

TEST REPORT

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202106034117-1
DATE: Jun,03, 2021
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APPLICANT: TONGFU MICROELECTRONICS CO.,LTD.
ADDRESS: NO.288, Chongchuan Road, Chongchuan Economic Development Area,Nantong, Jiangsu, P.R.China

SAMPLE DESCRIPTION: The following samples were submitted and identified by the applicant as:
Sample Name: LQFP44NT
1. Silvery Metal
2. Black Body

TEST REQUESTED: 1.**Silvery Metal:**To determine the contents of lead (Pb), mercury (Hg), hexavalent chromium (Cr6+), cadmium (Cd), PFOA, PFOS, Beryllium oxide, Beryllium copper,Sb.

2.**black body:**To determine the contents of Pb,Cd,Hg,Cr6+,PB Bs,PBDEs, Sb, F,Cl,Br,I,PCBs,PCNs,PCTs,SCCP,TBT,TPT,DBT, DOT,Asbestos,Specific azo compounds,Formaldehyde,PVC and PVC compound,Beryllium oxide,Beryllium copper,DEHP,DBP,BB P,DINP,DIDP,DNOP,DNHP,DIHP,DHNUP,DMEP,HFC,PFC,UV320 (Specific benzotriazole),PFOS,PFOA, Cobalt dichloride, Ozonosp here destroy substance, DMF, Tris (2-chloroethyl) phosphate (T CEP), Hexabromocyclododecane (HBCDD), Diarsenic trioxide, D iarsenic pentaoxide, Boric acid, specific sodium borates, Diisobu tyl phthalate (DIBP), 4-(1,1,3,3-tetramethylbutyl)phenol, Bis(2-met hoxyethyl)ether-d14, DMAC, EGDME

TEST METHOD: Please refer to the next pages.

TESTING PERIOD: May,24,2021 - Jun,03, 2021

RESULT: Please refer to next pages.

Authorized sign: 

DAI XUEWEI



NOTE: ALL TEST RESULTS ARE ONLY VALID FOR THE SAMPLES BEING TESTED. THIS TEST REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL,WITHOUT THE WRITTEN APPROVAL OF THE TESTING LABORATORY.

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TEST RESULTS:

Testing Item	Equipment	Test Method	Test Result		
			Sample 1	Sample 2	
Pb	AAS	IEC62321-5:2013	N.D.(< 1 mg/kg)	N.D.(< 1 mg/kg)	
Cd	AAS	IEC62321-5:2013	N.D.(< 1 mg/kg)	N.D.(< 1 mg/kg)	
Hg	ICP-OES	IEC62321-4:2013	N.D.(< 1 mg/kg)	N.D.(< 1 mg/kg)	
Cr6+	UV-Vis	IEC62321 Edition 1.0: 2008	Negative #	N.D.(< 1 mg/kg)	
PBBs	-	-		-	
Bromobiphenyl	GC-MS	IEC62321-6:2015	No requested	N.D.(< 5 mg/kg)	
Dibromobiphenyl	GC-MS	IEC62321-6:2015		N.D.(< 5 mg/kg)	
Tribromobiphenyl	GC-MS	IEC62321-6:2015		N.D.(< 5 mg/kg)	
Tetrabromobiphenyl	GC-MS	IEC62321-6:2015		N.D.(< 5 mg/kg)	
Pentabromobiphenyl	GC-MS	IEC62321-6:2015		N.D.(< 5 mg/kg)	
Hexabromobiphenyl	GC-MS	IEC62321-6:2015		N.D.(< 5 mg/kg)	
Heptabromobiphenyl	GC-MS	IEC62321-6:2015		N.D.(< 5 mg/kg)	
Octabromobiphenyl	GC-MS	IEC62321-6:2015		N.D.(< 5 mg/kg)	
Nonabromobiphenyl	GC-MS	IEC62321-6:2015		N.D.(< 5 mg/kg)	
Decabromobiphenyl	GC-MS	IEC62321-6:2015		N.D.(< 5 mg/kg)	
PBDEs	-	-			-
Bromodiphenyl ether	GC-MS	IEC62321-6:2015		No requested	N.D.(< 5 mg/kg)
Dibromodiphenyl ether	GC-MS	IEC62321-6:2015	N.D.(< 5 mg/kg)		
Tribromodiphenyl ether	GC-MS	IEC62321-6:2015	N.D.(< 5 mg/kg)		
Tetrabromodiphenyl ether	GC-MS	IEC62321-6:2015	N.D.(< 5 mg/kg)		
Pentabromodiphenyl ether	GC-MS	IEC62321-6:2015	N.D.(< 5 mg/kg)		
Hexabromodiphenyl ether	GC-MS	IEC62321-6:2015	N.D.(< 5 mg/kg)		
Heptabromodiphenyl ether	GC-MS	IEC62321-6:2015	N.D.(< 5 mg/kg)		
Octabromodiphenyl ether	GC-MS	IEC62321-6:2015	N.D.(< 5 mg/kg)		
Nonabromodiphenyl ether	GC-MS	IEC62321-6:2015	N.D.(< 5 mg/kg)		
Decabromodiphenyl ether	GC-MS	IEC62321-6:2015	N.D.(< 5 mg/kg)		

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PCBs	GC-MS	EPA 8082A	No requested	N.D.(< 10 mg/kg)
PCNs	GC-MS	EPA 8082A		N.D.(< 10 mg/kg)
PCTs	GC-MS	EPA 8082A		N.D.(< 10 mg/kg)
SCCP	GC-MS	EPA 3540C		N.D.(< 10 mg/kg)
TBT	GC	DIN 38407-13		N.D.(< 10 mg/kg)
TPT	GC	DIN 38407-13		N.D.(< 10 mg/kg)
DBT	GC	DIN 38407-13		N.D.(< 10 mg/kg)
DOT	GC	DIN 38407-13		N.D.(< 10 mg/kg)
Asbestos	-	-		-
Anthrophyllite	X-ray Diffraction	Niosh Method 9000,issue 2	No requested	N.D.(< 1 %)
Crocodolite	X-ray Diffraction	Niosh Method 9000,issue 2		N.D.(< 1 %)
Amosite	X-ray Diffraction	Niosh Method 9000,issue 2		N.D.(< 1 %)
Tremolite	X-ray Diffraction	Niosh Method 9000,issue 2		N.D.(< 1 %)
Chrysotile	X-ray Diffraction	Niosh Method 9000,issue 2		N.D.(< 1 %)
Actinolite	X-ray Diffraction	Niosh Method 9000,issue 2		N.D.(< 1 %)
azo compounds	-	-		-
4-AMINODIPHENYL	GC-MS	35 LMBG	No requested	N.D.(< 5 mg/kg)
BENZIDINE	GC-MS	35 LMBG		N.D.(< 5 mg/kg)
4-CHLORO-O-TOLUIDI NE	GC-MS	35 LMBG		N.D.(< 5 mg/kg)
2-NAPHTHYLAMINE	GC-MS	35 LMBG		N.D.(< 5 mg/kg)
O-AMINOAZOTOLUENE	GC-MS	35 LMBG		N.D.(< 5 mg/kg)
P-CHLOROANILINE	GC-MS	35 LMBG		N.D.(< 5 mg/kg)
2,4-DIAMINOANISOLE	GC-MS	35 LMBG		N.D.(< 5 mg/kg)
4,4'-DIAMINODIPHENYL METHANE	GC-MS	35 LMBG		N.D.(< 5 mg/kg)
3,3'-DICHLOROBENZIDI NE	GC-MS	35 LMBG		N.D.(< 5 mg/kg)
3,3'-DIMETHOXYBENZI DINE	GC-MS	35 LMBG		N.D.(< 5 mg/kg)

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			Sample 1	Sample 2
3,3'-DIMETHYLBENZIDINE	GC-MS	35 LMBG	No requested	N.D.(< 5 mg/kg)
3,3'-DIMETHYL-4,4'-DIAMINODIPHENYL METHANE	GC-MS	35 LMBG		N.D.(< 5 mg/kg)
P-CRESIDINE(2-METHOXY-5-METHYLANILINE)	GC-MS	35 LMBG		N.D.(< 5 mg/kg)
4,4'-METHYLENE-BIS-(2-CHLOROANILINE)	GC-MS	35 LMBG		N.D.(< 5 mg/kg)
4,4'-OXYDIANILINE	GC-MS	35 LMBG		N.D.(< 5 mg/kg)
4,4'-THIODIANILINE	GC-MS	35 LMBG		N.D.(< 5 mg/kg)
O-TOLUIDINE	GC-MS	35 LMBG		N.D.(< 5 mg/kg)
2,4-TOLUYLENEDIAMINE	GC-MS	35 LMBG		N.D.(< 5 mg/kg)
2,4,5-TRIMETHYLANILINE	GC-MS	35 LMBG		N.D.(< 5 mg/kg)
O-ANISIDINE	GC-MS	35 LMBG		N.D.(< 5 mg/kg)
5-NITRO-O-TOLUIDINE	GC-MS	35 LMBG		N.D.(< 5 mg/kg)
4-AMINOAZOBENZENE	GC-MS	35 LMBG		N.D.(< 5 mg/kg)
2,4-Dimethylaniline	GC-MS	35 LMBG		N.D.(< 5 mg/kg)
2,6-Dimethylaniline	GC-MS	35 LMBG		N.D.(< 5 mg/kg)
Formaldehyde	HPLC	ISO/TS 17226: 2003 (E)		N.D.(< 5 mg/kg)
PVC and PVC compound	Fourier transform Infrared Spectra	-		Not contain
Beryllium oxide	ICP-OES	-	N.D.(< 2 mg/kg)	N.D.(< 2 mg/kg)
Beryllium copper	ICP-OES	-	N.D.(< 2 mg/kg)	N.D.(< 2 mg/kg)
F	IC	EN 14582: 2016	No requested	N.D.(< 10 mg/kg)
Cl	IC	EN 14582: 2016		N.D.(< 10 mg/kg)
Br	IC	EN 14582: 2016		N.D.(< 10 mg/kg)
I	IC	EN 14582: 2016		N.D.(< 10 mg/kg)
Sb	ICP-OES	GB/T 5121.12-2008	N.D.(< 2 mg/kg)	N.D.(< 2 mg/kg)

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			Sample 1	Sample 2
DEHP	GC-MS	IEC62321-8(111/321/CD)	No requested	N.D.(< 10 mg/kg)
DBP	GC-MS	IEC62321-8(111/321/CD)		N.D.(< 10 mg/kg)
BBP	GC-MS	IEC62321-8(111/321/CD)		N.D.(< 10 mg/kg)
DINP	GC-MS	IEC62321-8(111/321/CD)		N.D.(< 10 mg/kg)
DIDP	GC-MS	IEC62321-8(111/321/CD)		N.D.(< 10 mg/kg)
DNOP	GC-MS	IEC62321-8(111/321/CD)		N.D.(< 10 mg/kg)
DNHP	GC-MS	IEC62321-8(111/321/CD)		N.D.(< 10 mg/kg)
DIBP	GC-MS	IEC62321-8(111/321/CD)		N.D.(< 10 mg/kg)
DIHP	GC-MS	IEC62321-8(111/321/CD)		N.D.(< 10 mg/kg)
DHNUP	GC-MS	IEC62321-8(111/321/CD)		N.D.(< 10 mg/kg)
DMEP	GC-MS	IEC62321-8(111/321/CD)		N.D.(< 10 mg/kg)
HFC	-	-		-
HFC-23	GC-MS	EPA8260B	No requested	N.D.(< 1 mg/kg)
HFC-32	GC-MS	EPA8260B		N.D.(< 1 mg/kg)
HFC-41	GC-MS	EPA8260B		N.D.(< 1 mg/kg)
HFC-43-10mee	GC-MS	EPA8260B		N.D.(< 1 mg/kg)
HFC-125	GC-MS	EPA8260B		N.D.(< 1 mg/kg)
HFC-134	GC-MS	EPA8260B		N.D.(< 1 mg/kg)
HFC-134a	GC-MS	EPA8260B		N.D.(< 1 mg/kg)
HFC-143	GC-MS	EPA8260B		N.D.(< 1 mg/kg)
HFC-143a	GC-MS	EPA8260B		N.D.(< 1 mg/kg)
HFC-152a	GC-MS	EPA8260B		N.D.(< 1 mg/kg)
HFC-227ea	GC-MS	EPA8260B		N.D.(< 1 mg/kg)
HFC-236fa	GC-MS	EPA8260B		N.D.(< 1 mg/kg)
HFC-236ea	GC-MS	EPA8260B		N.D.(< 1 mg/kg)
HFC-245ea	GC-MS	EPA8260B		N.D.(< 1 mg/kg)
HFC-245fa	GC-MS	EPA8260B		N.D.(< 1 mg/kg)
HFC-365mfc	GC-MS	EPA8260B		N.D.(< 1 mg/kg)
PFC	GC-MS	EPA8260B		N.D.(< 1 mg/kg)
F14	GC-MS	EPA8260B		N.D.(< 1 mg/kg)
Fluorocarbon 116	GC-MS	EPA8260B		N.D.(< 1 mg/kg)
Freon 218	GC-MS	EPA8260B		N.D.(< 1 mg/kg)
Decafluorobutane	GC-MS	EPA8260B	N.D.(< 1 mg/kg)	
Freon C318	GC-MS	EPA8260B	N.D.(< 1 mg/kg)	

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			Sample 1	Sample 2
Perfluor-1-butane	GC-MS	EPA8260B	No requested	N.D.(< 1 mg/kg)
perfluorisobutane	GC-MS	EPA8260B		N.D.(< 1 mg/kg)
1,4-dihydroctafluorobutane	GC-MS	EPA8260B		N.D.(< 1 mg/kg)
nonafluor-2-(trifluoromethyl)butane	GC-MS	EPA8260B		N.D.(< 1 mg/kg)
perfluoro-n-pentane	GC-MS	EPA8260B		N.D.(< 1 mg/kg)
2-perfluoromethylpentane	GC-MS	EPA8260B		N.D.(< 1 mg/kg)
perfluorohexane	GC-MS	EPA8260B		N.D.(< 1 mg/kg)
UV320(Specific benzotriazole)	GC-MS	-		N.D.(< 1 mg/kg)
Cobalt dichloride	ICP-OES	-		N.D. (< 2 mg/kg)
Ozonosphere destroy substance	-	-		-
CFCs	GC-MS	EPA8260B		N.D.(< 10 mg/kg)
Carbon Tetrachloride	GC-MS	EPA8260B		N.D.(< 10 mg/kg)
1,1,1-Trichloroethane	GC-MS	EPA8260B		N.D.(< 10 mg/kg)
Halons	GC-MS	EPA8260B		N.D.(< 10 mg/kg)
HCFCs	GC-MS	EPA8260B		N.D.(< 10 mg/kg)
Bromomethane	GC-MS	EPA8260B		N.D.(< 10 mg/kg)
HBFCs	GC-MS	EPA8260B	N.D.(< 10 mg/kg)	
PFOS	LC-MS-MS	CEN/TS 15968:2010	N.D(<0.01 mg/kg)	N.D(<0.01 mg/kg)
PFOA	LC-MS-MS	CEN/TS 15968:2010	N.D(<0.01 mg/kg)	N.D(<0.01 mg/kg)
DMF	GC	-	No requested	N.D. < 10 mg/kg)
TCEP	GC-MS	EPA 3540C		N.D.(< 10 mg/kg)
HBCDD	GC-MS	EPA 3540C		N.D.(< 10 mg/kg)
Diarsenic trioxide, Diarsenic pentaoxide	ICP-OES	EPA3052		N.D.(< 2 mg/kg)
Boric acid, specific sodium borates	ICP-OES	EPA3052		N.D.(< 2 mg/kg)
4-(1,1,3,3-tetramethylbutyl)phenol	GC-MS	EPA 3540C		N.D.(< 50 mg/kg)
Bis(2-methoxyethyl)ether-d14	GC-MS	EPA 3540C		N.D.(< 50 mg/kg)
DMAC	GC-MS	EPA 3540C		N.D.(< 50 mg/kg)
EGDME	GC-MS	EPA 3540C		N.D.(< 50 mg/kg)

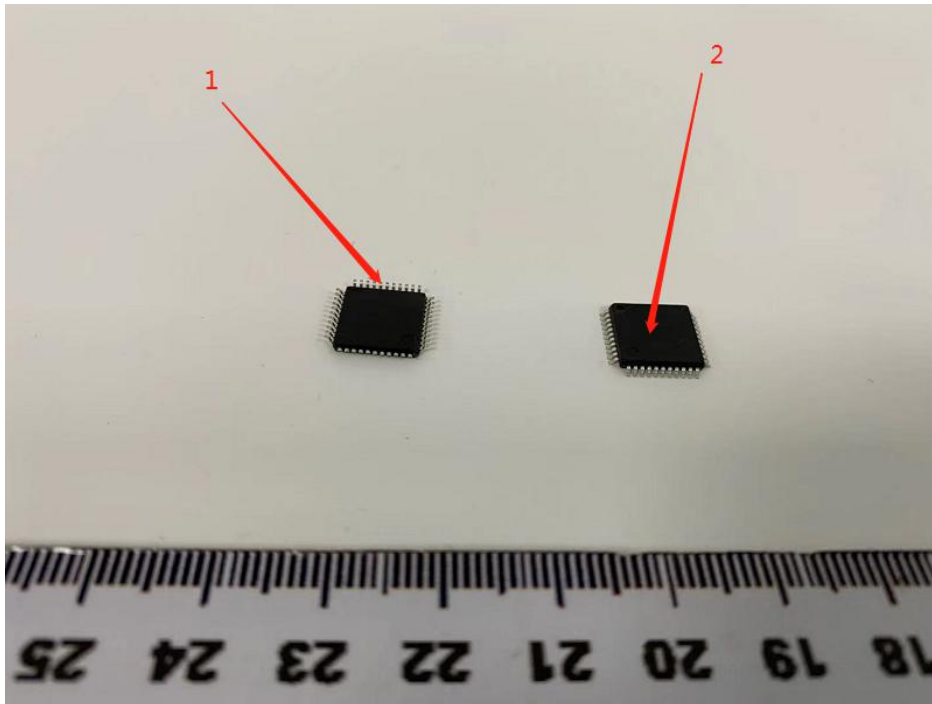
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REMARK:

= Testing Cr^{6+} by IEC 62321:2008 Annex B and the result is showed as Positive/Negative
Negative = Absence of Cr^{6+} , which means that the Cr^{6+} concentration in extraction solution is less than 0.02 mg/kg with 50 cm^2 sample surface area
Positive = Presence of Cr^{6+} , which means that the Cr^{6+} concentration in extraction solution is equal or greater than 0.02 mg/kg with 50 cm^2 sample surface area
mg/kg = ppm ; ND = Not detected

Sample photo

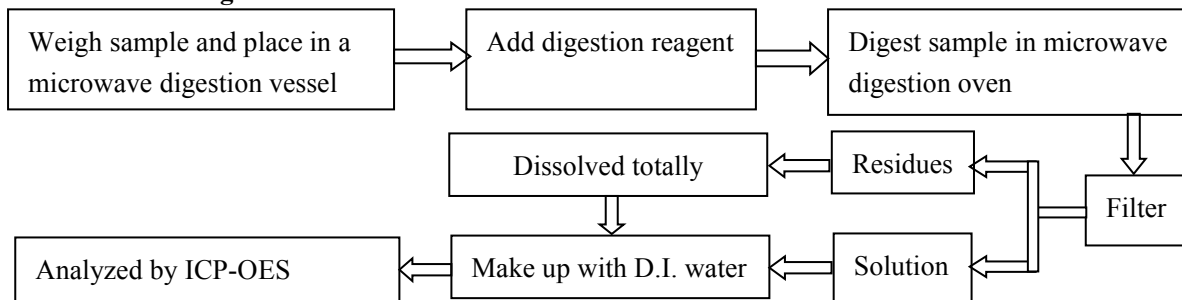


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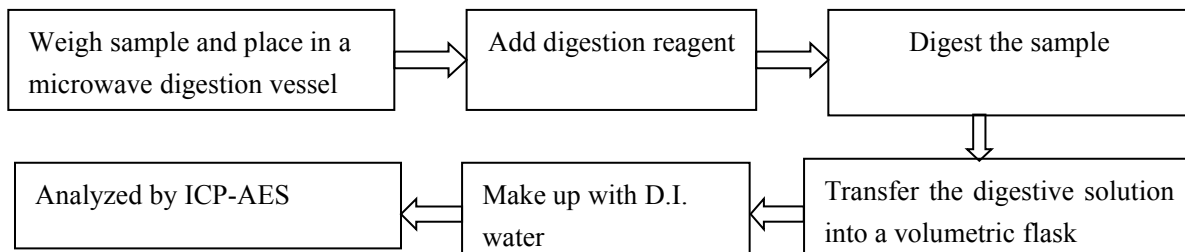
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Test Process:

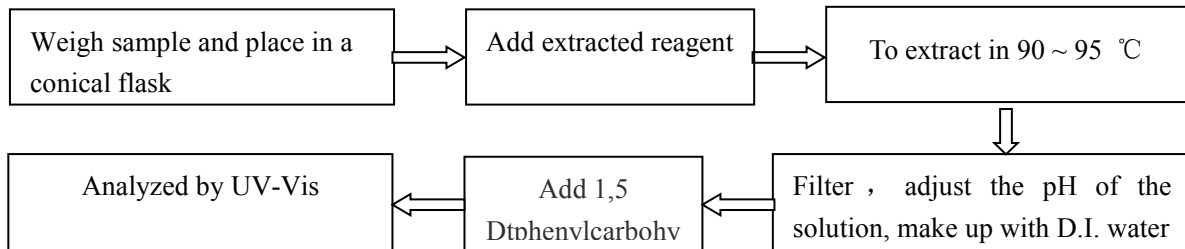
Test for Pb/Cd/Hg Content.



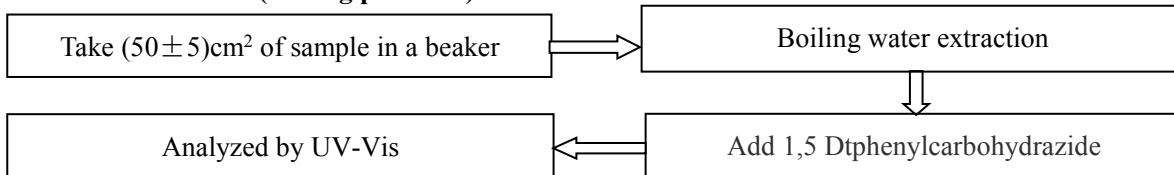
Test for Pb/Cd/Hg Content (Metal).



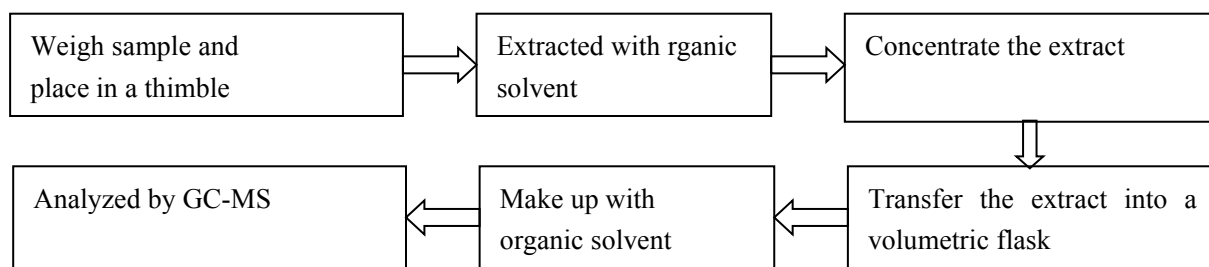
Test for Cr⁶⁺ Content.



Test for Cr⁶⁺ Content (Plating products).



Test for PBBs /PBDEs Content.

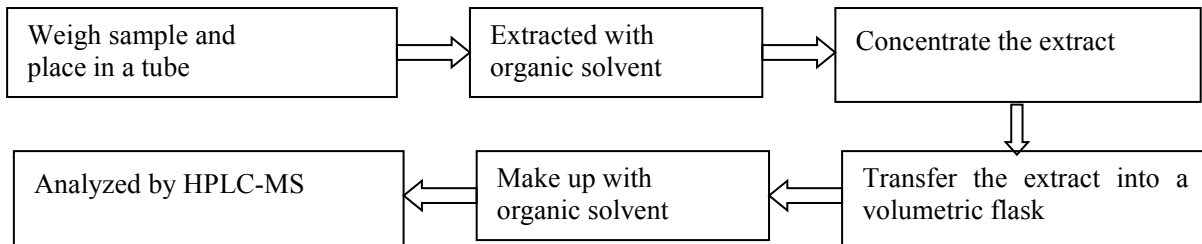


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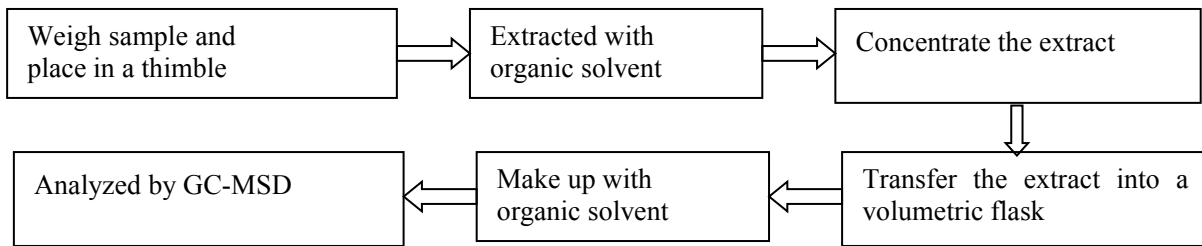
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Test Process :

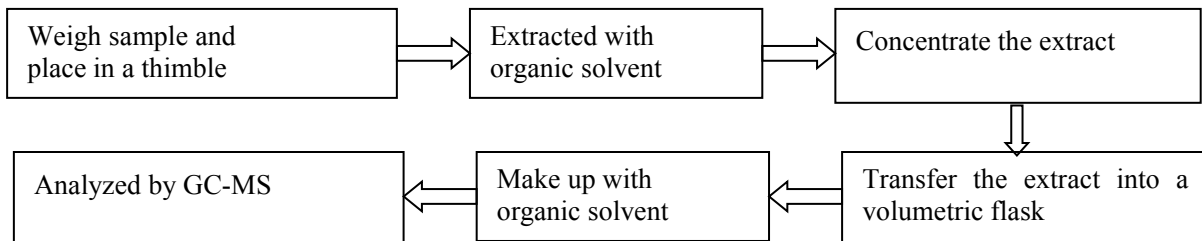
Test for PFOA, PFOS Content.



Test for phthalates Content.



Test for Dimethyl fumarate Content.



*****End of Report*****