



# TEST REPORT

Applicant : Alpha Assembly Solutions Korea Ltd.  
Address : 1Ra 310 Sihwa Industrial Complex, 40, Okgucheonseo-ro 131beon-gil,  
Siheung-si, Gyeonggi-do, Korea

Page: 1 of 5

Report No. RT17R-S0742-001-E

Date: Feb. 14, 2017


Sample Description : The following submitted sample(s) said to be:-


Name/Type of Product : 63Sn37Pb  
Sample ID No. : RT17R-S0742-001  
Manufacturer/Vendor : Alpha Assembly Solutions Korea Ltd.

Sample received : Feb. 09, 2017  
Testing Date : Feb. 09, 2017 ~ Feb. 14, 2017

Test Type : RoHS wet chemical analysis  
Test Method(s) : Please see the following page(s).  
Test Result(s) : Please see the following page(s).

\* Note 1 : The test results presented in this report relate only to the object tested.  
\* Note 2 : This report shall not be reproduced except in full without the written approval of the testing laboratory.

Approved by,  


Authorized by,  




Jade Jang / Lab. Technical Manager

Bo Park / Lab. General Manager

## Intertek Testing Services Korea Ltd.

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Report No. RT17R-S0742-001-E

Sample ID No. : RT17R-S0742-001

Sample Description : 63Sn37Pb

Test Item	Unit	Test Method	MDL	Result
Cadmium (Cd)	mg/kg	With reference to IEC 62321-5 Edition 1.0 : 2013, by acid digestion and determined by ICP-OES	0.5	N.D.
Lead (Pb)	mg/kg		5	367000
Mercury (Hg)	mg/kg	With reference to IEC 62321-4 Edition 1.0 : 2013, by acid digestion and determined by ICP-OES	2	N.D.
Hexavalent Chromium (Cr <sup>6+</sup> ) (For metal)	μg/cm <sup>2</sup>	With reference to IEC 62321-7-1 Edition 1.0 : 2015, by boiling water extraction and determined by UV-VIS Spectrophotometer	0.10	Negative

Tested by : Jean Kim, Youngmi Lee

Notes : mg/kg = ppm = parts per million  
 μg/cm<sup>2</sup> = microgram per square centimeter  
 < = Less than  
 N.D. = Not detected ( <MDL )  
 MDL = Method detection limit

Remarks : Interpretation of Cr<sup>6+</sup> results

Qualitative result	Concentration of Cr <sup>6+</sup> (μg/cm <sup>2</sup> )	Meaning
Negative	< 0.10	The sample coating is considered a non-Cr <sup>6+</sup> based coating.
Inconclusive	0.10 ≤ and ≤ 0.13	Unavoidable coating variation may influence the determination.
Positive	> 0.13	The sample coating is considered to contain Cr <sup>6+</sup> .

1. The qualitative results should be determination by the average result of three test results. (If concentration of Cr<sup>6+</sup> is over 0.10 μg/cm<sup>2</sup>)
2. The above results will be carried out by visual comparison only with the standard.

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# TEST REPORT

Report No. RT17R-S0742-001-E

Sample ID No. : RT17R-S0742-001  
Sample Description : 63Sn37Pb

Test Item	Unit	Test Method	MDL	Result
<b>Polybrominated Biphenyl (PBBs)</b>				
Monobromobiphenyl	mg/kg	With reference to IEC 62321-6 Edition 1.0 : 2015, by solvent extraction and determined by GC/MS	5	N.D.
Dibromobiphenyl	mg/kg		5	N.D.
Tribromobiphenyl	mg/kg		5	N.D.
Tetrabromobiphenyl	mg/kg		5	N.D.
Pentabromobiphenyl	mg/kg		5	N.D.
Hexabromobiphenyl	mg/kg		5	N.D.
Heptabromobiphenyl	mg/kg		5	N.D.
Octabromobiphenyl	mg/kg		5	N.D.
Nonabromobiphenyl	mg/kg		5	N.D.
Decabromobiphenyl	mg/kg		5	N.D.
<b>Polybrominated Diphenyl Ether (PBDEs)</b>				
Monobromodiphenyl ether	mg/kg	With reference to IEC 62321-6 Edition 1.0 : 2015, by solvent extraction and determined by GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg		5	N.D.
Tribromodiphenyl ether	mg/kg		5	N.D.
Tetrabromodiphenyl ether	mg/kg		5	N.D.
Pentabromodiphenyl ether	mg/kg		5	N.D.
Hexabromodiphenyl ether	mg/kg		5	N.D.
Heptabromodiphenyl ether	mg/kg		5	N.D.
Octabromodiphenyl ether	mg/kg		5	N.D.
Nonabromodiphenyl ether	mg/kg		5	N.D.
Decabromodiphenyl ether	mg/kg		5	N.D.

Tested by : Sujung Lee

Notes : mg/kg = ppm = parts per million  
 < = Less than  
 N.D. = Not detected ( <MDL )  
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# TEST REPORT

Report No. RT17R-S0742-001-E

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Sample Description : 63Sn37Pb

\* View of sample as received;-



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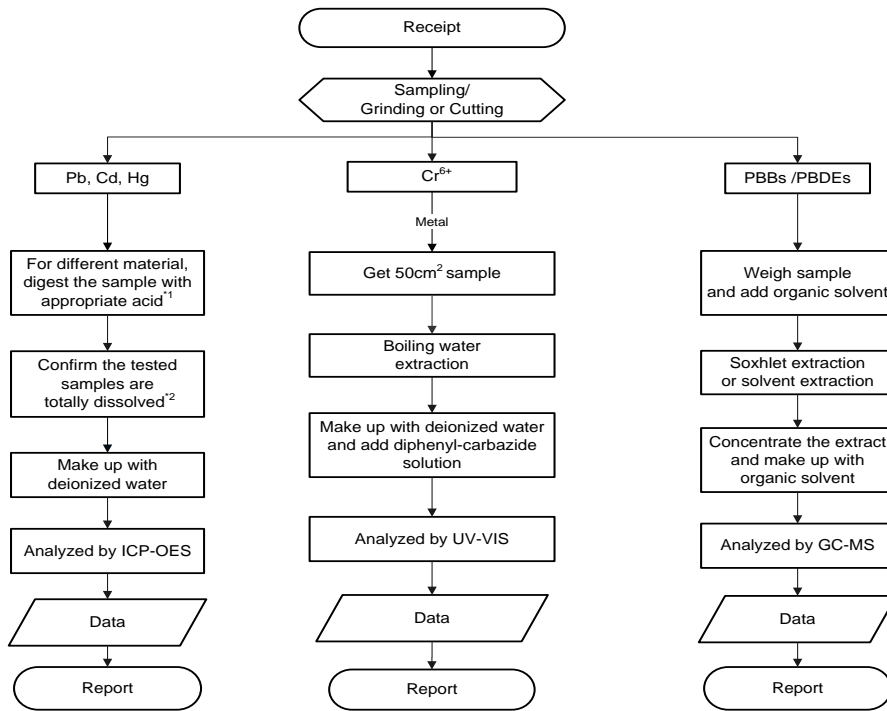
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Flow Chart  
(IEC 62321 Edition 1.0)



**Remarks :**

\*1 : List of appropriate acid :

Material	Acid added for digestion
Polymers	HNO <sub>3</sub> , HCl, HF, H <sub>2</sub> O <sub>2</sub> , H <sub>3</sub> BO <sub>3</sub>
Metals	HNO <sub>3</sub> , HCl, HF
Electronics	HNO <sub>3</sub> , HCl, H <sub>2</sub> O <sub>2</sub> , HBF <sub>4</sub>

\*2 : The samples were dissolved totally by pre-conditioning method according to above flow chart.

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

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