

# TEST REPORT

Applicant : Alpha Korea Ltd.  
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Page: 1 of 5

Report No. RT15R-S0960-002-E1

Date: Mar. 03, 2015

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

Name/Type of Product : SOLDER 63Sn37Pb  
Sample ID No. : RT15R-S0960-002  
Manufacturer/Vendor : Alpha Korea Ltd.

Sample received : Feb. 25, 2015  
Testing Date : Feb. 25, 2015 ~ Mar. 03, 2015

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,



Jade Jang / Lab. Technical Manager

Authorized by,



Bo Park / Lab. General Manager



Authenticity check

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**Intertek Testing Services Korea Ltd.**

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Ulsan Lab. Address : #340-2, Yongam-Ri, Chongryang-Myun, Ulju-Gun, Ulsan 689-865 Korea

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Report No. RT15R-S0960-002-E1

Sample ID No. : RT15R-S0960-002  
Sample Description : SOLDER 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	379000
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)	-	With reference to IEC 62321 Edition 1.0 : 2008, by Spot test	(Threshold of 1 mg/kg)	Negative
Hexavalent Chromium (Cr <sup>6+</sup> ) (For metal)	-	With reference to IEC 62321 Edition 1.0 : 2008, by boiling water extraction and determined by UV-VIS Spectrophotometer	(Threshold of 0.02 mg/kg with 50 cm <sup>2</sup> )	Negative

Tested by : Jean Kim, Jooyeon Lee

Notes : mg/kg = ppm = parts per million

mg/kg with 50 cm<sup>2</sup> = milligram per kilogram with 50 square centimeter

< = Less than

N.D. = Not detected ( <MDL )

MDL = Method detection limit

Positive = A positive test result indicated the presence of Cr(VI) at the time of testing, equal to or greater than threshold of 1 mg/kg for spot test procedures or 0.02 mg/kg for boiling water extraction procedures with a sample surface area of 50 cm<sup>2</sup> used. However, it shall not be interpreted as the Cr(VI) concentration in the coating layer of the sample and should not be used as a method detection limit for this qualitative test.

Negative = A negative test result indicates above positive observation was not found at the time of testing. When the spot test showed a negative result, the boiling water extraction procedure shall be used to verify the result.

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Report No. RT15R-S0960-002-E1

Sample ID No. : RT15R-S0960-002  
Sample Description : SOLDER 63Sn37Pb

Test Item	Unit	Test Method	MDL	Result
<b>Polybrominated Biphenyl (PBBs)</b>				
Monobromobiphenyl	mg/kg	With reference to IEC 62321 Edition 1.0 : 2008, 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 Edition 1.0 : 2008, 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 : Hyoji Lee

Notes : mg/kg = ppm = parts per million  
< = Less than  
N.D. = Not detected ( <MDL )  
MDL = Method detection limit

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Report No. RT15R-S0960-002-E1

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Date: Mar. 03, 2015Sample ID No. : RT15R-S0960-002  
Sample Description : SOLDER 63Sn37Pb

\* View of sample as received;-



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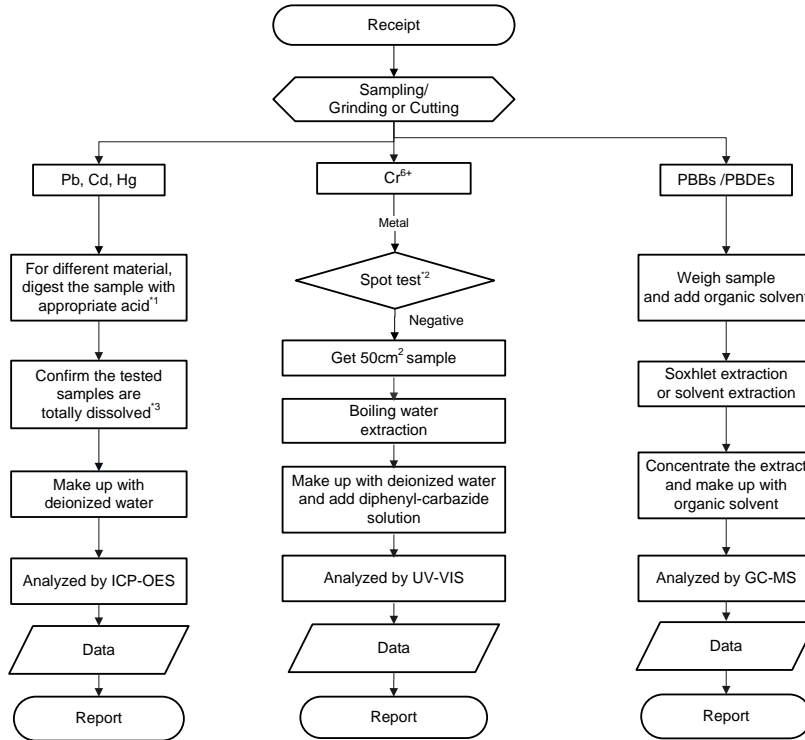
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Sample Description : SOLDER 63Sn37Pb

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 : If the result of spot test is positive, Chromium (VI) would be determined as detected. No further analysis is required.

\*3 : The samples were dissolved totally by pre-conditioning method according to above flow chart.

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

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