



Test Report

No. TJTC 0961090/CHEM

Date: July 3, 2009

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JINAN JINGHENG YAMADA ELECTRONIC PRECISION TECHNOLOGY CO., LTD
NORTH OF GAOYUANBEI ROAD, CHANGQING HIGH-TECH INDUSTRIAL PARK JINAN, CHINA

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

SGS Ref No. : 11971892
Material name : Cu


Sample Receiving Date : June 29, 2009
Testing Period : June 29 to July 03, 2009

Test Requested : 1. In accordance with the RoHS Directive 2002/95/EC, and its amendment directives
2. To determine the Hexabromocyclododecane (HBCDD) content of the submitted samples.
3. **To determine the PFOS (Perfluorooctane Sulfonates) and PFOA (Perfluorooctanoic Acid) content of the submitted samples.
4. To determine the Halogen- Fluorine, Chlorine, Bromine, Iodine content in the submitted sample.

Test method/Test Results : Please refer to next pages

Conclusion : 1. Based on the performed tests on submitted samples, the results comply with the RoHS Directive 2002/95/EC and its subsequent amendments.

Signed for and on behalf of
SGS-CSTC Chemical Laboratory



Lucid Qi
Lab Manager

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Test method

- : 1. With reference to IEC 62321 Ed.1: 2008
Procedures for the Determination of Levels of Regulated Substances in
Electrotechnical Products
 - 1-1) Determination of Cadmium by AAS
 - 1-2) Determination of Lead by AAS
 - 1-3) Determination of Mercury by ICP-AES
 - 1-4) Determination of Hexavalent Chromium by Spot test / Colorimetric Method
 - 1-5) Determination of PBBs and PBDEs by GC/MS
- 2. With reference to EPA 3550C: 2007.
Analysis was performed by Gas chromatograph / Mass Spectrometer (GC-MS).
- 3. **With reference to EPA 3550C: 2007.
Analysis was performed by High Performance Liquid Chromatograph-Mass
Spectrometer (HPLC-MS).
- 4. With reference to EN 14582:2007.
 - 4-1) Determination of Fluorine by Ion Chromatograph (IC) method.
 - 4-2) Determination of Chlorine by Ion Chromatograph (IC) method.
 - 4-3) Determination of Bromine by Ion Chromatograph (IC) method.
 - 4-4) Determination of Iodine by Ion Chromatograph (IC) method.

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Test results by chemical method

1) Cd, Pb, Hg, CrVI, PBBs, PBDEs content(Unit: mg/kg)

Test Item(s):	Method (refer to)	A*	MDL	RoHS Limit
Cadmium (Cd)	(1-1)	n.d.	2	100
Lead (Pb)	(1-2)	n.d.	2	1000
Mercury (Hg)	(1-3)	n.d.	2	1000
Hexavalent Chromium (CrVI) by Spot test / boiling water extraction	(1-4)	Negative	See Note (4)	#
Sum of PBBs	(1-5)	n.d.	-	1000
Monobromobiphenyl		n.d.	5	-
Dibromobiphenyl		n.d.	5	-
Tribromobiphenyl		n.d.	5	-
Tetrabromobiphenyl		n.d.	5	-
Pentabromobiphenyl		n.d.	5	-
Hexabromobiphenyl		n.d.	5	-
Heptabromobiphenyl		n.d.	5	-
Octabromobiphenyl		n.d.	5	-
Nonabromobiphenyl		n.d.	5	-
Decabromobiphenyl		n.d.	5	-
Sum of PBDEs		n.d.	-	1000
Monobromodiphenyl ether		n.d.	5	-
Dibromodiphenyl ether		n.d.	5	-
Tribromodiphenyl ether		n.d.	5	-
Tetrabromodiphenyl ether		n.d.	5	-
Pentabromodiphenyl ether		n.d.	5	-
Hexabromodiphenyl ether		n.d.	5	-
Heptabromodiphenyl ether		n.d.	5	-
Octabromodiphenyl ether		n.d.	5	-
Nonabromodiphenyl ether	n.d.	5	-	
Decabromodiphenyl ether ##	n.d.	5	-	

2) HBCDD content(Unit: mg/kg)

Test Item(s):	Method (refer to)	A*	MDL
Hexabromocyclododecane (HBCDD)	(2)	n.d.	5

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3. **PFOS (Perfluorooctane Sulfonates) and PFOA (Perfluorooctanoic Acid) content (Unit: $\mu\text{g}/\text{m}^2$)

<u>Test Item(s):</u>	<u>Method</u> <u>(refer to)</u>	<u>A*</u>	<u>MDL</u>
Perfluorooctane Sulfonates (PFOS) PFOS – Acid PFOS – Metal Salt PFOS – Amide	(3)	n.d.	1
Perfluorooctyl Acid (PFOA)		n.d.	1

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 $1\mu\text{g}/\text{m}^2$ of the coated material.

4. Halogen content(Unit: mg/kg)

<u>Test Item(s):</u>	<u>Method</u> <u>(refer to)</u>	<u>A*</u>	<u>MDL</u>
Fluorine (F)	(4-1)	n.d.	50
Chlorine (Cl)	(4-2)	n.d.	50
Bromine (Br)	(4-3)	n.d.	50
Iodine (I)	(4-4)	n.d.	50

Test Part Description:

A. coppery/silvery metal (mix all)

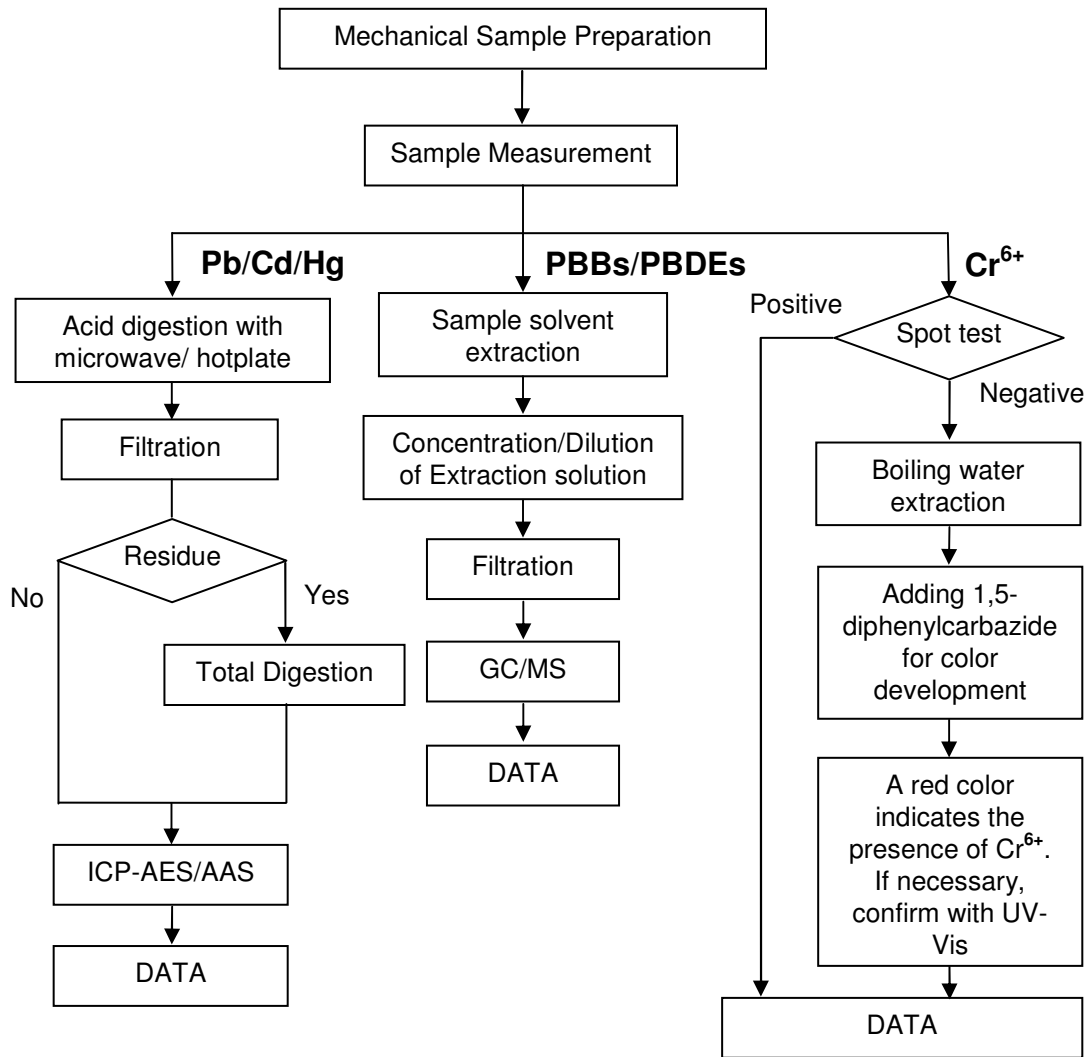
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- Note :
- (1) mg/kg = ppm
 - (2) n.d. = Not Detected
 - (3) MDL = Method Detection Limit
 - (4) Spot-test:
Negative = Absence of CrVI coating, Positive = Presence of CrVI coating;
(The tested sample should be further verified by boiling-water-extraction 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) # = Positive indicates the presence of CrVI on the tested areas.
Negative indicates the absence of CrVI on the tested areas.
 - (6) ## =The exemption of DecaBDE in polymeric applications according to Decision 2005/717/EC was overruled by the European Court of Justice in its Judgment of 1 April 2008. Accordingly, DecaBDE is included in the sum of PBDE from 1 July 2008 onwards.
 - (7) “. ”= Not regulated
 - (8) The maximum permissible limit is quoted from the document 2005/618/EC amending RoHS directive 2002/95/EC
 - (9) *The sample(s) was/were analyzed on behalf of the applicant as mixing sample in one testing. The above result(s) was/were only given as the informality value.
 - (10) **This test was subcontracted to SGS Shanghai chemical lab.

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Pb/Cd/Hg/Cr⁶⁺/PBBs&PBDEs Testing Flow Chart

- 1) Operator: Amy Wang
- 2) Section Chief: Cindy Yin

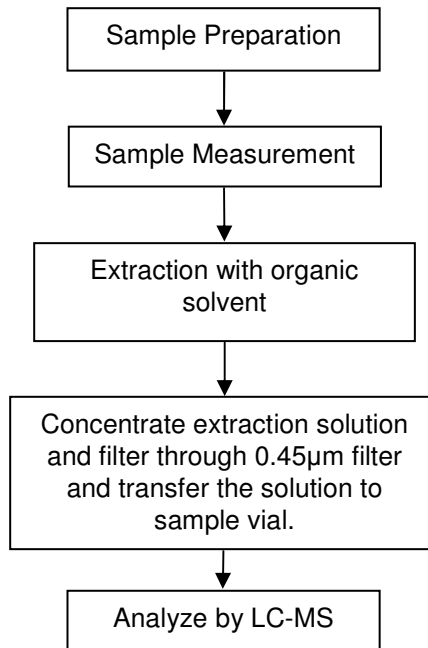


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PFOS/PFOA Testing Flow Chart

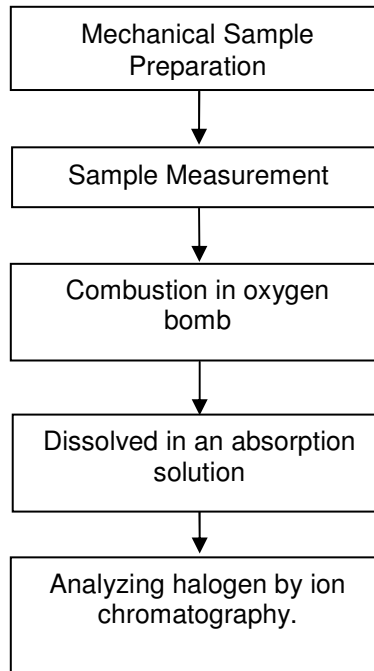
- 1) Operator : Daisy Gong
- 2) Section Chief : Alex Jiang



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Halogen Testing Flow Chart

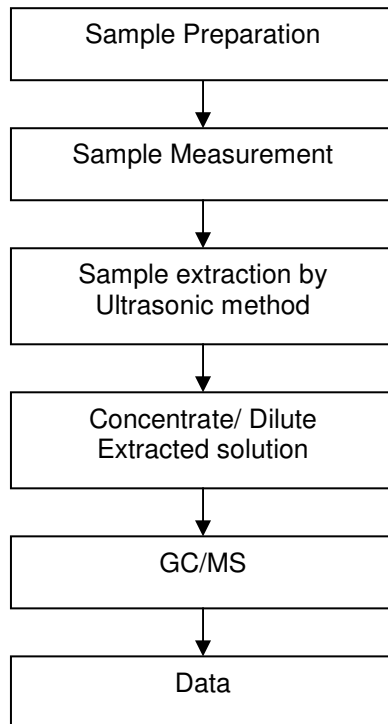
- 1) Operator : Marina Sun
- 2) Section Chief : Rex Zhu



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HBCDD Testing Flow Chart

- 1) Operator : Marina Sun
- 2) Section Chief : Rex Zhu



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Sample photo:



SGS authenticate the photo on original report only

*** End of Report ***

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