



上海出入境检验检疫局
机电产品检测技术中心
Machinery & Electrical Products Testing Center
Shanghai Entry-Exit Inspection and Quarantine Bureau

TEST REPORT

NUMBER: 201802039729-6

DATE: May 10, 2018

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ORIGINAL

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: TSSOP8-NT

1. metal
2. plastic

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

2.plastic:To determine the contents of Pb,Cd,Hg,Cr⁶⁺,PBBs,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,BBP,DINP,DIDP,DNOP,DNHP,DIHP,DHNUP,DMEP,HFC,PFC, UV320(Specific benzotriazole),PFOS,PFOA, Cobalt dichloride, Ozonosphere destroy substance, DMF, Tris (2-chloroethyl) phosphate (TCEP), Hexabromocyclododecane (HBCDD), Diarsenic trioxide, Diarsenic pentaoxide, Boric acid, specific sodium borates, Diisobutyl phthalate (DIBP), 4-(1,1,3,3-tetramethylbutyl)phenol, Bis(2-methoxyethyl)ether-d14, DMAC, EGDME.

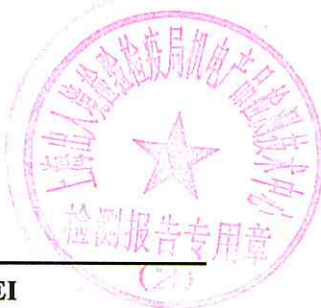
TEST METHOD: Please refer to the next pages.

TESTING PERIOD: May 8, 2018 – May 10, 2018

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)
Cr ⁶⁺	UV-Vis	IEC62321-7-1:2015 IEC62321-7-2:2017	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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			Sample 1	Sample 2
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-TOLUIDINE	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'-DICHLOROBENZIDINE	GC-MS	35 LMBG		N.D.(< 5 mg/kg)
3,3'-DIMETHOXYBENZIDINE	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'-DIAMINODIPHENYLMETHANE	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: 2007	No requested	N.D. (<10 mg/kg)
Cl	IC	EN 14582: 2007		33 mg/kg (<10 mg/kg)
Br	IC	EN 14582: 2007		N.D. (<10 mg/kg)
I	IC	EN 14582: 2007		N.D.(<20 mg/kg)
Sb	ICP-OES	EPA 3050B:1996, EPA 6010C:2007, EPA 3012:1996	N.D.(<2 mg/kg)	N.D.(<2 mg/kg)

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			Sample 1	Sample 2
DEHP	GC-MS	IEC62321-8:2017	No requested	N.D.(< 10 mg/kg)
DBP	GC-MS	IEC62321-8:2017		N.D.(< 10 mg/kg)
BBP	GC-MS	IEC62321-8:2017		N.D.(< 10 mg/kg)
DINP	GC-MS	IEC62321-8:2017		N.D.(< 10 mg/kg)
DIDP	GC-MS	IEC62321-8:2017		N.D.(< 10 mg/kg)
DNOP	GC-MS	IEC62321-8:2017		N.D.(< 10 mg/kg)
DNHP	GC-MS	IEC62321-8:2017		N.D.(< 10 mg/kg)
DIBP	GC-MS	IEC62321-8:2017		N.D.(< 10 mg/kg)
DIHP	GC-MS	IEC62321-8:2017		N.D.(< 10 mg/kg)
DHNUP	GC-MS	IEC62321-8:2017		N.D.(< 10 mg/kg)
DMEP	GC-MS	IEC62321-8:2017		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	LCMS	EPA 3540C	N.D.(<2 mg/kg)	N.D.(<20 mg/kg)
PFOA	LCMS	EPA 3540C	N.D.(<2 mg/kg)	N.D.(<20 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: ND=Not detected (Below the detection limit); /=Not Applicable; mg/kg=ppm

The sample had been dissolved totally tested for Lead, Cadmium, Mercury.

= Testing Cr^{6+} by IEC 62321-7-1:2015 and the result is showed as Positive/Negative

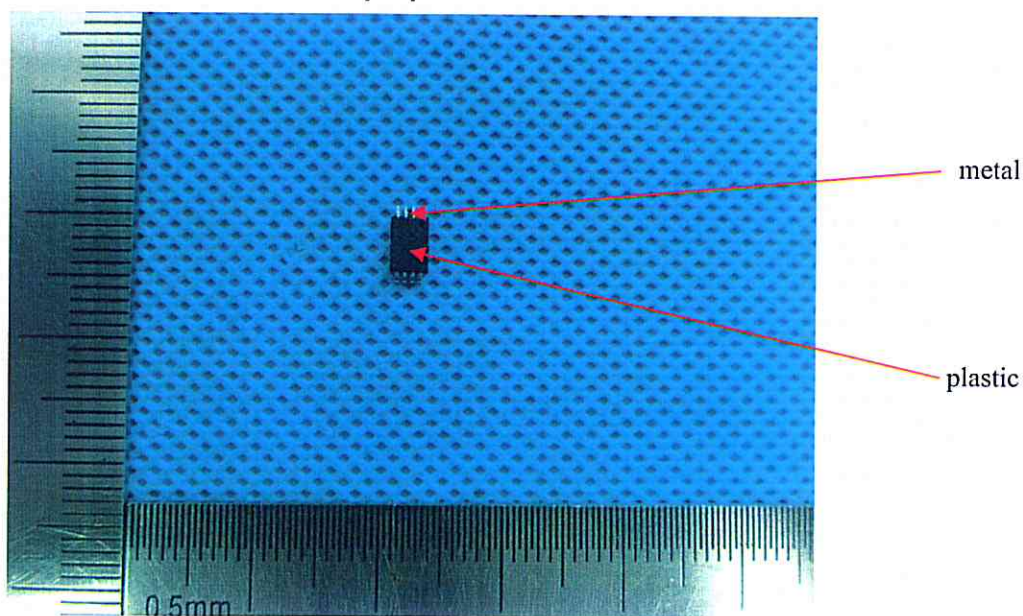
When Cr(VI) in a sample is detected below the $0.10 \mu\text{g}/\text{cm}^2$ LOQ (Limit of quantification), the sample is considered to be negative for Cr(VI) .

When Cr(VI) may not be uniformly distributed in the coating even within the same sample batch,

A "grey zone" between $0.10 \mu\text{g}/\text{cm}^2$ and $0.13 \mu\text{g}/\text{cm}^2$ has been established as "inconclusive".

When Cr(VI) is detected above $0.13 \mu\text{g}/\text{cm}^2$, the sample is considered to be positive for the presence of Cr(VI) in the coating layer.

Sample photo



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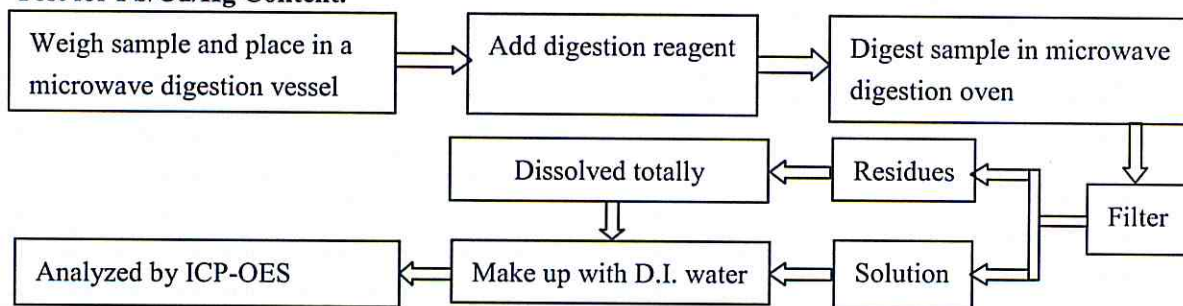
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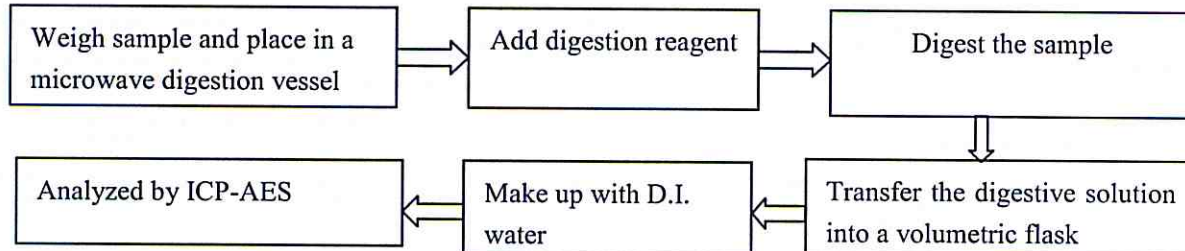
ORIGINAL

Test Process:

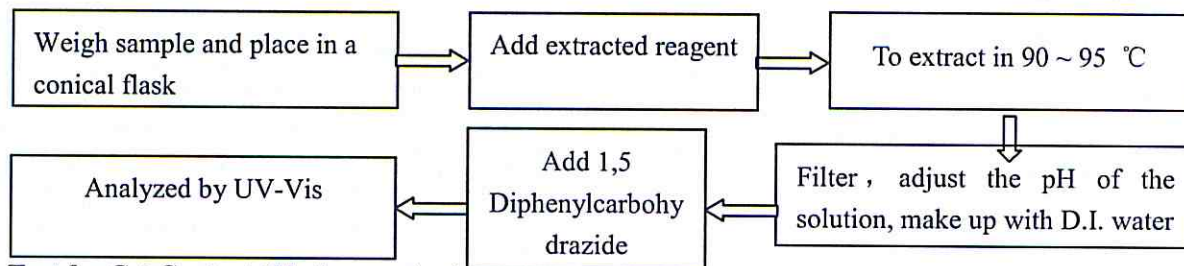
Test for Pb/Cd/Hg Content.



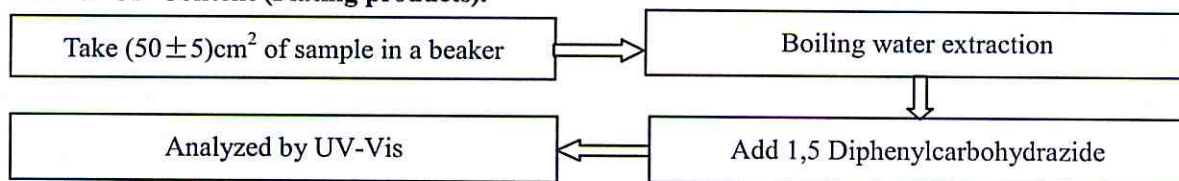
Test for Pb/Cd/Hg Content (Metal).



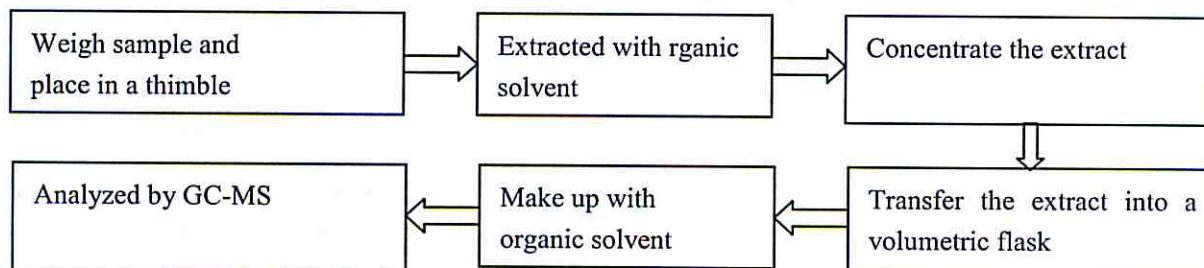
Test for Cr⁶⁺ Content.



Test for Cr⁶⁺ Content (Plating products).



Test for PBBs /PBDEs Content.



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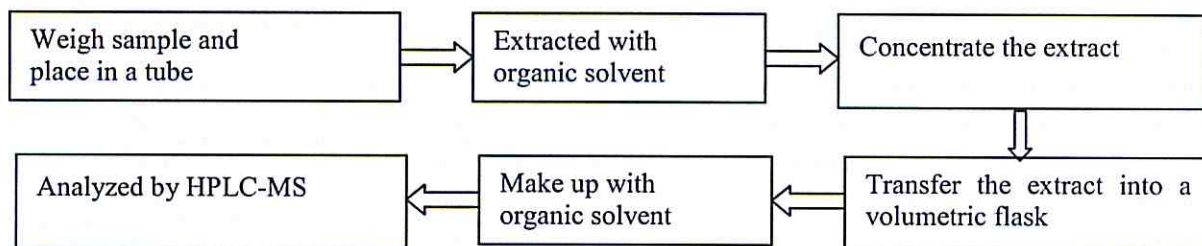
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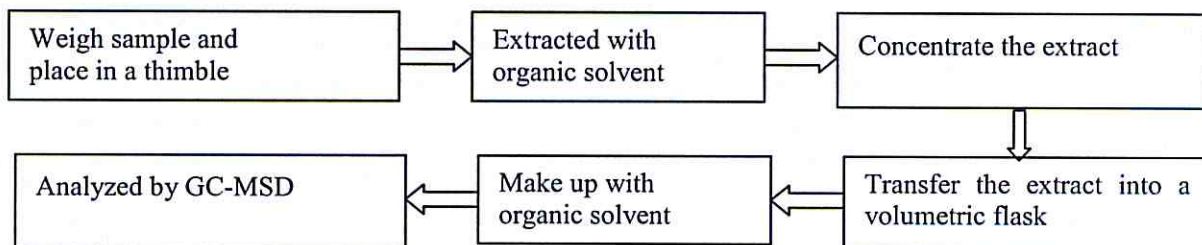
ORIGINAL

Test Process :

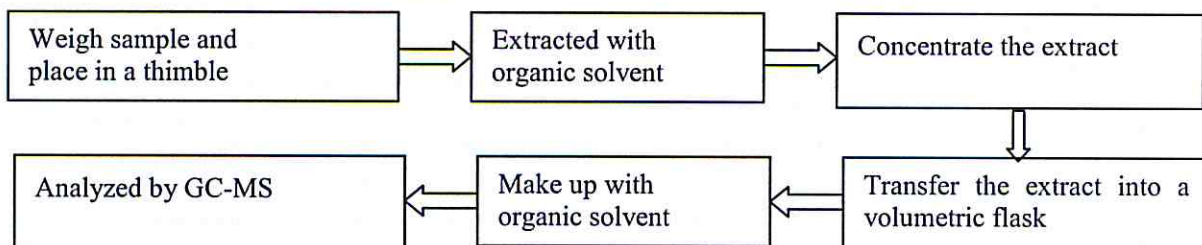
Test for PFOA, PFOS Content.



Test for phthalates Content.



Test for Dimethyl fumarate Content.



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