

Test Report

No. : KA/2010/B1745 Date : 2010/12/03 Page : 1 of 6



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

Sample Description : Au ALLOY BONDING WIRE
Style/Item No. :
Sample Receiving Date : 2010/11/25
Testing Period : 2010/11/25 TO 2010/12/03

=====

Test Requested : In accordance with the RoHS Directive 2002/95/EC, and its amendment directives.

Test Method : With reference to IEC 62321: 2008
Procedures for the Determination of Levels of Regulated Substances in Electrotechnical Products.

- (1) Determination of Cadmium by ICP-AES.
- (2) Determination of Lead by ICP-AES.
- (3) Determination of Mercury by ICP-AES.
- (4) Determination of Hexavalent Chromium by Spot test / boiling water extraction Method, confirm by UV-Vis.
- (5) Determination of Hexavalent Chromium by UV/Vis Spectrometry.

With reference to US EPA Method 3060A & 7196A for

- (6) Hexavalent Chromium. Analysis was performed by UV-Vis
- With reference to BS EN ISO 3613:2001 for Hexavalent
- (7) Chromium. Analysis was performed by UV-VIS Spectrometry.
- (8) Determination of PBB and PBDE by GC/MS.

Test Result(s) : Please refer to next page(s).

Ray Chang
Ray Chang / Asst. Manager
Signed for and on behalf of
SGS Taiwan Limited



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Test Report

No. : KA/2010/B1745 Date : 2010/12/03

Page : 2 of 6



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

Test Item (s):	Method (Refer to)	Result	MDL
		No.1	
Cadmium (Cd)	(1)	n.d.	2
Lead (Pb)	(2)	n.d.	2
Mercury (Hg)	(3)	n.d.	2
Hexavalent Chromium Cr(VI) by Spot test / boiling water extraction	(4)	Negative	See Note 4
Hexavalent Chromium Cr(VI) by alkaline extraction	(5)	n.d.	2
Hexavalent Chromium Cr(VI)	(6)	n.d.	2
Hexavalent Chromium Cr(VI)	(7)	n.d.	See Note 5
Sum of PBBs	(8)	n.d.	-
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.	-
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

TEST PART DESCRIPTION:

NO.1 : GOLDE Au ALLOY BONDING WIRE

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Test Report

No. : KA/2010/B1745

Date : 2010/12/03

Page : 3 of 6



Note : 1. mg/kg = ppm ; 0.1wt% = 1000ppm

2. n.d. = Not Detected

3. MDL = Method Detection Limit

4. Spot-test:

Negative = Absence of Cr(VI) coating / surface layer,

Positive = Presence of Cr(VI) coating / surface layer;

(The tested sample should be further verified by boiling-water-extraction method if the spot test result cannot be confirmed.)

Boiling-water-extraction:

Negative = Absence of Cr(VI) coating / surface layer.

Positive = Presence of Cr(VI) coating / surface layer;

the detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm² sample surface area.

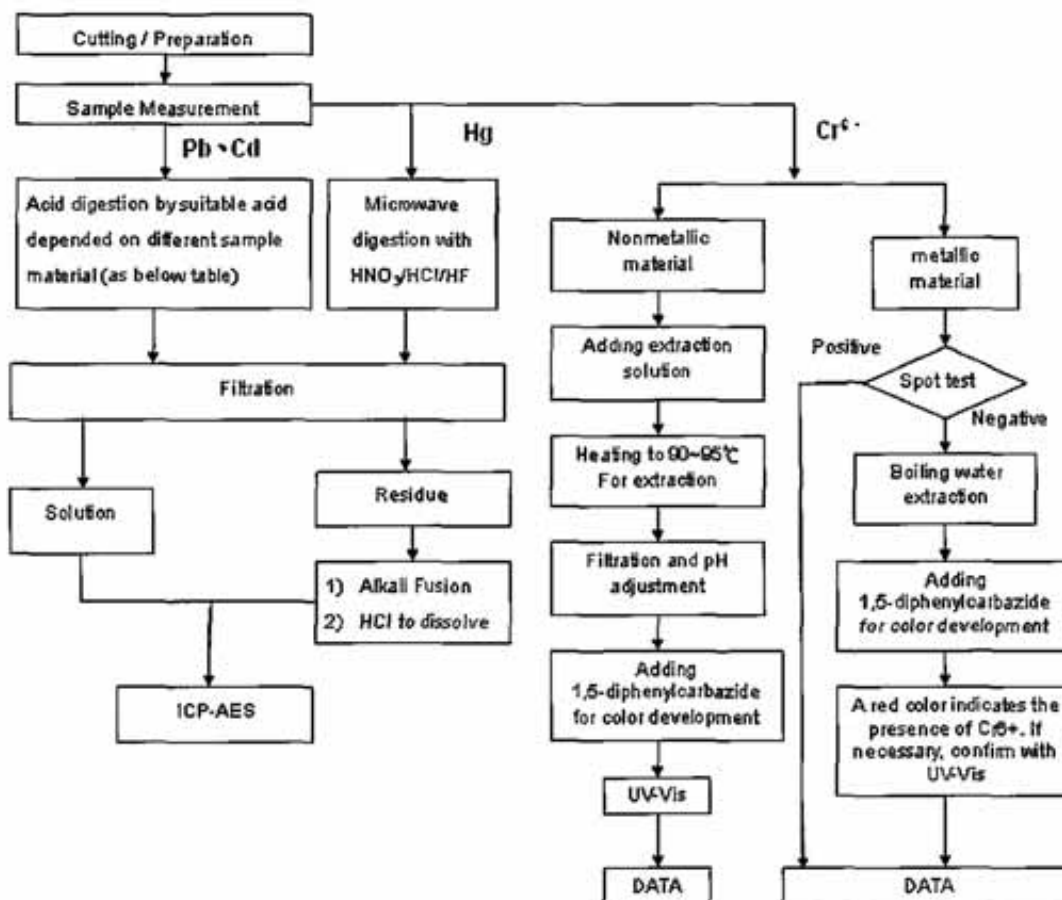
5. Method Detection Limit = 0.02 µg/cm² ;

Based upon the customer's requirement and information to calculate the coating thickness, the unit of the test result was conversed into mg/kg.

6. "-" = Not Regulated



- 1) These samples were dissolved totally by pre-conditioning method according to below flow chart (Cr⁶⁺ test method excluded)
- 2) Name of the person who made measurement: Alex Chang
- 3) Name of the person in charge of measurement: Ray Chang



Sample Material	Digestion Acid
Steel, copper, aluminum, solder	Aqua regia, HNO ₃ , HCl, HF, H ₂ O ₂
Glass	HNO ₃ /HF
Gold, platinum, palladium, ceramic	Aqua regia
Silver	HNO ₃
Plastic	H ₂ SO ₄ , H ₂ O ₂ , HNO ₃ , HCl
Others	Any acid to total digestion

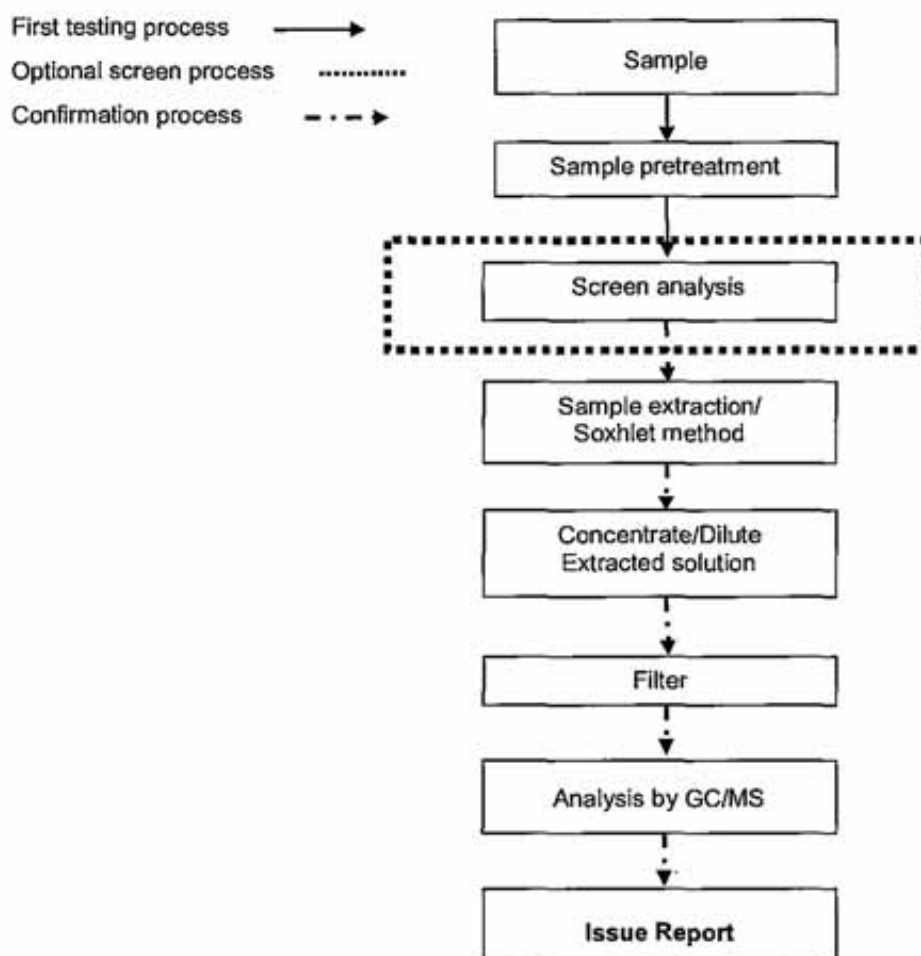
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PBB/PBDE analytical FLOW CHART

1) Name of the person who made measurement: Anson Tsao

2) Name of the person in charge of measurement: Ray Chang



Test Report

No. : KA/2010/B1745 Date : 2010/12/03

Page : 6 of 6



** End of Report **

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