TEST REPORT

APPLICANT : Amkor Technology Korea, Inc.
ADDRESS : 150, Songdomirae-ro, Yeonsu-gu,
Incheon, Korea

REPORT NO. RT24R-S8364-007-E DATE: Dec. 20, 2024

SAMPLE DESCRIPTION	: The following submitted sample(s) said to be:-
NAME/TYPE OF PRODUCT	: Bumping - Plated layer (SnAg)
SAMPLE ID NO.	: RT24R-S8364-007
ITEM NO.	: Sputter + SnAg
MANUFACTURER/VENDOR	: Amkor Technology Korea, Inc.
SAMPLE RECEIVED	: Dec. 10, 2024
TESTING DATE	: Dec. 10, 2024 ~ Dec. 20, 2024
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 refer only to the object tested.
* Note 2 : This report shall not be reproduced except in full without the written approval of the testing laboratory.
* Note 3 : The item no. is assigned by client and indicated according to their requirement and guarantee letter.

Approved by,

Jade Jang / Lab. Technical Manager

Authorized by,

Bo Park / Lab. General Manager

Authenticity check

Intertek Testing Services Korea Ltd.
Office: Tel : 031-8069-3708 Fax : 02-3409-0025 Web Site : intertek.co.kr
Seoul Lab. Address : 7, Achasan-ro 5-gil, Seongdong-gu, Seoul, 04793 Korea

※ You can verify the forgery and authenticity by the barcode at the end of this document.

TEST REPORT

REPORT NO. RT24R-S8364-007-E DATE: Dec. 20, 2024

SAMPLE ID NO. : RT24R-S8364-007
SAMPLE DESCRIPTION : Bumping - Plated layer (SnAg)

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	N.D.
Mercury (Hg)	mg/kg	With reference to IEC 62321-4 : 2013/AMD1 : 2017, by acid digestion and determined by ICP-OES	2	N.D.
Hexavalent Chromium (Cr^{6+})	mg/kg	With reference to IEC 62321-7-2 Edition 1.0 : 2017, by alkaline/toluene digestion and determined by UV-VIS Spectrophotometer	8	N.D.
Polybrominated Biphenyl (PBBs)				
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.
Polybrominated Diphenyl Ether (PBDEs)				
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 : Jooyeon Lee, Chano Kim, Hayan Park

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

Intertek Testing Services Korea Ltd.
Office: Tel : 031-8069-3708 Fax : 02-3409-0025 Web Site : intertek.co.kr
Seoul Lab. Address : 7, Achasan-ro 5-gil, Seongdong-gu, Seoul, 04793 Korea

TEST REPORT

REPORT NO. RT24R-S8364-007-E DATE: Dec. 20, 2024

SAMPLE ID NO. : RT24R-S8364-007
SAMPLE DESCRIPTION : Bumping - Plated layer (SnAg)

TEST ITEM	UNIT	TEST METHOD	MDL	RESULT
Bromine (Br)	mg/kg	With reference to EN 14582, by oxygen combustion with bomb and determined by IC	30	N.D.
Chlorine (Cl)	mg/kg	With reference to EN 14582, by oxygen combustion with bomb and determined by IC	30	N.D.
Fluorine (F)	mg/kg	With reference to EN 14582, by oxygen combustion with bomb and determined by IC	30	N.D.
Arsenic (As)	mg/kg	With reference to US EPA 3052, by acid digestion and determined by ICP-OES	2	N.D.
Beryllium (Be)	mg/kg	With reference to US EPA 3052, by acid digestion and determined by ICP-OES	2	N.D.
Antimony (Sb)	mg/kg	With reference to US EPA 3052, by acid digestion and determined by ICP-OES	2	N.D.
Perfluorooctanoic acid (PFOA)	mg/kg	With reference to US EPA 3550C/8321B, by ultrasonic extraction and determined by LC/MS or LC/MS/MS	0.025	N.D.
Perfluorooctane sulfonate (PFOS)	mg/kg	With reference to US EPA 3550C/8321B, by ultrasonic extraction and determined by LC/MS or LC/MS/MS	0.025	N.D.

Tested by : Chano Kim, Jooyeon Lee, Hayan Park

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

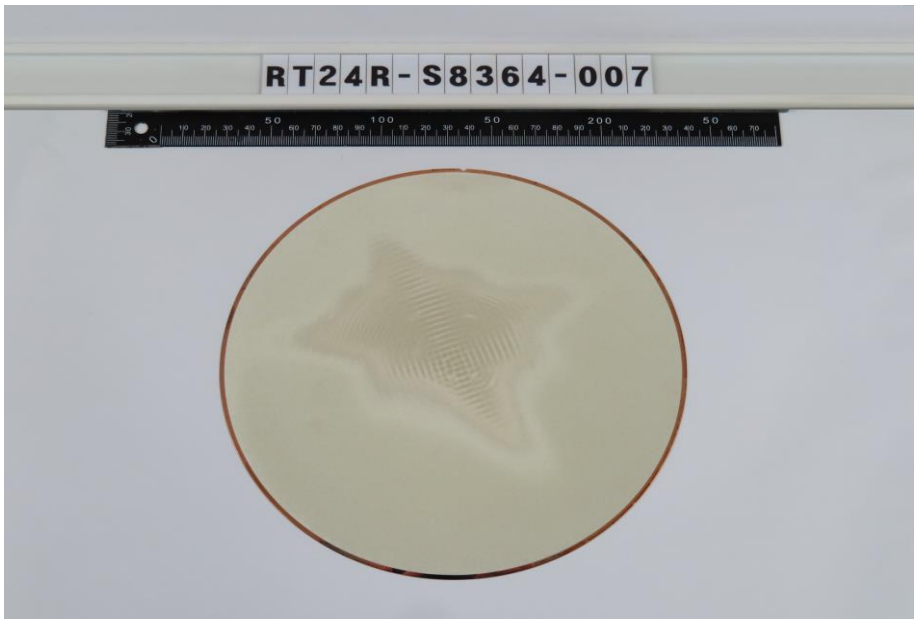
Intertek Testing Services Korea Ltd.
Office: Tel : 031-8069-3708 Fax : 02-3409-0025 Web Site : intertek.co.kr
Seoul Lab. Address : 7, Achasan-ro 5-gil, Seongdong-gu, Seoul, 04793 Korea

TEST REPORT

REPORT NO. RT24R-S8364-007-E DATE: Dec. 20, 2024

SAMPLE ID NO. : RT24R-S8364-007
SAMPLE DESCRIPTION : Bumping - Plated layer (SnAg)

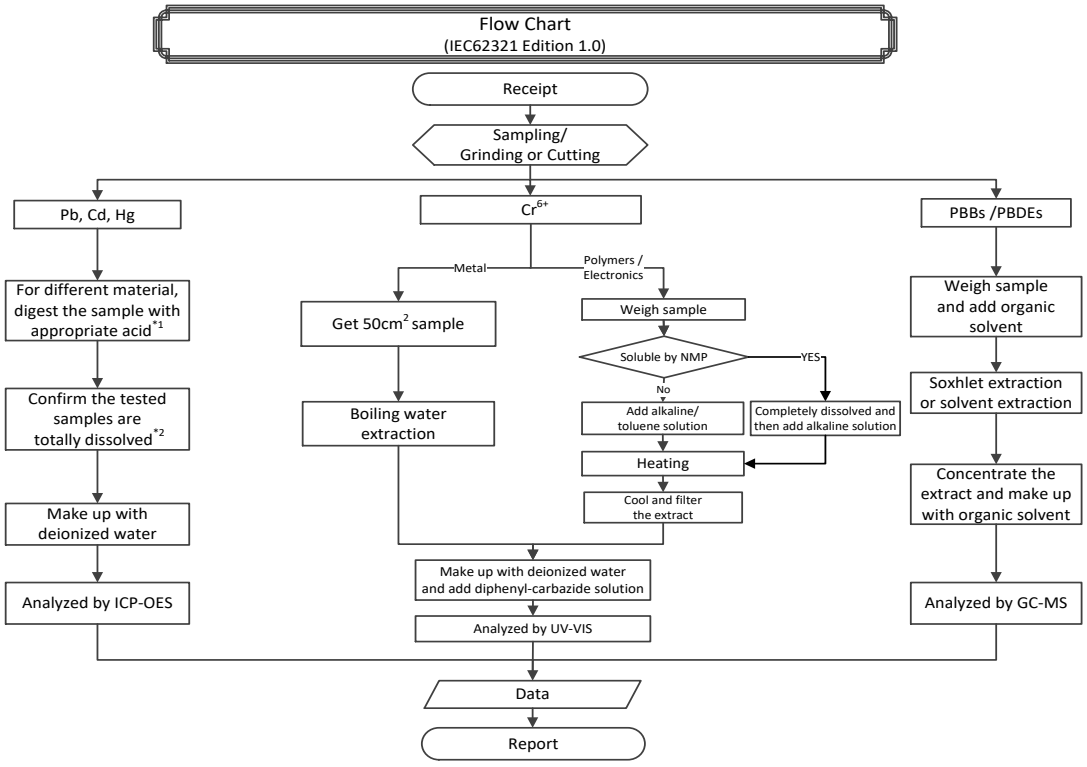
* View of sample as received;-



TEST REPORT

REPORT NO. RT24R-S8364-007-E DATE: Dec. 20, 2024

SAMPLE ID NO. : RT24R-S8364-007
SAMPLE DESCRIPTION : Bumping - Plated layer (SnAg)



Remarks :
*1 : List of appropriate acid :

Material	Acid added for digestion
Polymers	HNO_3, HCl, HF, H_2O_2, $H3BO_3$
Metals	HNO_3, HCl, HF
Electronics	HNO_3, HCl, H_2O_2, HBF_4

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

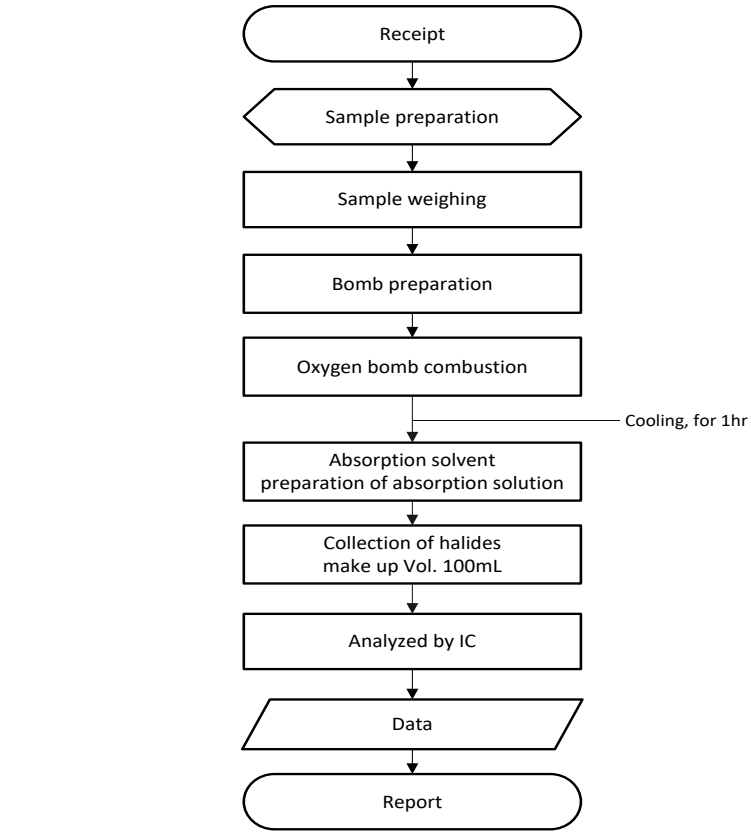
Intertek Testing Services Korea Ltd.
Office: Tel : 031-8069-3708 Fax : 02-3409-0025 Web Site : intertek.co.kr
Seoul Lab. Address : 7, Achasan-ro 5-gil, Seongdong-gu, Seoul, 04793 Korea

TEST REPORT

REPORT NO. RT24R-S8364-007-E DATE: Dec. 20, 2024

SAMPLE ID NO. : RT24R-S8364-007
SAMPLE DESCRIPTION : Bumping - Plated layer (SnAg)

Flow Chart (EN14582)

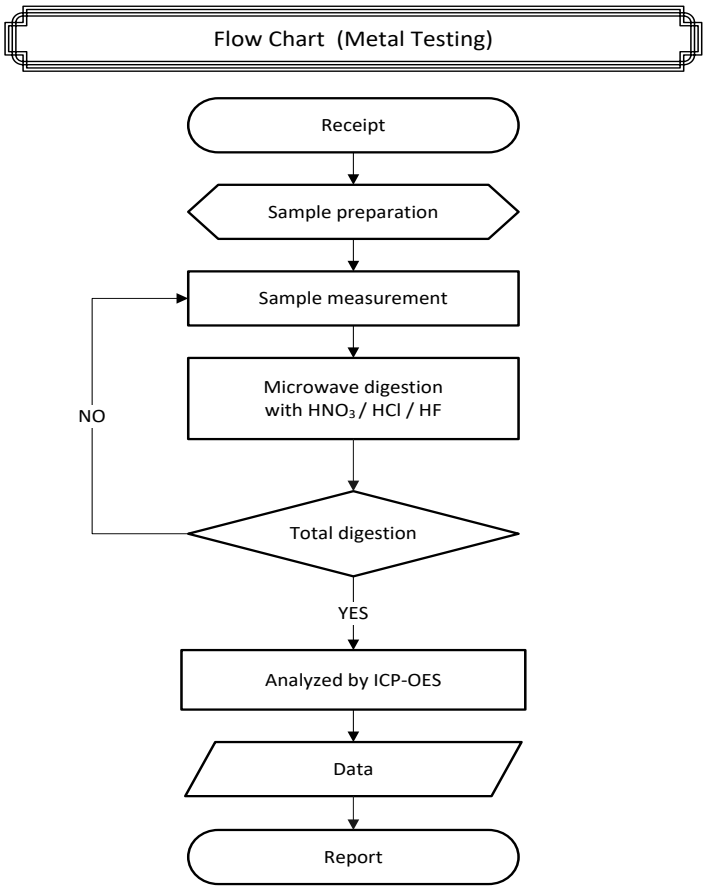


Intertek Testing Services Korea Ltd.
Office: Tel : 031-8069-3708 Fax : 02-3409-0025 Web Site : intertek.co.kr
Seoul Lab. Address : 7, Achasan-ro 5-gil, Seongdong-gu, Seoul, 04793 Korea

TEST REPORT

REPORT NO. RT24R-S8364-007-E DATE: Dec. 20, 2024

SAMPLE ID NO. : RT24R-S8364-007
SAMPLE DESCRIPTION : Bumping - Plated layer (SnAg)



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

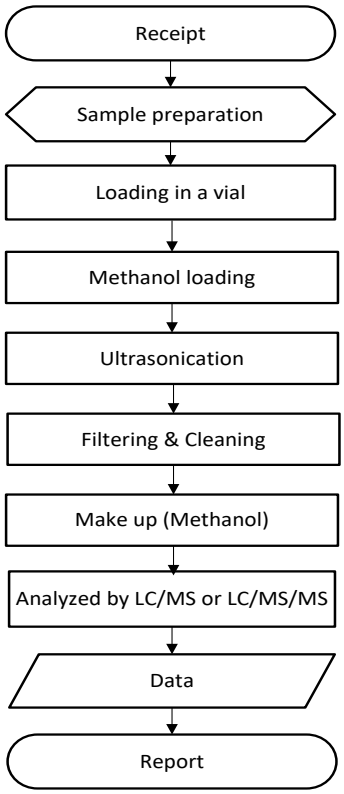
Intertek Testing Services Korea Ltd.
Office: Tel : 031-8069-3708 Fax : 02-3409-0025 Web Site : intertek.co.kr
Seoul Lab. Address : 7, Achasan-ro 5-gil, Seongdong-gu, Seoul, 04793 Korea

TEST REPORT

REPORT NO. RT24R-S8364-007-E
DATE: Dec. 20, 2024

SAMPLE ID NO. : RT24R-S8364-007
SAMPLE DESCRIPTION : Bumping - Plated layer (SnAg)

Flow Chart (PFOS, PFOA)



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

Intertek Testing Services Korea Ltd.
Office: Tel : 031-8069-3708 Fax : 02-3409-0025 Web Site : intertek.co.kr
Seoul Lab. Address : 7, Achasan-ro 5-gil, Seongdong-gu, Seoul, 04793 Korea