

# **JACKCON** *Electrolytic Capacitors*

**DATE: 2022.10.06**



**CUSTOMER: JAMECO ELECTRONICS LTD.**

**DESCRIPTION: Electrolytic Capacitor**

**SPEC: LAG Series 100uF 50V 85°C 8X20**

**P/N: LAG101M50V820**

**CUST.Code: 10911**

<b>BUYER'S APPROVAL STAMP</b>	<b>APPROVED BY:</b>	<b>TESTED BY:</b>
		
	<b>2022.10.05</b>	<b>2022.10.05</b>

**HONJU TAIWAN CO., LTD**

**JACKCON CAPACITOR ELECTRONICS CO., LTD.**

SUPPLIER : JACKCON CAPACITOR ELECTRONICS CO., LTD.  
5F, NO.88, SHING DE ROAD, SAN CHUNG CITY,  
TAIPEI COUNTY, TAIWAN

TEL : 886-2-2278-2210      886-2-2278-2212

FAX : 886-2-2278-2656      886-2-2278-2640

[www.jackcon.com.tw](http://www.jackcon.com.tw)

[qc@jackcon.com.tw](mailto:qc@jackcon.com.tw)

# JACKCON *Electrolytic Capacitors*

## 85°C *LAG* SERIES

- 規格書

Item	Performance Characteristics	
Operating Temperature Range(°C)	-40 to +85°C	
Capacitance Tolerance (%)	±20%(120Hz, +20°C)	
Rated Voltage Range(v)	25	
Dissipation Factor(tan δ %)max.	0.15	
Leakage Current (LC.) (μA /after 5 min.)max.	I ≤ 0.02 CV or 3(μA) After 2minute whichever is greater measured With rated working voltage applied	
Life Test : Load Life Test : After 2000 Hrs at 85°C Shelf Life Test : After 1000 Hrs at 85°C	ΔC/C	Within ±20% of the initial value
	Tan δ	≤ 200% of the initial specified value
	LC.	Load : ≤ The initial specified value Shelf : ≤ 200% specified value
Detail specifications	Conform to IEC 60384-4	

### Spec. & RIPPLE CURRENT:

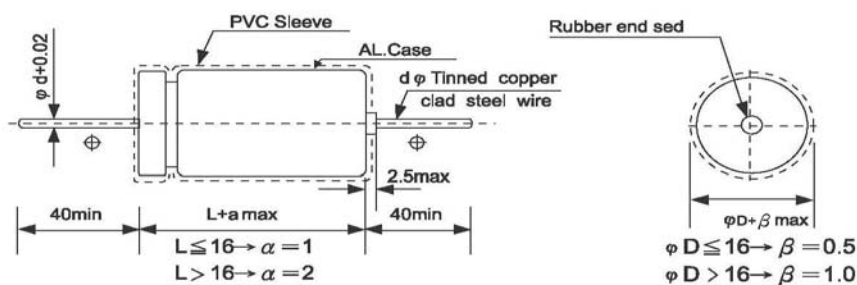
uF	WV	SIZE	Maximum Ripple Current
100	50	8X20	260mA,rms,120Hz at 85°C

### Dimensions

φ D	5	6	8	10	13	16	18	20	22	25
φ d	0.6	0.6	0.6	0.6	0.6	0.8	0.8	0.8	0.8	0.8

### Multiplier for Ripple Current VS, Frequency

CAP(uF)Hz		60(50)	120	500	1K	10KUP
Multiplier	Under 100	0.70	1.00	1.30	1.40	1.50
	100 < CAP ≤ 1000	0.75	1.00	1.20	1.30	1.35
	1000 up above	0.80	1.00	1.10	1.12	1.15





# JACKCON *Electrolytic Capacitors*

## Endurance characteristic

NO.	Item	Condition	Specification	
5	High temperature load life test	<ol style="list-style-type: none"> <li>Capacitors shall be placed in oven with application of ripple current and rate voltage for <math>2000 \pm 12</math> hrs at <math>85^{\circ}\text{C}</math></li> <li>The capacitors should be use within specified permissible ripple current in each standard products table (the sum of DC working voltage and AC peak voltage shall be equal to the rated DC working voltage)</li> <li>The specified maximum permissible ripple current in defined at <math>85^{\circ}\text{C}</math> and 120 Hz</li> <li>Then the capacitor shall be subjected to standard atmospheric conditions for 16 hours, after witch measurements shall be made.</li> </ol>	Capacitance change	Within $\pm 20\%$ of the initial value
			TAN $\delta$	Less then 200% of specified value
			Leakage Current	Within specified value
			Physical	no broken and undamaged
6.	High temperature shelf life test	After 1000hrs test at $85^{\circ}\text{C}$ without rated working voltage. And then the capacitor shall be subjected to standard atmospheric conditions for 16 hours, after witch measurements shall be made.	Capacitance change	Within $\pm 20\%$ of the initial value
			TAN $\delta$	Less then 200% of specified value
			Leakage Current	Less then 200% of specified value
			Physical	no broken and undamaged
7.	Rotational temperature test	Capacitor is place in a oven whose temperature follow specific regulation to change. The specific regulations is “ $+25^{\circ}\text{C}$ (1 hr) $\rightarrow +85^{\circ}\text{C}$ (2 hrs) $\rightarrow +25^{\circ}\text{C}$ (0.5 hr) $\rightarrow -40^{\circ}\text{C}$ (2 hrs) $\rightarrow +25^{\circ}\text{C}$ (0.5 hr)”, and it called a cycle. The test totals 10 cycles. And then the capacitor shall be subjected to standard atmospheric conditions for 16 hours, after witch measurements shall be made.	Capacitance change	Within $\pm 10\%$ of the initial value
			TAN $\delta$	Within specified value
			Leakage Current	Within specified value
			Physical	no broken and undamaged
8.	Humidity test	Capacitors shall be exposed for $500 \pm 8$ hrs in an atmosphere of 90~95%R.H at $40^{\circ}\text{C}$ . And then the capacitor shall be subjected to standard atmospheric conditions for 16 hours, after witch measurements shall be made.	Capacitance change	Within $\pm 10\%$ of the initial value
			TAN $\delta$	Less then 120% of specified value
			Leakage Current	Within specified value
			Physical	no broken and undamaged

# JACKCON *Electrolytic Capacitors*

9.	Low temperature test	Capacitor are place at $-40 \pm 3^{\circ}\text{C}$ for $72 \pm 4$ hrs. And then the capacitor shall be subjected to standard atmospheric conditions for 16 hours, after witch measurements shall be made.	Capacitance change	Within $\pm 10\%$ of the initial value																		
			TAN $\delta$	Within specified value																		
			Leakage Current	Within specified value																		
			Physical	no broken and undamaged																		
10.	Vibration test	<ol style="list-style-type: none"> <li>Fix it at the point 4mm or less form body. For ones of 12.5mm or 25mm or more length, use separate fixture.</li> <li>Direction and during of vibration:3 orthogonal direction each for 2hrs total 6hrs.</li> <li>Mutually frequency: 10 to 55Hz reciprocation for 1 min.</li> <li>Total amplitude:1.5mm</li> </ol>	Capacitance change	Within $\pm 10\%$ of the initial value																		
			TAN $\delta$	Within specified value																		
			Leakage Current	Within specified value																		
			Physical	no broken and undamaged																		
11.	Reflow test	<ol style="list-style-type: none"> <li>IR Reflow                     <div style="text-align: center;"> </div> <table border="1" style="margin-top: 10px;"> <tr> <td rowspan="2">Preheat</td> <td>Temp (T1~T2)</td> <td>100~150°C</td> </tr> <tr> <td>Time (t1) max</td> <td>40 sec</td> </tr> <tr> <td rowspan="2">Duration</td> <td>Temp(T3)</td> <td>260°C</td> </tr> <tr> <td>Time (t2) max</td> <td>10 sec</td> </tr> <tr> <td rowspan="2">Peck</td> <td>Temp(T4)</td> <td>270°C</td> </tr> <tr> <td>Time (t3) max</td> <td>5 sec</td> </tr> <tr> <td>Reflow cycle</td> <td colspan="2">Twice or less</td> </tr> </table> </li> <li>Solder bath method: Solder temperature:<math>260 \pm 3^{\circ}\text{C}</math> Immersion time:<math>5+1/-0</math> sec Thickness of heat shunt (Printed wiring board):1.6mm</li> <li>Soldering iron method: Bit temperature: <math>350 \pm 10^{\circ}\text{C}</math> Application time of soldering Iron:<math>3+1/-0</math> sec</li> </ol>	Preheat	Temp (T1~T2)	100~150°C	Time (t1) max	40 sec	Duration	Temp(T3)	260°C	Time (t2) max	10 sec	Peck	Temp(T4)	270°C	Time (t3) max	5 sec	Reflow cycle	Twice or less		Capacitance change	Within $\pm 10\%$ of the initial value
				Preheat	Temp (T1~T2)	100~150°C																
			Time (t1) max		40 sec																	
			Duration	Temp(T3)	260°C																	
Time (t2) max	10 sec																					
Peck	Temp(T4)	270°C																				
	Time (t3) max	5 sec																				
Reflow cycle	Twice or less																					
TAN $\delta$	Within specified value																					
Leakage Current	Within specified value																					
Physical	no broken and undamaged																					

# JACKCON *Electrolytic Capacitors*

12.	Solderability test	After the lead wire fully immersed in the solder for $2 \pm 0.1$ sec at a temperature of $245 \pm 2^\circ\text{C}$ , the solder coating must be more than 95%																
13.	Mechanical	<p>1. The test is about lead tabs strength.</p> <p>2. Tension test: The lead tabs shall not be broken or any malformed condition after fixing capacitor vertically and pressing the following weight on the lead tabs of capacitor for <math>10 \pm 1</math> sec.</p> <table border="1" data-bbox="604 629 1240 763"> <thead> <tr> <th>Lead tabs diameter(mm)</th> <th>Weight(Kg)</th> </tr> </thead> <tbody> <tr> <td><math>\leq 0.5</math></td> <td>0.5</td> </tr> <tr> <td>0.6~0.8</td> <td>1.0</td> </tr> <tr> <td>&gt;0.8</td> <td>2.5</td> </tr> </tbody> </table> <p>3. Bending test: The capacitor is held in vertical position. Attach a weight to the lead tabs, slowly rotate the capacitor <math>90^\circ</math> to a same way in the opposite direction. Repeat it again (5 secs per cycle). The lead tabs shall not be broken or cracked.</p> <table border="1" data-bbox="604 1010 1240 1144"> <thead> <tr> <th>Lead tabs diameter(mm)</th> <th>Weight(Kg)</th> </tr> </thead> <tbody> <tr> <td><math>\leq 0.5</math></td> <td>0.5</td> </tr> <tr> <td>0.6~0.8</td> <td>1.0</td> </tr> <tr> <td>&gt;0.8</td> <td>2.5</td> </tr> </tbody> </table>	Lead tabs diameter(mm)	Weight(Kg)	$\leq 0.5$	0.5	0.6~0.8	1.0	>0.8	2.5	Lead tabs diameter(mm)	Weight(Kg)	$\leq 0.5$	0.5	0.6~0.8	1.0	>0.8	2.5
Lead tabs diameter(mm)	Weight(Kg)																	
$\leq 0.5$	0.5																	
0.6~0.8	1.0																	
>0.8	2.5																	
Lead tabs diameter(mm)	Weight(Kg)																	
$\leq 0.5$	0.5																	
0.6~0.8	1.0																	
>0.8	2.5																	
14.	Safety vent	<p><b>Condition:</b> Apply a reverse voltage with current 1 amp.(DC reverse voltage test)</p> <p><b>Criteria:</b> When the pressure relief vent operated, the capacitor shall not flame although gas generation or expulsion of a part of the inside element is allowable. If the vent does not operate with the voltage applied for 30 minutes, the test is Considered to be passed.</p>																
15.	Standards	Satisfies Characteristic W of IEC-60384-4,18																

# JACKCON *Electrolytic Capacitors*

## CODE CONSTRUCTION

LAG	101	M	50	V	8	20	----
<u>Series</u> (1)	<u>Capacitance</u> (2)	<u>Tol.</u> (3)	<u>Voltage</u> (4)	<u>Sleeve</u> (5)	<u>Dia.</u> (6)	<u>Length</u> (7)	<u>Forming</u> (8)

### (1) Series:

LGK	LHK	LMK	LSM	LEK	LPS	LKP	LNP	LLK	LBP
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

### (2) Capacitance (uF):

$\mu$ F	0.1	1	10	100	1000	10000	1.5
Code	0R1	010	100	101	102	103	1R5
$\mu$ F	0.22	2.2	22	220	2200	22000	15
Code	R22	2R2	220	221	222	223	150
$\mu$ F	0.33	3.3	33	330	3300	33000	150
Code	R33	3R3	330	331	332	333	151
$\mu$ F	0.47	4.7	47	470	4700	47000	1500
Code	R47	4R7	470	471	472	473	152

### (3) Tolerance:

Code	J	K	M
Tolerance	$\pm 5\%$	$\pm 10\%$	$\pm 20\%$

### (4) Working Voltage (V):

6.3	10	16	25	35	50	63
100	160	200	250	350	400	450

### (5) Sleeve:

Code	V	E
Sleeve	PVC	PET

### (6) Diameter (mm):

4	5	6	8	10	13	16	18
22	25	30	35	51	64	77	90

### (7) Length (mm):

5	7	9	11	12	14	16	20	21	25
26	31	33	36	40	42	45	50	53	65
75	83	96	100	115	121	130	140	144	157

### (8) Forming (optional):

Taping + pitch (mm)	Cutting + length (mm)	Kink + pitch (mm)
TB2	C3.3	K5
TB2.5	C3.5	
TB3.5	C5	
TB5	C7	

# **JACKCON** *Electrolytic Capacitors*

## L A B E L

### FRONT

<b>JACKCON</b>	<b>Electrolytic Capacitor</b>	
Capacitance Range:	<b>100</b>	<b>uF</b>
Voltage Range:	<b>50</b>	<b>V</b>
Quantity:	<b><u>***</u></b>	<b>pcs</b>
Remark: <b>8*20</b>	<b>85°C</b>	<b>RoHS</b>
<b>MADE IN TAIWAN</b>		<b>COMPLIANT</b>

**Lot No : 8 070313-000314**

**DATE LOT NO.**



# **JACKCON** *Electrolytic Capacitors*

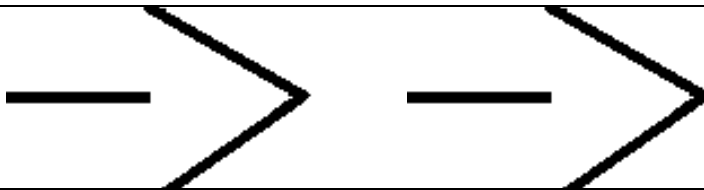
## Marking

### FRONT

**JACKCON**

**100uF50V**

**-40+85°C**



## Test Report

Applicant: Jackcon Capacitor Electronics Co., Ltd.  
LTD. 5F., NO.90, SHINGDE ROAD,  
SANCHUNG DIST., NEW TAIPEI CITY,  
24158, TAIWAN

Number : TWNC01057626

Issue Date : Feb 21, 2022

Sample Description:

One (1) Group of Submitted Samples Said To Be :  
Sample Description : AL. ELECTROLYTIC CAPACITORS FULL RANGE  
Date Sample Received : Feb 11, 2022  
Date Test Started : Feb 11, 2022

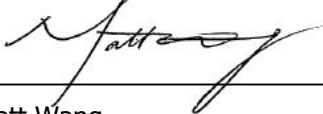
---

Test Conducted:

As requested by the applicant, for details please refer to attached pages.

---

Authorized By:  
On behalf of Intertek Testing Services  
Taiwan Limited



Matt Wang  
Director



Signed by:



Thomas Chou  
Manager



Test Conducted :

Test Result Summary:

Test Item	Unit	Test Method	Result	RL
			Black electronic component (mixed all parts)	
<b>Heavy Metal</b>				
Cadmium (Cd) Content	ppm	With reference to IEC 62321-5: 2013, by microwave or acid digestion and determined by ICP-OES.	ND	2
Lead (Pb) Content	ppm	With reference to IEC 62321-5: 2013, by microwave or acid digestion and determined by ICP-OES.	4	2
Mercury (Hg) Content	ppm	With reference to IEC 62321-4:2013+AMD1:2017, by microwave or acid digestion and determined by ICP-OES.	ND	2
Chromium VI (Cr(VI)) Content	ppm	With reference to IEC 62321-7-2: 2017, organic solvent was used to dissolve or swell sample matrix, followed by alkaline digestion and determined by UV-Vis Spectrophotometer.	ND	8
<b>Polybrominated Biphenyls (PBBs)</b>				
Monobrominated Biphenyls (MonoBB)	ppm	With reference to IEC 62321-6: 2015, by solvent extraction and determined by GC-MS and further HPLC-DAD confirmation when necessary.	ND	5
Dibrominated Biphenyls (DiBB)	ppm		ND	5
Tribrominated Biphenyls (TriBB)	ppm		ND	5
Tetrabrominated Biphenyls (TetraBB)	ppm		ND	5
Pentabrominated Biphenyls (PentaBB)	ppm		ND	5
Hexabrominated Biphenyls (HexaBB)	ppm		ND	5
Heptabrominated Biphenyls (HeptaBB)	ppm		ND	5
Octabrominated Biphenyls (OctaBB)	ppm		ND	5
Nonabrominated Biphenyls (NonaBB)	ppm		ND	5
Decabrominated Biphenyl (DecaBB)	ppm		ND	5



Test Conducted :

Test Item	Unit	Test Method	Result	RL
			Black electronic component (mixed all parts)	
<b>Polybrominated Diphenyl Ethers (PBDEs)</b>				
Monobrominated Diphenyl Ethers (MonoBDE)	ppm	With reference to IEC 62321-6: 2015, by solvent extraction and determined by GC-MS and further HPLC-DAD confirmation when necessary.	ND	5
Dibrominated Diphenyl Ethers (DiBDE)	ppm		ND	5
Tribrominated Diphenyl Ethers (TriBDE)	ppm		ND	5
Tetrabrominated Diphenyl Ethers (TetraBDE)	ppm		ND	5
Pentabrominated Diphenyl Ethers (PentaBDE)	ppm		ND	5
Hexabrominated Diphenyl Ethers (HexaBDE)	ppm		ND	5
Heptabrominated Diphenyl Ethers (HeptaBDE)	ppm		ND	5
Octabrominated Diphenyl Ethers (OctaBDE)	ppm		ND	5
Nonabrominated Diphenyl Ethers (NonaBDE)	ppm		ND	5
Decabrominated Diphenyl Ether (DecaBDE)	ppm		ND	5
<b>Phthalates</b>				
Di(2-ethylhexyl) Phthalate (DEHP)	ppm	With reference to IEC 62321-8:2017, by solvent extraction and determined by GC-MS.	ND	50
Dibutyl Phthalate (DBP)	ppm		ND	50
Benzyl Butyl Phthalate (BBP)	ppm		ND	50
Diisobutyl Phthalate (DIBP)	ppm		ND	50

Remarks: ppm = Parts per million based on weight of tested sample = mg/kg  
 ND = Not detected  
 RL = Reporting limit, quantitation limit of analyte in sample

Responsibility of Chemist: Melody Lee/ Vita Fu

Date Sample Received : Feb 11, 2022  
 Test Period : Feb 11, 2022 to Feb 17, 2022



Test Conducted :

RoHS Limit

<u>Restricted Substances</u>	<u>Limits</u>
Cadmium (Cd) content	0.01% (100ppm)
Lead (Pb) content	0.1% (1000ppm)
Mercury (Hg) content	0.1% (1000ppm)
Chromium VI (Cr(VI)) content	0.1% (1000ppm)
Polybrominated Biphenyls (PBBs)	0.1% (1000ppm)
Polybrominated Diphenyl Ethers (PBDEs)	0.1% (1000ppm)
Di(2-ethylhexyl) Phthalate (DEHP)	0.1% (1000ppm)
Dibutyl Phthalate (DBP)	0.1% (1000ppm)
Benzyl Butyl Phthalate (BBP)	0.1% (1000ppm)
Diisobutyl Phthalate (DIBP)	0.1% (1000ppm)

The limits were quoted from Annex II of 2011/65/EU and Amendment (EU) 2015/863 for homogeneous material.



Test Conducted :

Measurement Flowchart:

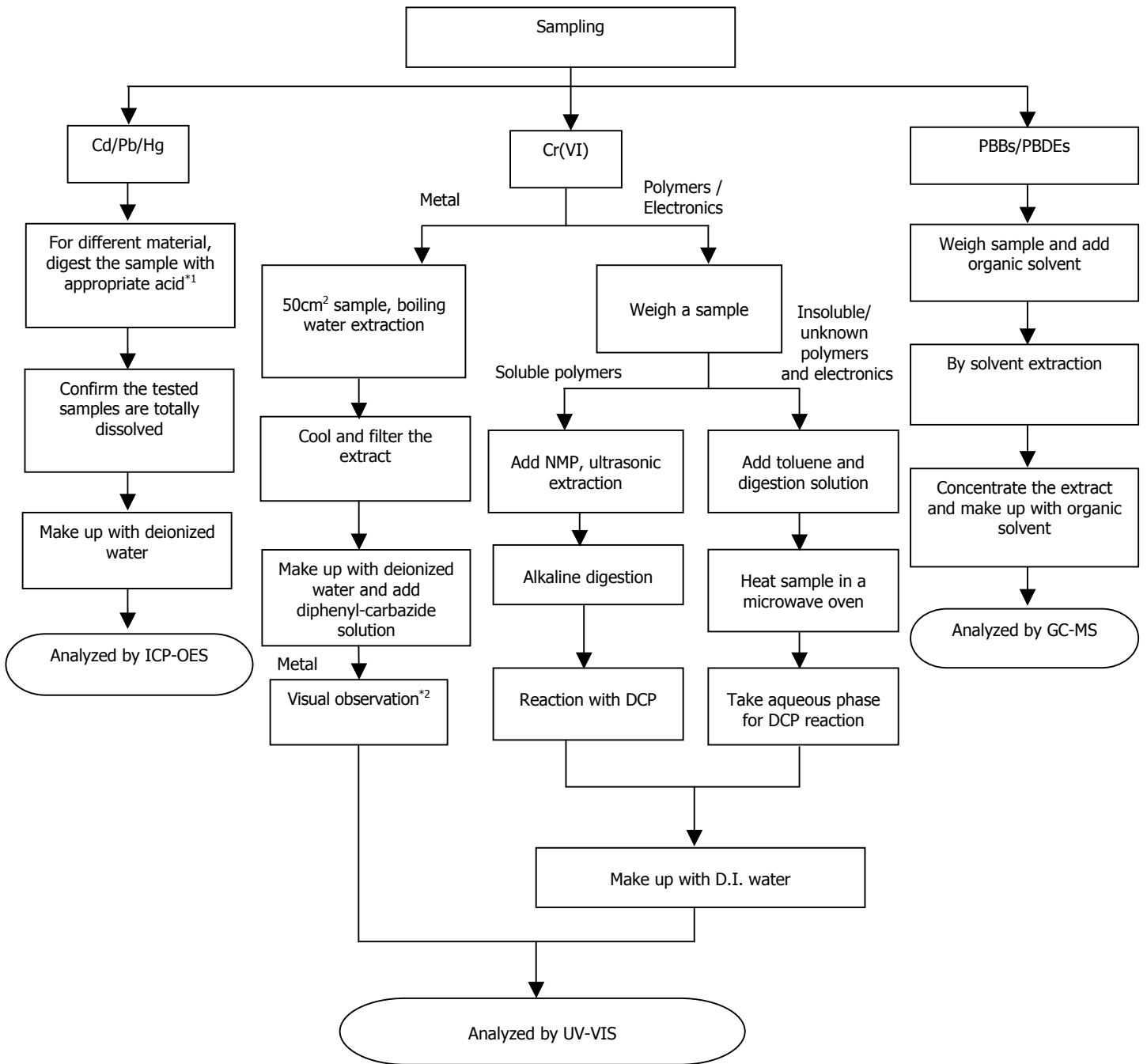
Test for Cd/Pb/Hg/Chromium (VI)/PBBs/PBDEs Content

Reference Standard : Cd/Pb: IEC 62321-5:2013; Hg: IEC 62321-4:2013+AMD1:2017;

Chromium (VI): IEC 62321-7-1:2015 (boiling water extraction);

Chromium (VI): IEC 62321-7-2:2017 (solvent and alkaline extraction);

PBBs/PBDEs: IEC 62321-6:2015



Test Conducted :

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 sample solution is significantly more intense than 0.13 µg/cm<sup>2</sup> equivalent comparison standard, Chromium VI would be determined as detected, the result of visual observation is positive.

---

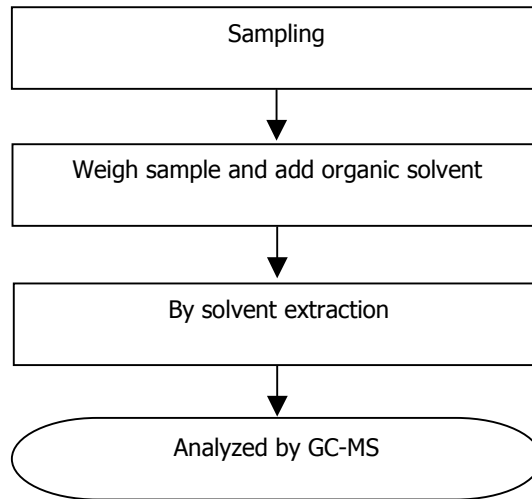


Test Conducted :

Measurement Flowchart:

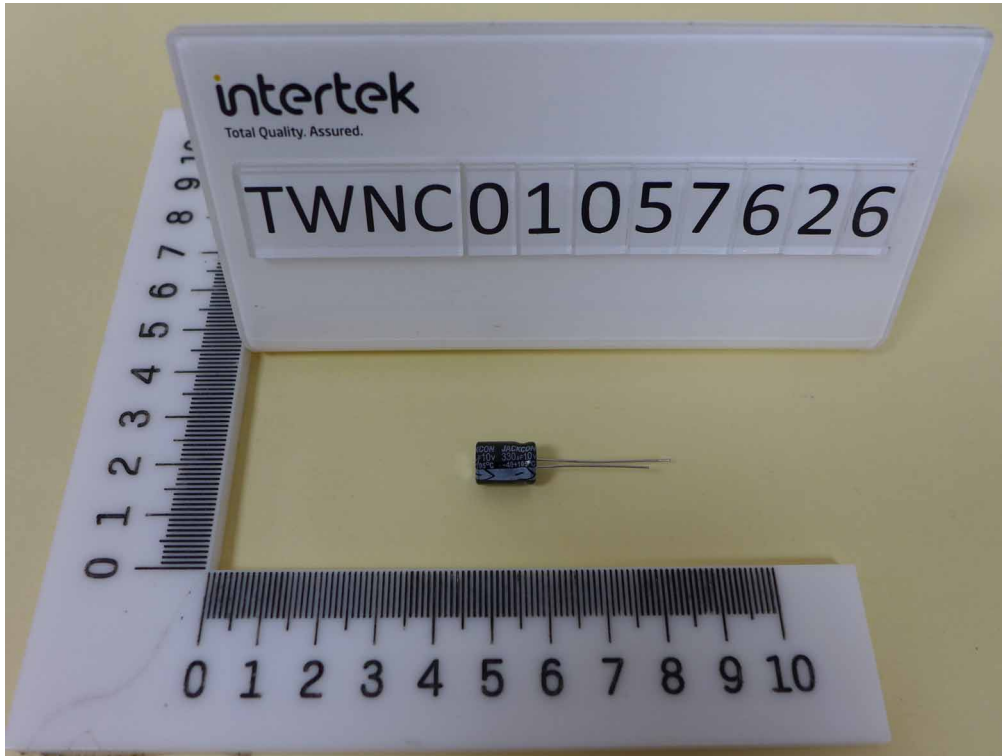
Test for Phthalates Content

Reference Method : IEC 62321-8:2017





Sample photo:



End of Report

Except where explicitly agreed in writing, all work and services performed by Intertek is subject to our standard Terms and Conditions which can be obtained at our website: <http://www.intertek-twn.com/terms/>. Intertek's responsibility and liability are limited to the terms and conditions of the agreement.

This report is made solely on the basis of your instructions and / or information and materials supplied by you and provide no warranty on the tested sample(s) be truly representative of the sample source. The report is not intended to be a recommendation for any particular course of action, you are responsible for acting as you see fit on the basis of the report results. Intertek is under no obligation to refer to or report upon any facts or circumstances which are outside the specific instructions received and accepts no responsibility to any parties whatsoever, following the issue of the report, for any matters arising outside the agreed scope of the works. This report does not discharge or release you from your legal obligations and duties to any other person. You are the only one authorized to permit copying or distribution of this report (and then only in its entirety). Any such third parties to whom this report may be circulated rely on the content of the report solely at their own risk

**Reporting Statements of Conformity:** Please note that the test results contain statement of conformity with the decision rules which are based on the specifications of customers, regulations and standards, and does not consider measurement uncertainty.

