

Test Report

No. SH9117108/CHEM

Date: Jun. 20, 2009

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SHANGHAI NANYA COPPER CLAD LAMINATE CO., LTD
NO.158 CHANGXIANG ROAD NANXIANG SHANGHAI P.R. CHINA

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

Sample Name : METAL CLAD LAMINATE
SGS Ref No. : 11937553
Buyer : SONY
Part No. : FR-4
Main Substance : EPOXY RESIN, COPPER, FIBERGLASS

Sample Receiving Date : Jun.17, 2009
Testing Period : Jun.17-20, 2009

Test Requested : (1) With reference to SONY SS-00259
(1-1) To determine the Cadmium, Lead, Mercury, Hexavalent Chromium, PBBs(Polybrominated biphenyls) and PBBEs(PBDEs) (Polybrominated biphenyl ethers) Content of the submitted sample.
(1-2) To determine the PFOS (Perfluorooctane Sulfonates) content of the submitted samples.
(2) To determine the PFOA (Perfluorooctanoic Acid) content of the submitted samples.
(3) To determine the TBBP-A Content in the submitted sample.

Test Method /Test Results : Please refer to next pages

Signed for and on behalf of
SGS-CSTC Chemical Laboratory



Sandy Hao
Lab Manager

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Test Method : (1-1-1) With reference to IEC 62321:2008 for Cadmium content
 Analysis was performed by ICP.
 (1-1-2) With reference to IEC 62321:2008 for Lead content
 Analysis was performed by ICP.
 (1-1-3) With reference to IEC 62321:2008 for Mercury content
 Analysis was performed by ICP.
 (1-1-4) With reference to IEC 62321:2008 for Hexavalent Chromium by spot
 test / Colorimetric Method.
 (1-1-5) With reference to IEC 62321:2008 for PBBs / PBDEs Content.
 Analysis was performed by GC/MS
 (1-2)~(2) With reference to EPA 3550C: 2007.
 Analysis was performed by High Performance Liquid Chromatograph-Mass
 Spectrometer (HPLC-MS).
 (3) With reference to EPA 3550C: 2007. Analysis was performed by Gas
 Chromatograph / Mass Spectrometer (GC/MS).

Test results by chemical method (Unit: mg/kg)

(1) Cadmium, Lead, Mercury, Hexavalent Chromium, PBBs, PBDEs Content

Test Item(s):	Method (refer to)	1	2	MDL
Cadmium(Cd)	(1-1-1)	ND	ND	2
Lead (Pb)	(1-1-2)	ND	ND	2
Mercury (Hg)	(1-1-3)	ND	ND	2
Hexavalent Chromium (CrVI)	(1-1-4)	---	ND	2
Hexavalent Chromium (CrVI) by Spot test / boiling water extraction	(1-1-4)	Negative	---	#
Sum of PBBs	(1-1-5)	---	ND	--
Monobromobiphenyl		---	ND	5
Dibromobiphenyl		---	ND	5
Tribromobiphenyl		---	ND	5
Tetrabromobiphenyl		---	ND	5
Pentabromobiphenyl		---	ND	5
Hexabromobiphenyl		---	ND	5
Heptabromobiphenyl		---	ND	5
Octabromobiphenyl		---	ND	5
Nonabromobiphenyl		---	ND	5
Decabromobiphenyl		---	ND	5
Sum of PBDEs		---	ND	--
Monobromodiphenyl ether		---	ND	5
Dibromodiphenyl ether		---	ND	5
Tribromodiphenyl ether		---	ND	5
Tetrabromodiphenyl ether		---	ND	5
Pentabromodiphenyl ether		---	ND	5
Hexabromodiphenyl ether		---	ND	5
Heptabromodiphenyl ether		---	ND	5
Octabromodiphenyl ether		---	ND	5

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Nonabromodiphenyl ether		---	ND	5
Decabromodiphenyl ether##		---	ND	5

(1-2) Perfluorooctane Sulfonates (PFOS) content

Test Items	Test method (refer to)	⌊	MDL
Perfluorooctane Sulfonates (PFOS) PFOS – Acid PFOS – Metal Salt PFOS – Amide	(1-2)	ND	10

PFOS Reference Information: Directive 2006/122/EC

- (i) May not be placed on the market or used as a substance or constituent of preparations in a concentration equal to or higher than 0.005 % by mass.
- (ii) May not be placed on the market in semi-finished products or articles, or parts thereof, if the concentration of PFOS is equal to or higher than 0.1 % by mass calculated with reference to the mass of structurally or microstructurally distinct parts that contain PFOS or, for textiles or other coated materials, if the amount of PFOS is equal to or higher than 1µg /m² of the coated material.

(2) Perfluorooctyl Acid (PFOA) content

Test Items	Test method (refer to)	⌊	MDL
Perfluorooctyl Acid (PFOA)	(2)	ND	10

(3) TBBP-A Content

Test Item(s):	Method (refer to)	⌊	MDL
TBBP-A	(3)	ND	10

Test Part Description:

1. Copper metal foil
2. Yellow solid board

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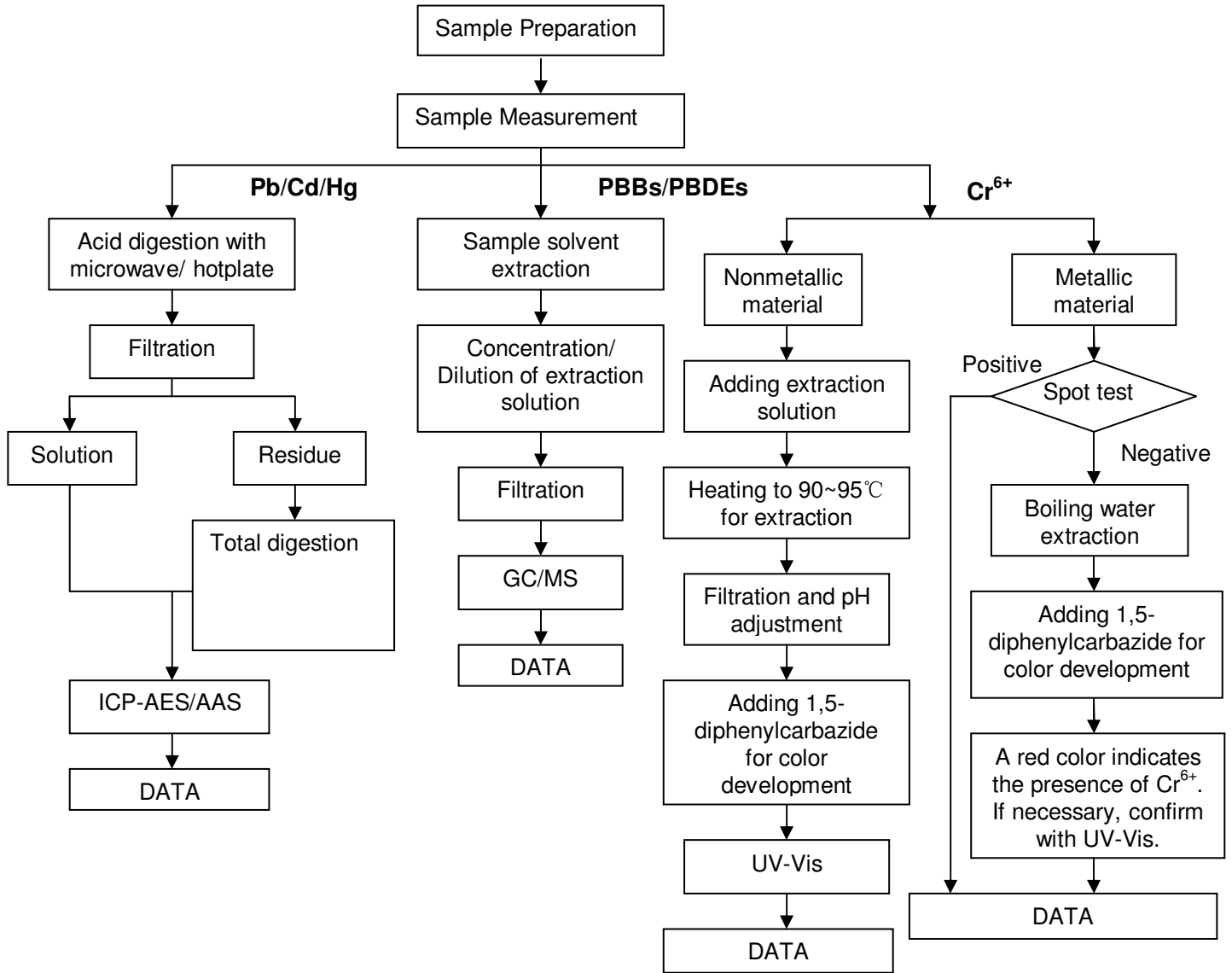
Note:

- (1) mg/kg = ppm
- (2) ND = Not Detected
- (3) MDL = Method Detection Limit
- (4) # = Spot-test:
 - Negative = Absence of CrVI coating, Positive = Presence of CrVI coating;
 - (The tested sample should be further verified by boiling-water-extraction method if the spot test result is Negative or cannot be confirmed.)
 - Boiling-water-extraction:
 - Negative = Absence of CrVI coating
 - Positive = Presence of CrVI coating; the detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm² sample surface area.
 - For corrosion protection coatings on metals: Information on storage conditions and production date of the tested sample is unavailable and thus results of Cr(VI) represent status of the sample at the time of testing.
- (5) ## = The exemption of DecaBDE in polymeric application according 2005/717/EC was overruled by the European Court of Justice by its decision of 01.04.2008. Subsequently DecaBDE is included in the sum of PBDE after 01.07.2008
- (6) "---" = Not Conducted

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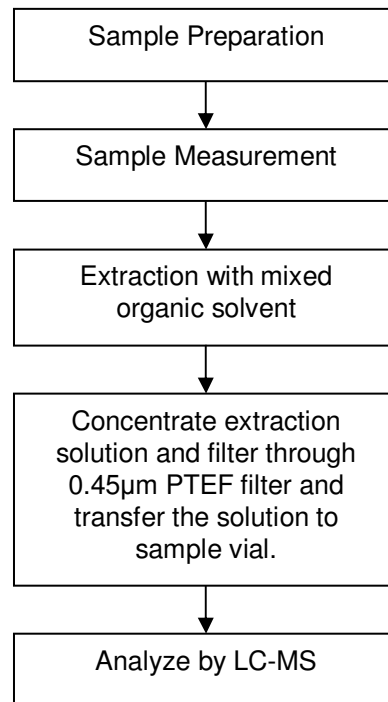
ATTACHMENTS

- 1) Name of the person who made measurement: Jeff Zhang/Chaven Lian/Frank Fang/Elim Lin
- 2) Name of the person in charge of measurement: Terry Wang/Phoebe Shen
- 3) These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr⁶⁺ and PBBs/PBDEs test method excluded)



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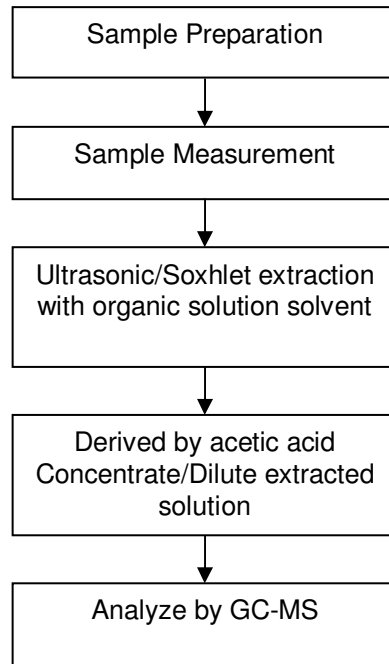
PFOS/PFOA Measurement Flowchart for sample



Tested by : Judy Li
Checked by : Jenny Liu

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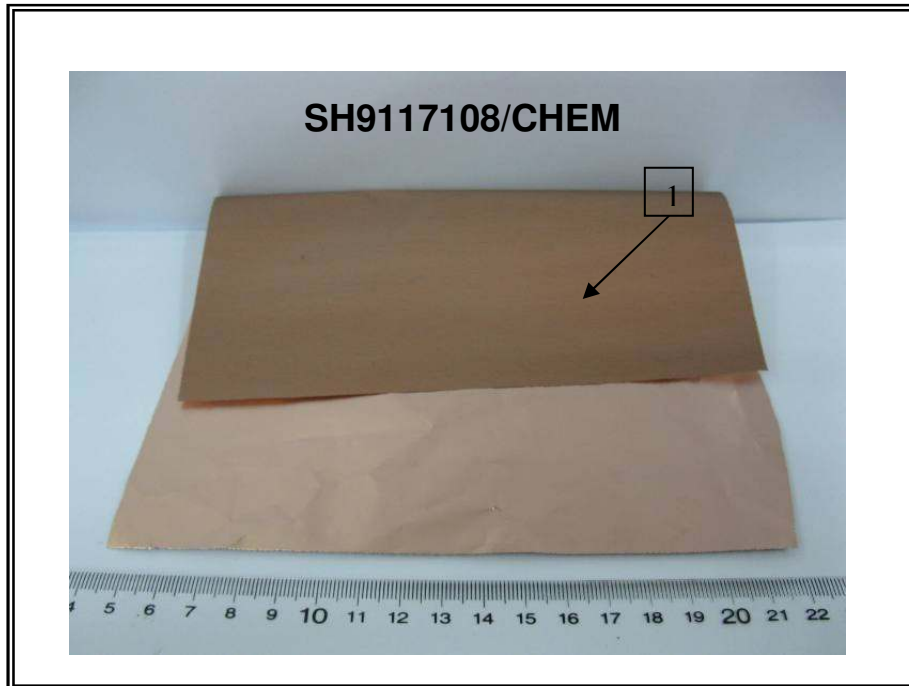
TBBP-A Measurement Flowchart for sample



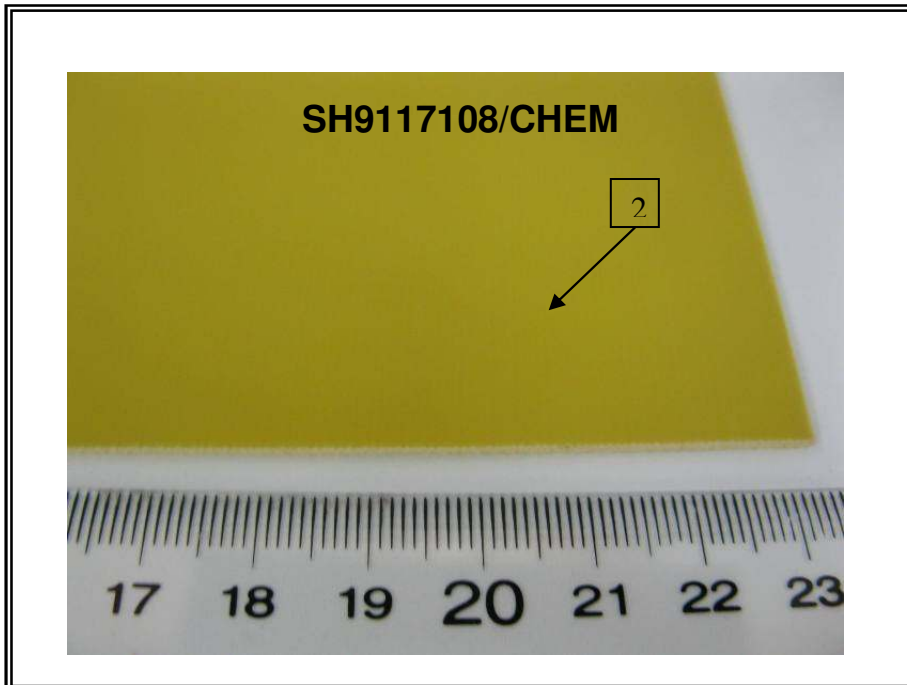
Tested by : Kery Shao
Checked by : Jenny Liu

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Sample photo:



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SGS authenticate the photo on original report only

*** End of Report ***

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