



# TEST REPORT

Applicant : Samsung Electro-mechanics Co., Ltd.  
Address : 314, Maetan-3dong, Yeongtong-gu,  
Suwon, Kyungki-do, 443-743 Korea

Page: 1 of 9

Report No. RT10R-S0609-018-E

Date: Feb. 12, 2010

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

Name/Type of Product : Tantalum Capacitor  
Name of Material : Epoxy resin / Metal  
Sample ID No. : RT10R-S0609-018  
Item No. : TCPCS\*\*\*\*\*  
Manufacturer/Vender : Samsung Electro-mechanics Co., Ltd.

Sample received : Feb. 05, 2010  
Testing Date : Feb. 05, 2010 ~ Feb. 12, 2010  
Testing Laboratory : Intertek Testing Center  
Testing Environment : Temperature : ( 24 ± 2 ) °C, Humidity : ( 60 ± 5 ) % R.H.

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.
- \* Note 3 : The item no. is assigned by client and indicated according to their requirement and guarantee letter.

Approved by,

Authorized by,

Jade Jang / Lab. Technical Manager

Bo Park / Lab. General Manager

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# TEST REPORT

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Date: Feb. 12, 2010

Report No. RT10R-S0609-018-E

Sample ID No. : RT10R-S0609-018  
Sample Description : Tantalum Capacitor

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	With reference to IEC 62321 Edition 1.0 : 2008, by acid digestion and determined by ICP-OES	0.5	N.D.
Lead (Pb)	mg/kg		5	N.D.
Mercury (Hg)	mg/kg		2	N.D.
Hexavalent Chromium (Cr <sup>6+</sup> ) (For non-metal)	mg/kg	With reference to IEC 62321 Edition 1.0 : 2008, by alkaline digestion and determined by UV-VIS Spectrophotometer	1	N.D.
Polybrominated Biphenyl (PBBs)				
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.
Polybrominated Diphenyl Ether (PBDEs)				
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 : Nikkie Lee, Peter Kim, Ellen Jung, Jessica Kang

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

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Seoul Lab. : #709, 7FI, Ace Techno Tower V, 197-22, Guro-3Dong, Guro-Gu, Seoul 152-766 Korea Tel : 02-2109-1260 Fax : 02-2109-1258  
Ulsan Lab. : #340-2, Yongam-Ri, Chongryang-Myun, Ulju-Gun, Ulsan 689-865 Korea Tel : 052-257-6754 Fax : 052-276-6792



# TEST REPORT

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Date: Feb. 12, 2010

Report No. RT10R-S0609-018-E

Sample ID No. : RT10R-S0609-018  
Sample Description : Tantalum Capacitor

Test Items	Unit	Test Method	MDL	Results
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	73
Phthalates				
Dibutyl phthalate (DBP)	mg/kg	With reference to US EPA 8061A, by solvent extraction and determined by GC/MS	50	N.D.
Di(2-ethylhexyl) phthalate (DEHP)	mg/kg	With reference to US EPA 8061A, by solvent extraction and determined by GC/MS	50	N.D.
Di-n-octyl phthalate (DNOP)	mg/kg	With reference to US EPA 8061A, by solvent extraction and determined by GC/MS	50	N.D.
Diisononyl phthalate (DINP)	mg/kg	With reference to US EPA 8061A, by solvent extraction and determined by GC/MS	100	N.D.
Diisodecyl phthalate (DIDP)	mg/kg	With reference to US EPA 8061A, by solvent extraction and determined by GC/MS	100	N.D.
Benzyl butyl phthalate (BBP)	mg/kg	With reference to US EPA 8061A, by solvent extraction and determined by GC/MS	50	N.D.

Tested by : Nikkie Lee, Ellen Jung, David Kwon

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# TEST REPORT

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Date: Feb. 12, 2010

Report No. RT10R-S0609-018-E

Sample ID No. : RT10R-S0609-018  
Sample Description : Tantalum Capacitor

Test Items	Unit	Test Method	MDL	Results
Tetrabromobisphenol-A (TBBP-A)	mg/kg	With reference to US EPA 3540C, by solvent extraction and determined by GC/MS	5	N.D.
Perfluorooctane sulfonate (PFOS)	mg/kg	With reference to US EPA 3550C & 8321B, by ultrasonic extraction and determined by LC/MS/MS	1	N.D.

Tested by : Ellen Jung

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\* View of sample as received;-



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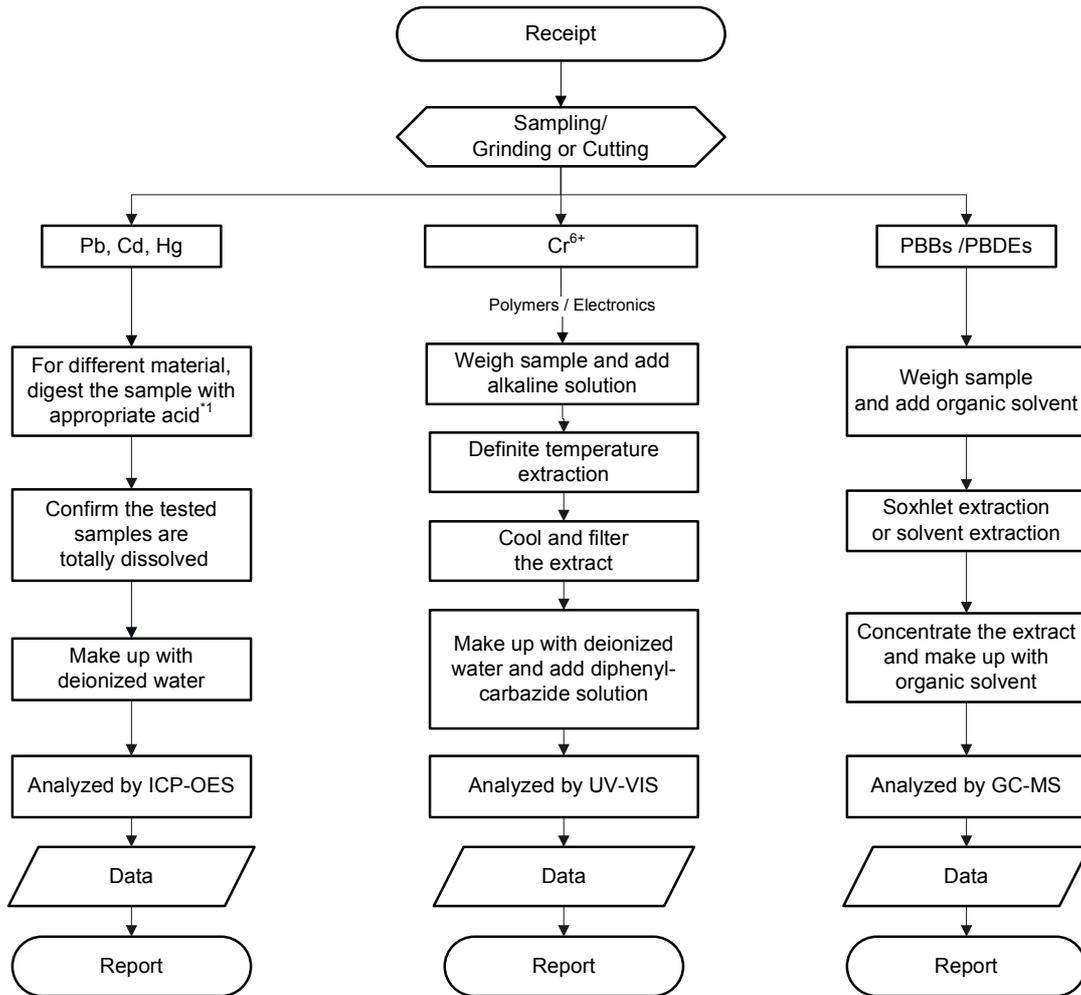
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Sample ID No. : RT10R-S0609-018  
Sample Description : Tantalum Capacitor

**Flow Chart**  
(IEC 62321 Edition 1.0 : 2008)



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>

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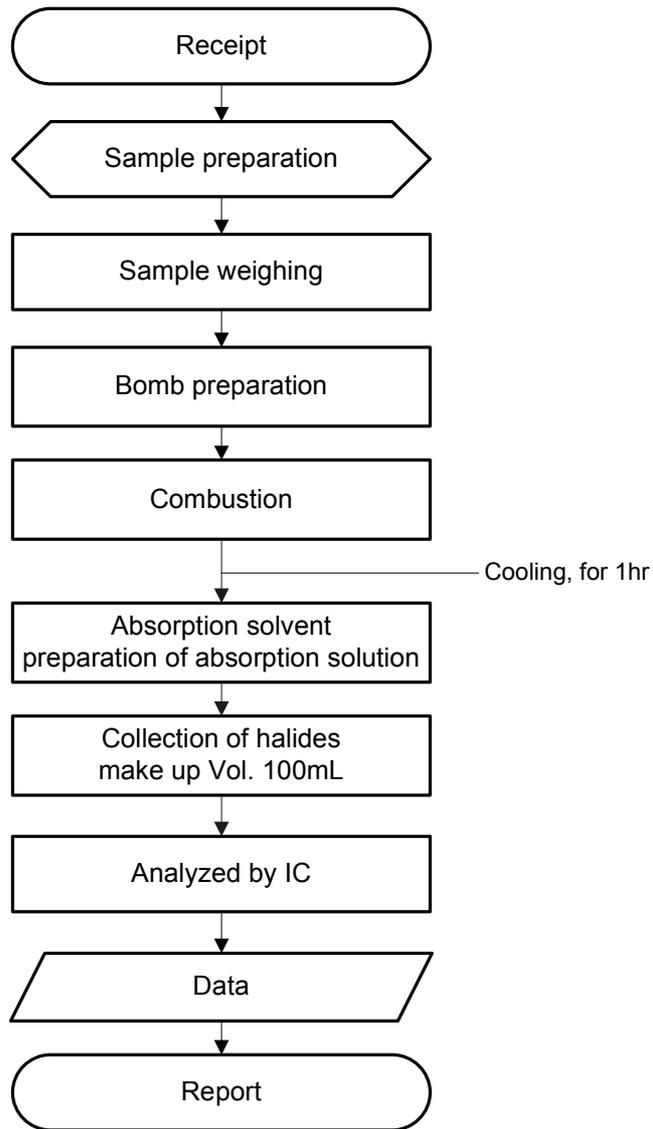
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Sample ID No. : RT10R-S0609-018

Sample Description : Tantalum Capacitor

## Flow Chart (Halogen)



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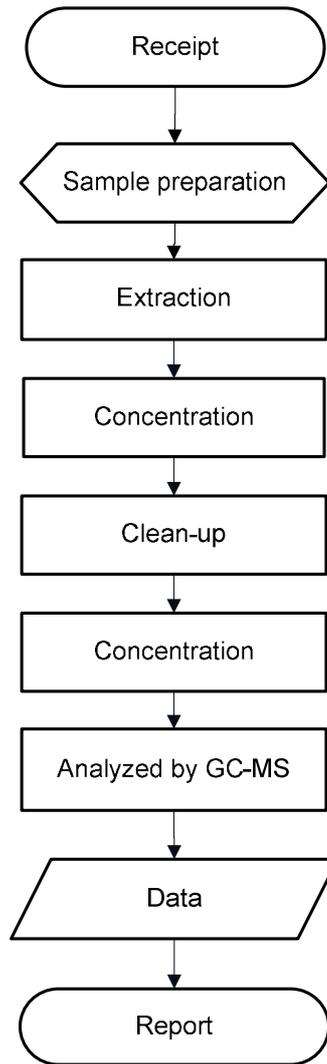
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Sample ID No. : RT10R-S0609-018

Sample Description : Tantalum Capacitor

## Flow Chart (Phthalates)



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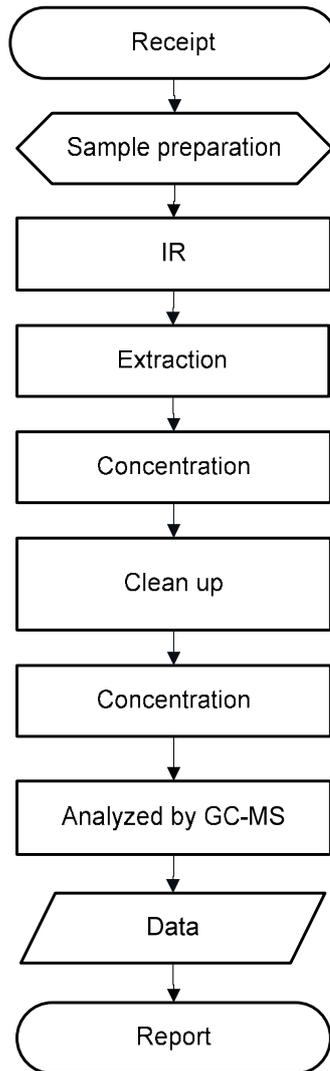
# TEST REPORT

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Sample ID No. : RT10R-S0609-018

Sample Description : Tantalum Capacitor

## Flow Chart (TBBPA)



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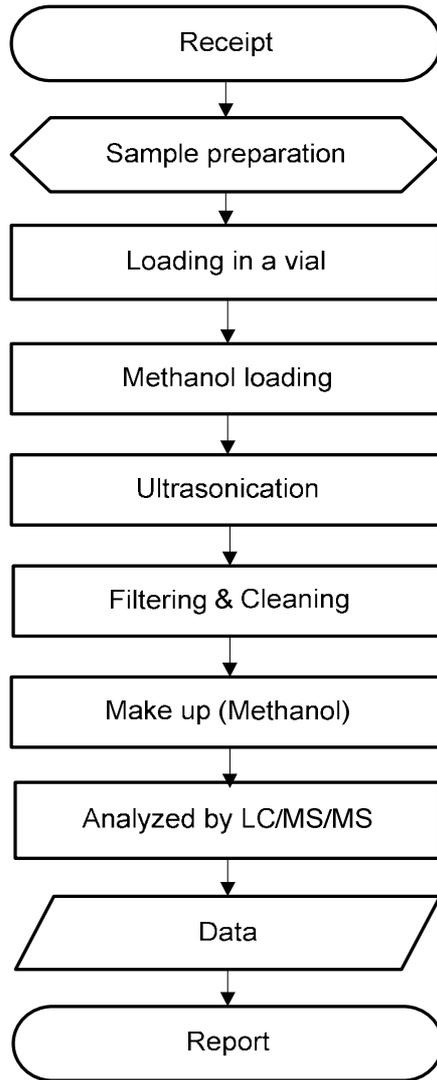
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Sample ID No. : RT10R-S0609-018

Sample Description : Tantalum Capacitor

## Flow Chart (PFOS)



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

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