

CHEMICAL ANALYSIS TEST REPORT

Company : TAI HONG CIRCUIT IND. Co., Ltd.
Address : No.81, KUANG FU RD., HSINCHU IND. PARK, FUKOU HSANG,
HSINCHU HSIEN, TAIWAN
Product Name : (Cu)COPPER
Date Received : MAY 06, 2019
Date Tested : MAY 09, 2019

TESTING LABORATORY IS ACCREDITED BY:

IECQ ISO/IEC 17025 certificate of independent test laboratory approval
Certificate No. : IECQ-L DEKRA 16.0002

WE HEREBY CERTIFY THAT:

The test(s) shown in the attachment were conducted according to the indicating procedures. We assume full responsibility for the accuracy and completeness of these tests and vouch for the qualifications of all personnel performing them.

NOTE :

1. This report will be invalid if reproduced in part or altered in any way.
2. This report refers only to the specimen(s) submitted to test, and is invalid if used otherwise.
3. This report is ONLY valid with the examination seal and signature of this institute.
4. The tested specimen(s) will only be preserved for thirty days from the date issued, if not collected by the applicant.

Signed and on behalf of

Wenston Lin

Wenston Lin
Technical Manager



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1. GENERAL INFORMATION

1.1 DESCRIPTION OF SAMPLE

Product Name : (Cu)COPPER

2. CHEMICAL ANALYSIS TEST

2.1 TEST CONDITIONS AND RESULTS

*Description of test part : COPPER COLORED METAL SHEET

Test Item(s)	Method	Instrument	Unit	MDL	Result
Lead (Pb)	Refer to IEC 62321-5:2013	ICP-OES	mg/kg	2	N.D.
Cadmium (Cd)				2	N.D.
Mercury (Hg)				2	N.D.
Hexavalent chromium (Cr6+)	Refer to IEC 62321-7-1:2015	UV-VIS	µg/cm ²	0.10	Negative
Monobromobiphenyl	Refer to IEC 62321-6:2015	GC-MS	mg/kg	5	N.D.
Dibromobiphenyl				5	N.D.
Tribromobiphenyl				5	N.D.
Tetrabromobiphenyl				5	N.D.
Pentabromobiphenyl				5	N.D.
Hexabromobiphenyl				5	N.D.
Heptabromobiphenyl				5	N.D.
Octabromobiphenyl				5	N.D.
Nonabromobiphenyl				5	N.D.
Decabromobiphenyl				5	N.D.
The above-mentioned total of (PBBs)	-	-	-	-	N.D.
Monobromodiphenyl ether	Refer to IEC 62321-6:2015	GC-MS	mg/kg	5	N.D.
Dibromodiphenyl ether				5	N.D.
Tribromodiphenyl ether				5	N.D.
Tetrabromodiphenyl ether				5	N.D.
Pentabromodiphenyl ether				5	N.D.
Hexabromodiphenyl ether				5	N.D.
Heptabromodiphenyl ether				5	N.D.
Octabromodiphenyl ether				5	N.D.
Nonabromodiphenyl ether				5	N.D.
Decabromodiphenyl ether				5	N.D.
The above-mentioned total of (PBDEs)	-	-	-	-	N.D.


***Description of test part : COPPER COLORED METAL SHEET**

Test Item(s)	Method	Instrument	Unit	MDL	Result	
Antimony (Sb)	Refer to EPA 3052: 1996	ICP-OES	mg/kg	5	N.D.	
Beryllium (Be)				5	N.D.	
Fluorine (F)	Refer to EN 14582: 2016	IC		30	N.D.	
Chlorine (Cl)				30	N.D.	
Bromine (Br)				30	N.D.	
Iodine (I)				30	N.D.	
Perfluorooctanoic Acid (PFOA)	Refer to US EPA 3550C:2007	LC/MS		10	N.D.	
Perfluorooctane sulphonate (PFOS)				10	N.D.	
HBCDD	Refer to IEC 62321:2008	GC-MS		mg/kg	10	N.D.
DEHP	Refer to IEC 62321-8:2017	GC-MS		mg/kg	50	N.D.
DBP			50		N.D.	
BBP			50		N.D.	
DIBP			50		N.D.	

Note :

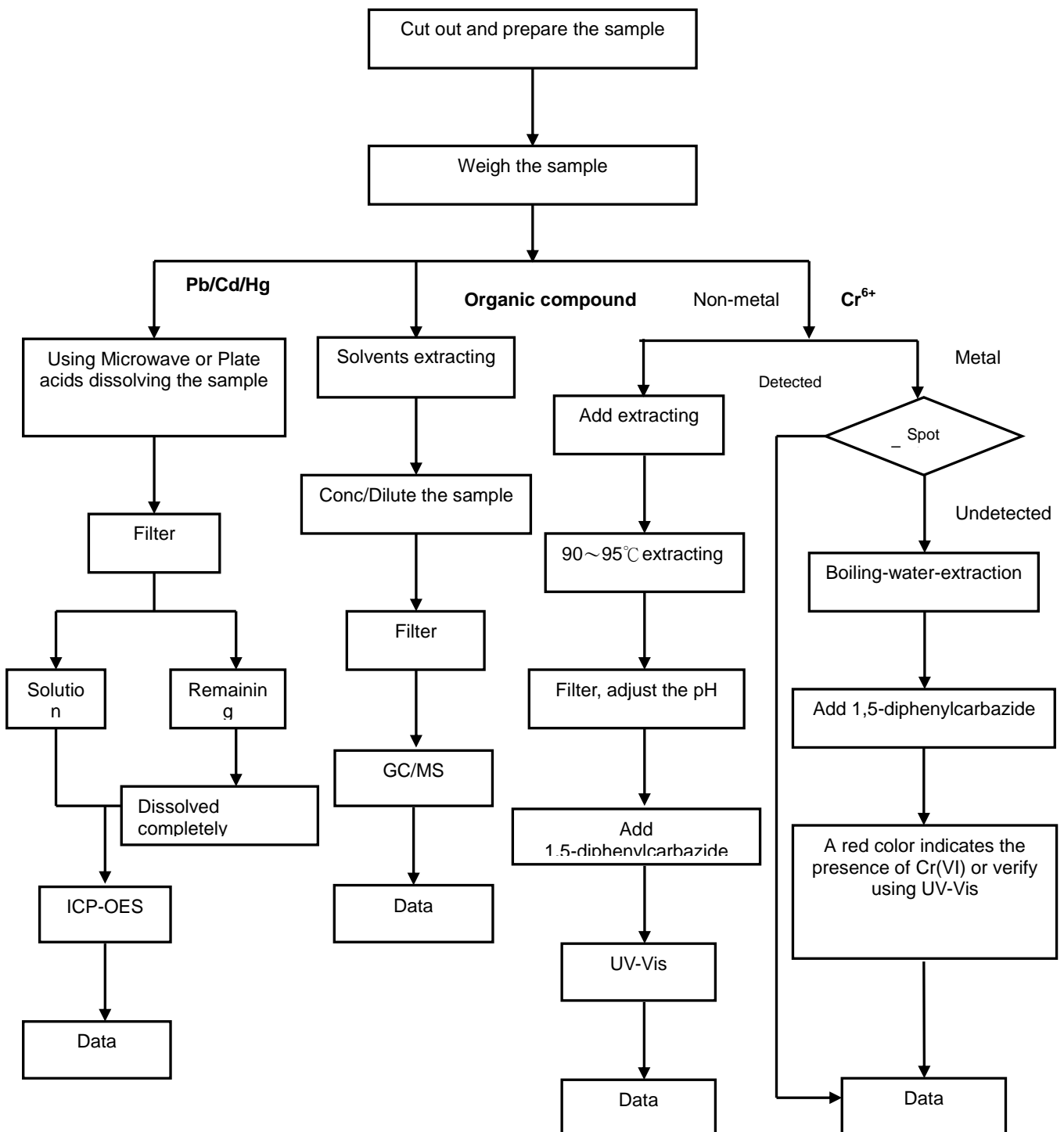
1. MDL = Method Detection Limit.
2. mg/kg = ppm.
3. N.D. = Not detected. (< MDL) If the clients required the result must be value(s), the value just for reference.
4. Negative= not detected.
5. ICP-OES = Inductively Coupled Plasma-Optical Emission Spectrometer.
6. UV-VIS = Ultraviolet-Visible Spectrophotometer.
7. GC-MS = Gas Chromatograph-Mass Spectrometer.
8. "-"Show that there is not specification value.

2.2 PHOTO OF SAMPLE

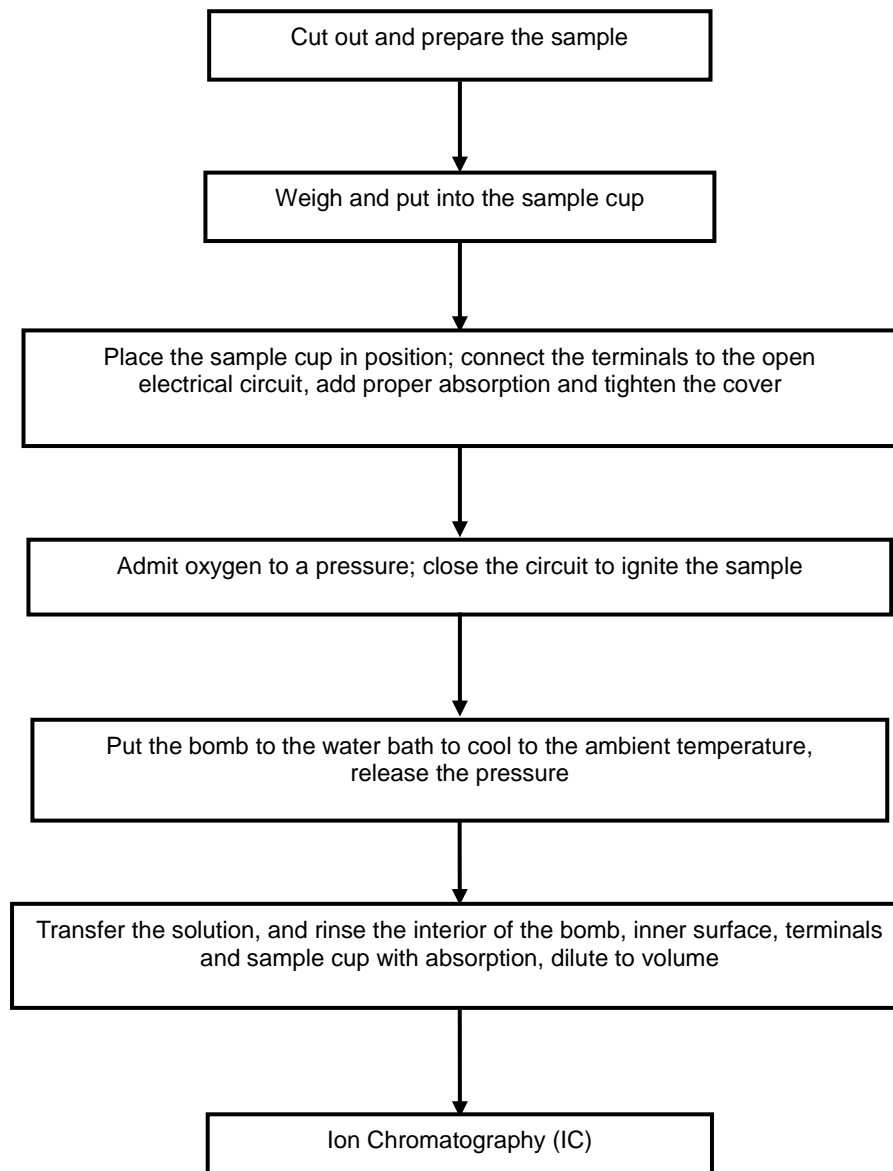
Sample NO.	Description of test part	Photo
-	COPPER COLORED METAL SHEET	

2.3 MEASUREMENT FLOW CHART

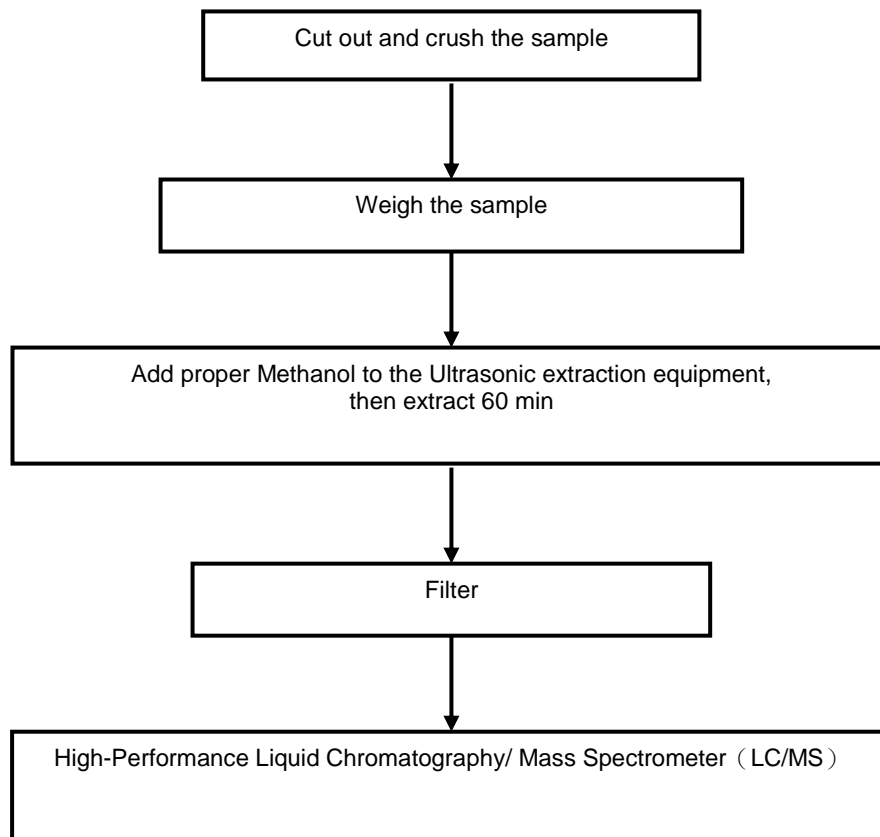
Measurement Flowchart of Lead (Pb)/ Cadmium (Cd)/ Mercury (Hg)/ Hexavalent chromium (Cr⁶⁺)/ PBBs/PBDEs



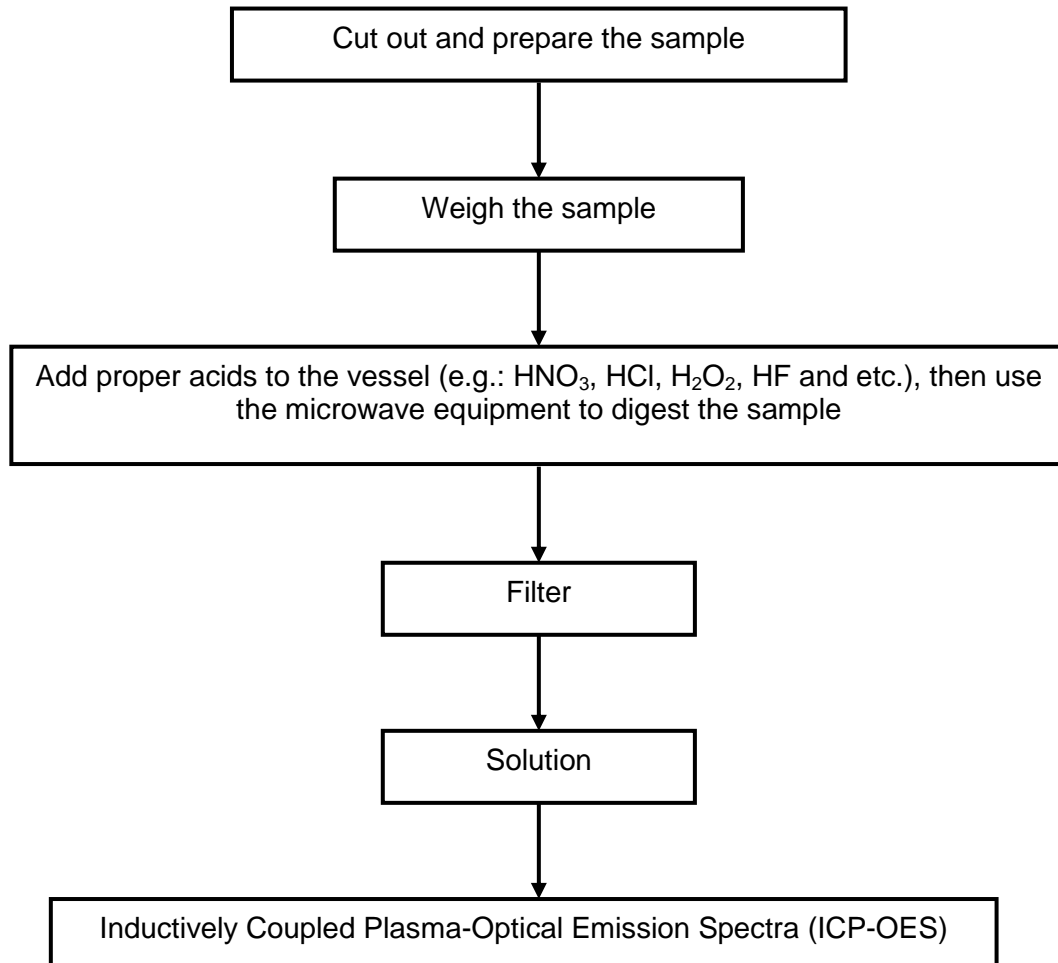
Measurement Flowchart of Halogen



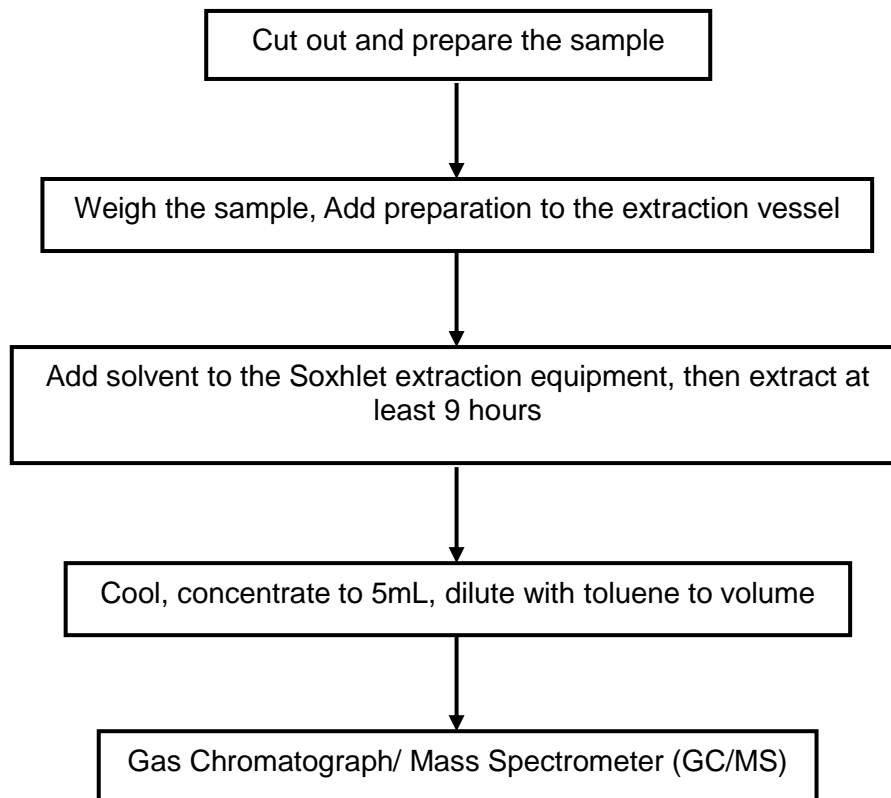
Measurement Flowchart of Perfluorooctane sulphonate(PFOS)/Perfluorooctanoic Acid (PFOA)



Measurement Flowchart of Antimony(Sb)/ Beryllium(Be)



Measurement Flowchart of Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified (α -HBCDD, β -HBCDD, γ -HBCDD) (α -HBCDD, β -HBCDD, γ -HBCDD)/ Bis (2-ethylhexyl) ortho-phthalate(DEHP)/ Benzyl-n-butyl ortho-phthalate(BBP)/ Di-n-butyl ortho-phthalate (DBP)/ Di-iso-butyl ortho-phthalate(DIBP)



-----End of Report-----