



**CENTRE OF TESTING SERVICE
INTERNATIONAL**

OPERATE ACCORDING TO ISO/IEC 17025

TEST REPORT

RoHS 2011/65/EU

Test Report Number : CNB3150911-04245-C



CTS (Ningbo) Testing Service Technology Co., Ltd.

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The measurement results only apply to the submitted samples.

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1 General Information

1.1 Application Details

Name :
Address :

Contact : /
Telephone :
Fax :
Mobile telephone : /
Email :

1.2 Manufacturer & Buyer

Manufacturer name :
Address :

Contact : /
Telephone :
Fax :
Mobile telephone : /
Email :
Buyer name : /

1.3 Description of the Test Item

Sample name : LED LIGHT
Model No. : /
Brand name : /
Condition of sample(s) : EFFECTIVE

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2 Test results

2.1 Sample Receiving Date

Sep. 11, 2015

2.2 Testing Period

Sep. 11, 2015 to Sep. 23, 2015

2.3 Test Requested

In accordance with the RoHS Directive 2011/65/EU Annex II.

2.4 Test Method

1. X-Ray Fluorescence Spectrometry method in reference to IEC 62321-3-1:2013.
2. Chemical test method

Test Item(s)	Test Method	Test Instrument
Lead (Pb)	With reference to IEC 62321-5:2013	ICP-AES
Cadmium (Cd)	With reference to IEC 62321-5:2013	ICP-AES
Mercury (Hg)	With reference to IEC 62321-4:2013	ICP-AES
Chromium VI (Cr VI)	With reference to IEC 62321:2008	UV-Vis
PBBs	With reference to IEC 62321:2008	GC-MS
PBDEs		

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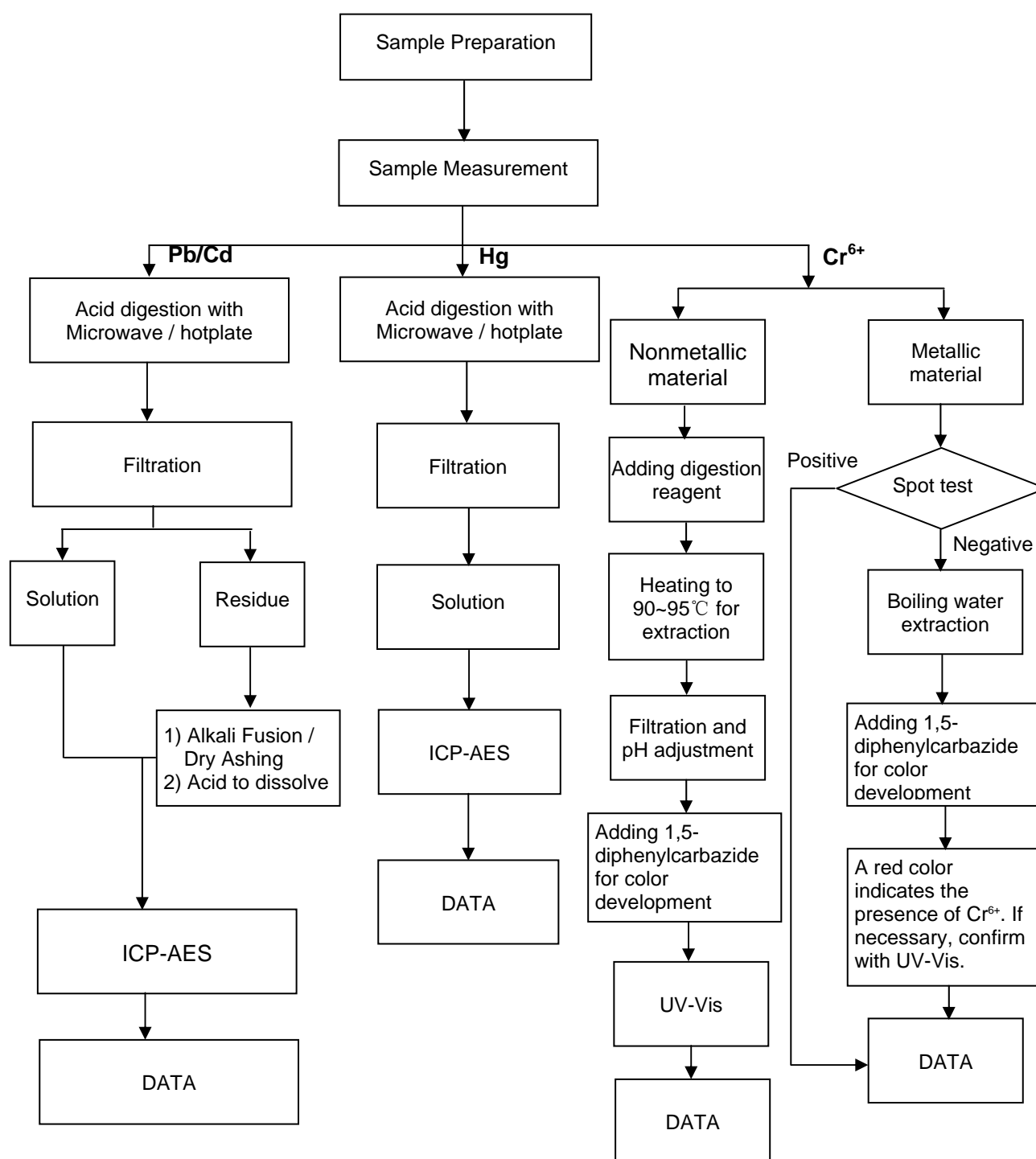
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2.5 Chemical Test Method Flow Chart



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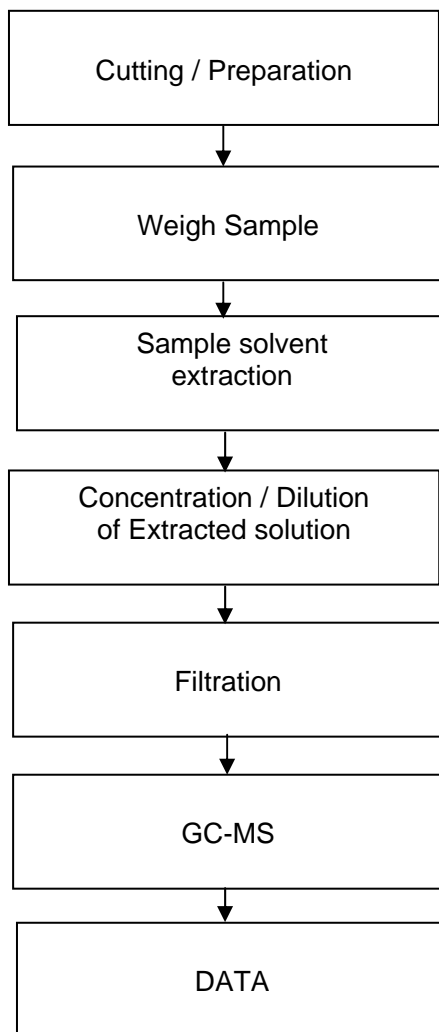
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PBBs / PBDEs



2.6 Conclusion

Based on the performed tests on submitted samples, the results of Lead, Cadmium, Mercury, Hexavalent chromium, Polybrominated biphenyls (PBB), Polybrominated diphenyl ethers (PBDE) comply with the limits as set by RoHS Directive 2011/65/EU Annex II; recasting 2002/95/EC.

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2.7 Test Results**2.7.1 Test results of all parts by EDXRF and chemical confirmation**

No.	Sample Description		Results					Chemical Confirmation Result (Unit=mg/kg)
			Pb	Cd	Hg	Cr	Br	
1	White plastic cover		P	P	P	P	P	/
2	Transparent plastic sheet		P	P	P	P	P	/
3	Silvery coating		P	P	P	P	P	/
4	Green plastic frame		P	P	P	P	P	/
5	PCB	Base material	P	P	P	P	P	/
6		Copper foil	P	P	P	P	/	/
7	Chip LED		P	P	P	P	X	PBBs: N.D. PBDEs: N.D.
8	Chip capacitor		P	P	P	P	P	/
9	Silvery metal		P	P	P	P	/	/
10	White plastic frame		P	P	P	P	X	PBBs: N.D. PBDEs: N.D.
11	Toggle switch	Silvery metal cover	P	P	P	P	/	/
12		Black plastic frame	P	P	P	P	P	/
13		Beige plastic	P	P	P	P	P	/
14	Jack	Silvery metal cover	P	P	P	P	/	/
15		Black plastic	P	P	P	P	P	/

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Note : P = Below Limit (Pass)
 F = Over Limit (Fail)
 X = Inconclusive
 N.D. = not detected (less than MDL)
 1mg/kg=1ppm=0.0001%
 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 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 50cm² sample surface area.

Remarks:

- (1) Results are obtained by EDXRF for primary screening, and further chemical testing is recommended to be performed, if the concentration exceeds the below warning value according to IEC 62321-3-1:2013.

Element	Polymer Materials	Metallic Materials	Electronic Materials
Pb	$P \leq 500 < X < 1300 \leq F$	$P \leq 500 < X < 1300 \leq F$	$P \leq 500 < X < 1300 \leq F$
Cd	$P \leq 50 < X < 130 \leq F$	$P \leq 50 < X < 130 \leq F$	$X < 130 \leq F$
Hg	$P \leq 500 < X < 1300 \leq F$	$P \leq 500 < X < 1300 \leq F$	$P \leq 500 < X < 1300 \leq F$
Cr	$P \leq 700 < X$	$P \leq 700 < X$	$P \leq 500 < X$
Br	$P \leq 250 < X$	/	$P \leq 250 < X$

(2) Chemical Confirmation Result acceptable Limit:

Test items	Lead (Pb)	Cadmium (Cd)	Mercury (Hg)	Chromium (CrVI)	PBBs	PBDEs
Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Acceptable Limit	1000	100	1000	1000	1000	1000

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2.7.2 Test results by chemical analysis

Test items		Lead (Pb)	Cadmium (Cd)	Mercury (Hg)	Chromium (CrVI)	PBBs	PBDEs
Unit		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Acceptable Limit		1000	100	1000	1000	1000	1000
16	Chip resistor	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
17	Chip IC	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
18	Soldering tin and solder	228	N.D.	N.D.	Negative	N.A.	N.A.

Note

1. Specimens, which requested to determine Cadmium, Mercury and Lead content, have been dissolved completely.
2. N.D. = not detected (less than MDL)
3. N.A. = not applicable
4. 1 mg/kg=1 ppm=0.0001%
5. **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 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 50cm² sample surface area.
6. **Positive** indicates the presence of CrVI on the tested areas and result be regarded as conflict with RoHS requirement.
Negative indicates the absence of CrVI on the tested areas and result be regarded as no conflict with RoHS requirement.
7. The test results only apply to the materials requested by applicant.

The measurement results only apply to the submitted samples.

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8. The method detect limit for each hazardous substances, and determined individual PBBs and individual PBDEs are:

Method Detect Limit in mg/kg		
Heavy Metals	Lead (Pb)	2
	Cadmium (Cd)	2
	Mercury (Hg)	2
	Chromium (CrVI)	2
PBBs	Monobromobiphenyl	5
	Dibromobiphenyl	5
	Tibromobiphenyl	5
	Tetrabromobiphenyl	5
	Pentabromobiphenyl	5
	Hexabromobiphenyl	5
	Heptabromobiphenyl	5
	Octabromobiphenyl	5
	Nonabromodiphenyl	5
	Decabromodiphenyl	5
PBDEs	Monobromodiphenyl ether	5
	Dibromodiphenyl ether	5
	Tibromodiphenyl ether	5
	Tetrabromodiphenyl ether	5
	Pentabromodiphenyl ether	5
	Hexabromodiphenyl ether	5
	Heptabromodiphenyl ether	5
	Octabromodiphenyl ether	5
	Nonabromodiphenyl ether	5
	Decabromodiphenyl ether	5

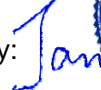
Written by:



Inspected by:



Approved by:




End of Report

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3 Sample Reference Photo



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