than 0.10 ug/cm2). The coating is considered a non-CrVI based coating.
c. The result between 0.10 ug/cm2 and 0.13 ug/cm2 is considered to be inconclusive - unavoidable coating variations may influence the determination.
(9) The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
This test report is not related to Korea Laboratory Accreditation Scheme.

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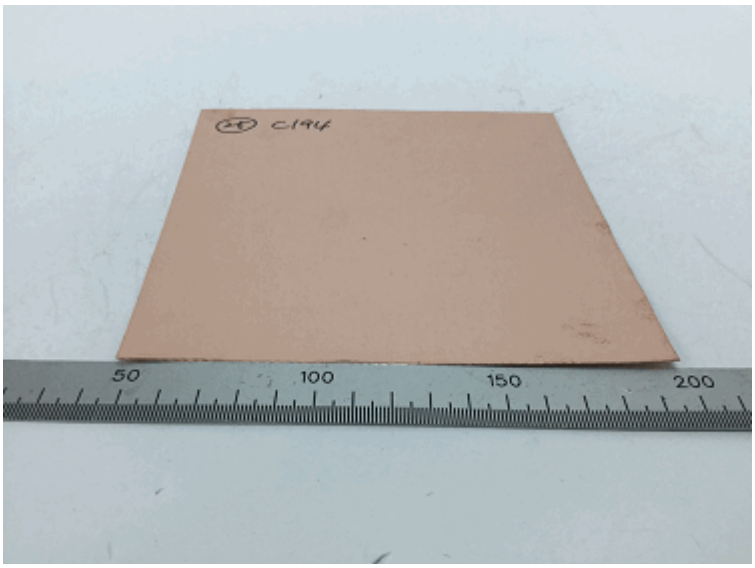
Picture of Sample as Received:



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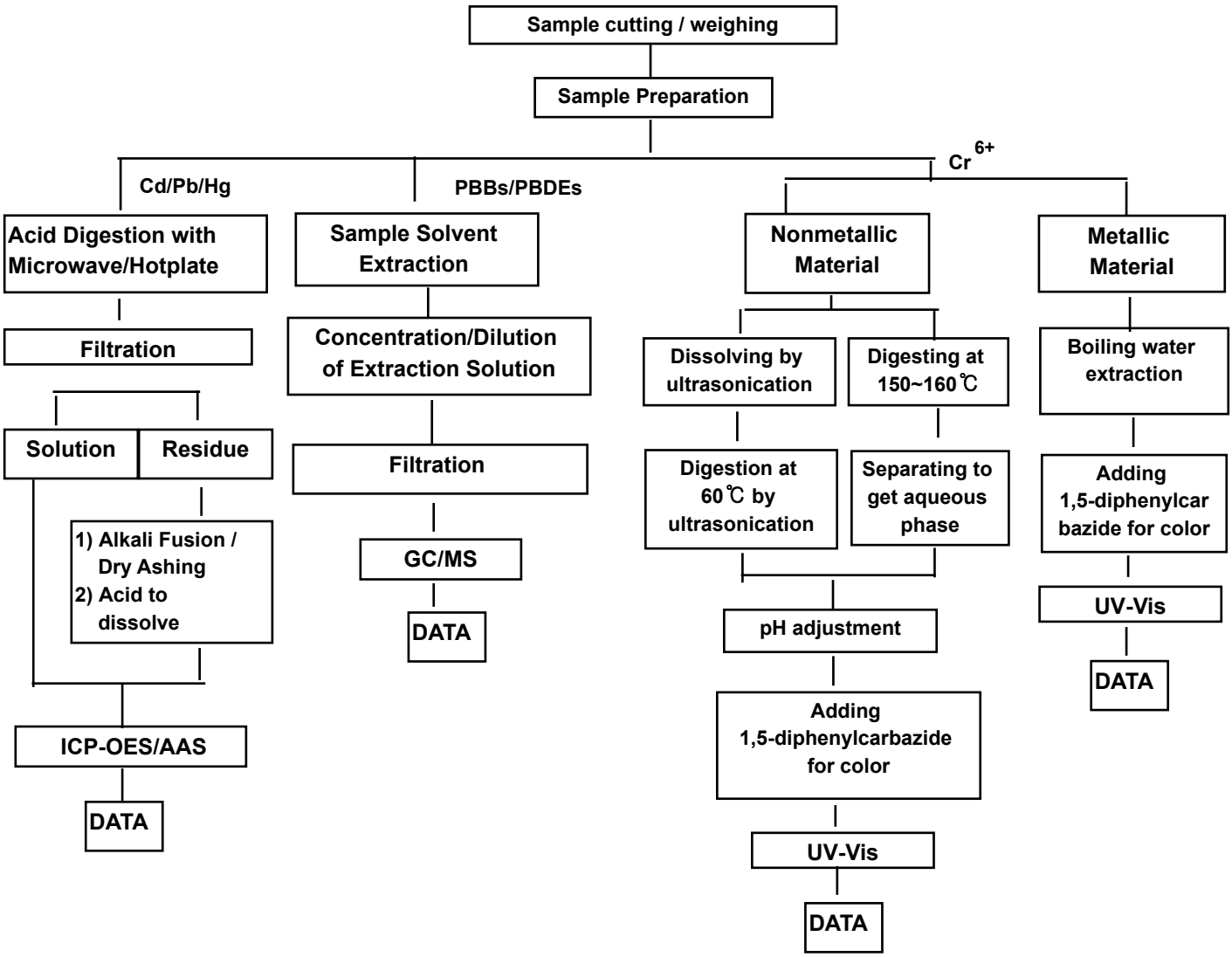
Testing Flow Chart for RoHS:Cd/Pb/Hg/Cr^{6+} /PBBs&PBDEs Testing



The samples were dissolved totally at the acid digestion step of the above flow chart for Cd,Pb,Hg

- **Technician : Gihwan Kim/Choah Jeong/Taehee Kang**
- **Supervisor : Dongju Lee**

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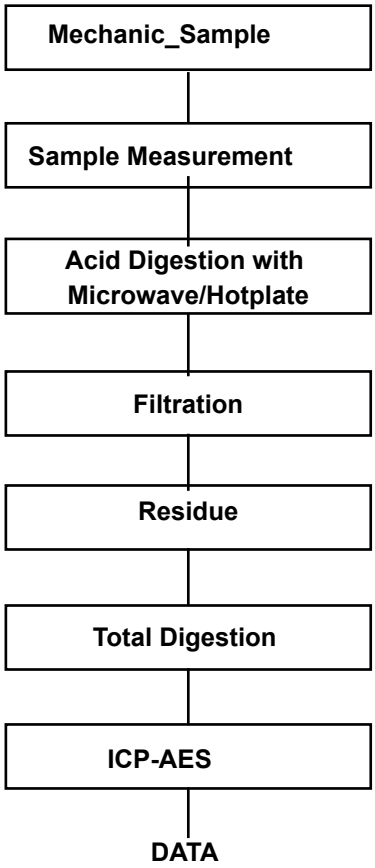
Flow Chart for Inorganic Elements Testing

Inorganic Elements



Major Inorganic Heavy Metals	Antimony(Sb) , Beryllium(Be) , Phosphorus(P) , Arsenic(As) etc.

- Technician : Gihwan Kim
- Supervisor : Dongju Lee

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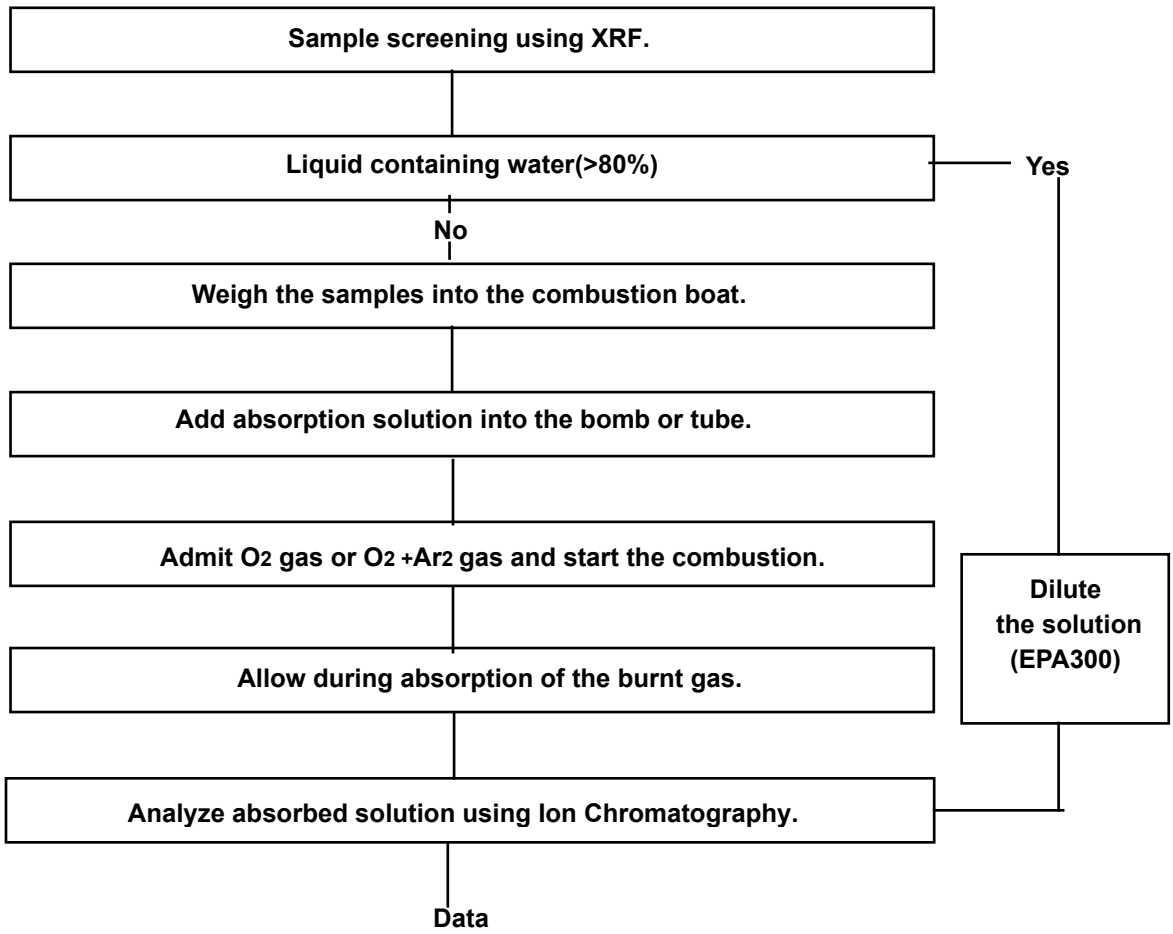
Flow Chart for Halogen Test



- Technician : Gihwan Kim
- Supervisor : Dongju Lee

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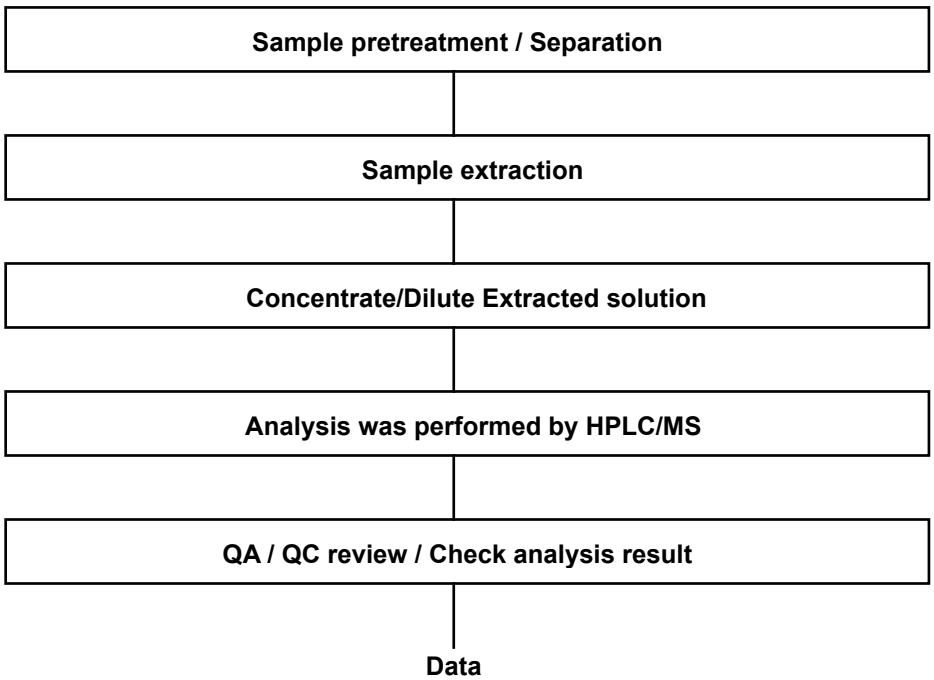
Flow Chart for PFOS/PFOA Test



- Technician : Yukyung Park
- Supervisor : Dongju Lee

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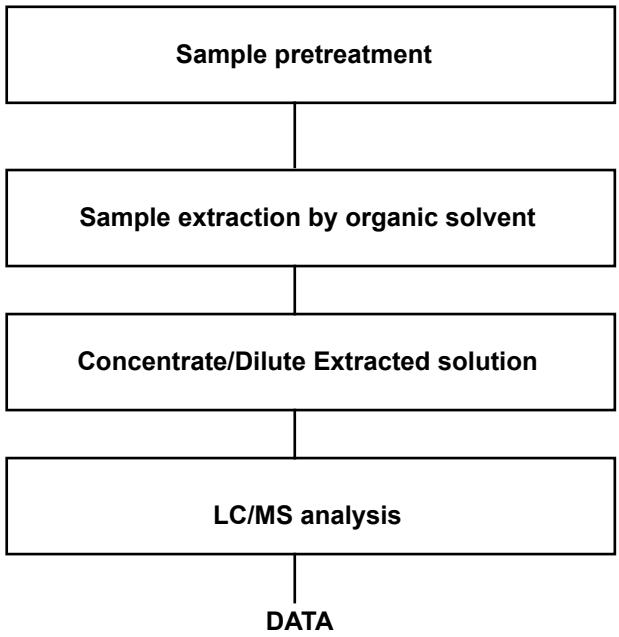
Testing Flow Chart for HBCD



- Technician : Jongsir Lim
- Supervisor : Dongju Lee

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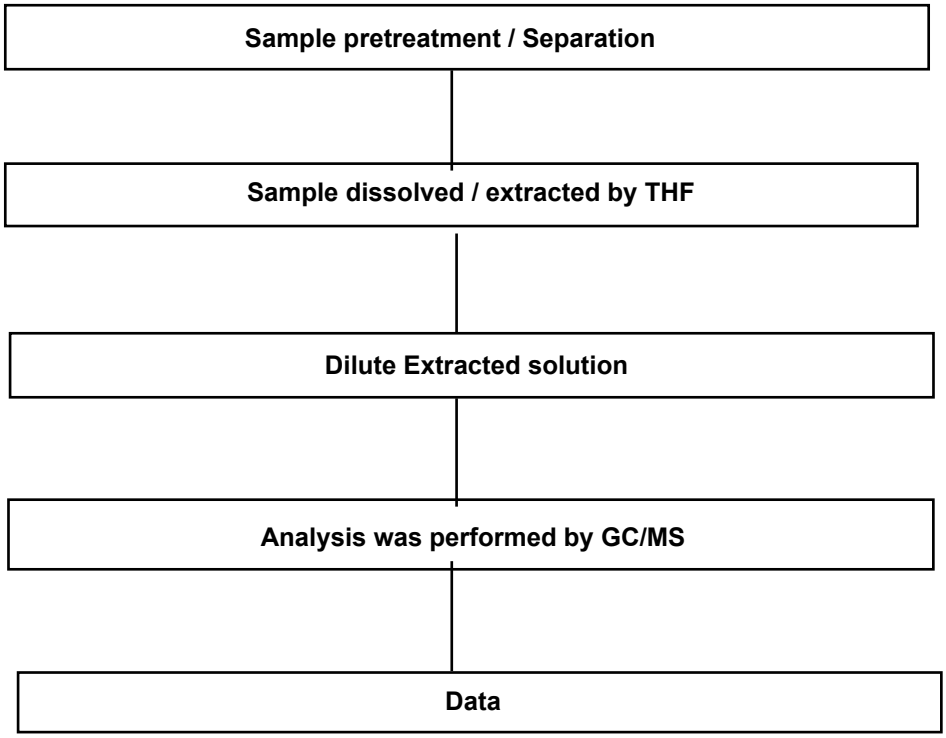
Flow Chart for Phthalate Test



- Technician : Yukyung Park
- Supervisor : Dongju Lee

*** End of Report ***

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