Test Report

Applicant: Dongguan YINYAN Electric Tech.LTD

Contact information: EMAX Industrial Park, Gao-long Industrial Zone, Huanzhuli Village, Changping Town, Dongguan City, Guangdong Province, China

The following sample(s) was (were) submitted and identified by client as:

Sample Name	:	Tinyhawk 3
Model No.	:	Tinyhawk 3
Trade mark	:	EMAX
Manufacturer	:	Dongguan YINYAN Electric Tech.LTD
Address	:	EMAX Industrial Park, Gao-long Industrial Zone, Huanzhuli Village, Changping Town, Dongguan City, Guangdong Province, China
Sample Received Date	:	Sep. 24, 2021
Testing Period	:	From Sep. 24, 2021 to Sep. 28, 2021
Test Request	:	Please refer to next page(s).
Test Result(s)	:	Please refer to next page(s).

Shen Zhen UONE Test Co., LTD.

Prepared by	Checked by	Approved by
Max Wu	Lin Zhu	Levent Liang

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Summary of test results:

TEST REQUEST	CONCLUSION
RoHS Directive 2011/65/EU and its subsequent amendments Directive (EU) 2015/863	
(1) To determine Lead (Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)), Polybrominated Biphenyls (PBBs) and Polybrominated DiphenylEthers (PBDEs) content by screening test and chemical test	**PASS**
(2) To determine Phthalates (DBP, BBP, DEHP, DIBP) content by chemical test	**PASS**

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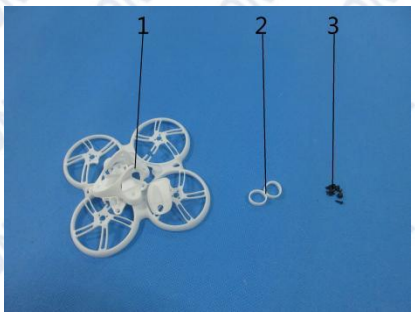
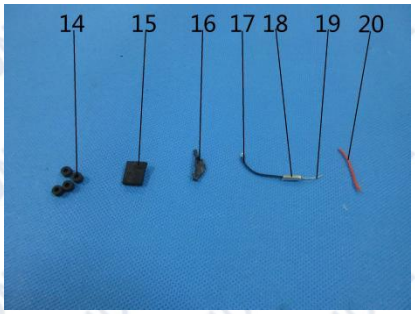
Test Material List

Material No.	Description (Location)	Photo(s) of tested materials
1	White plastic(shell)	
2	White soft plastic(rubber band)	
3	Silvery metal with black coating(screw)	
4	Red translucent plastic(fan)	
5	Silvery metal with black coating(shell,motor)	
6	Silvery magnet(motor)	
7	Silvery metal(axle,motor)	
8	Silvery metal(bearing,motor)	
9	Silvery metal sheet(motor)	
10	Coppery metal(coil,motor)	
11	Black soft plastic(wire jacket)	
12	White plastic(terminal holder)	
13	Silvery metal(terminal)	
14	Black soft plastic(wire jacket)	
15	Black adhesive foam(spacer)	
16	Black soft plastic(sleeve)	
17	Black soft plastic(wire jacket)	
18	Silvery metal(tube)	
19	Silvery metal(wire)	
20	Red soft plastic(wire jacket)	

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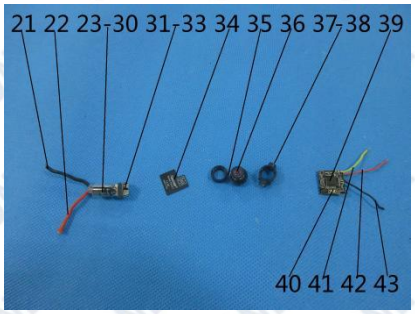
Material No.	Description (Location)	Photo(s) of tested materials
21	Black soft plastic(wire jacket)	
22	Red soft plastic(wire jacket)	
23	Translucent plastic(sleeve)	
24	Black plastic with white printing(sleeve, capacitor)	
25	Silvery metal(shell, capacitor)	
26	Black soft rubber(base, capacitor)	
27	Brown paper with liquid(film, capacitor)	
28	Silvery metal(foil, capacitor)	
29	Dull silvery metal(foil, capacitor)	
30	Silvery metal(pin, capacitor)	
31	Black plastic(shell,plug)	
32	White plastic(fixed)	
33	Silvery metal(pin)	
34	Black adhesive plastic(spacer)	
35	Silvery metal with black coating(shell,camera)	
36	Transparent glass(camera)	
37	Black plastic(pedestal,camera)	
38	Gold metal(nut,camera）	
39	Black body(IC,camera)	
40	Silvery body(crystal)	
41	Yellow soft plastic(wire jacket)	
42	Red soft plastic(wire jacket)	
43	Black soft plastic(wire jacket)	

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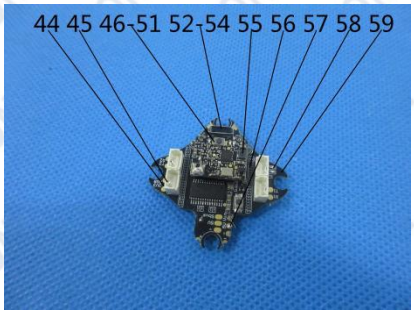
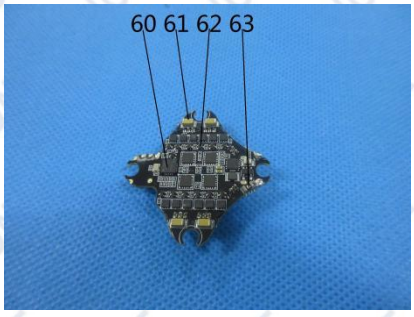
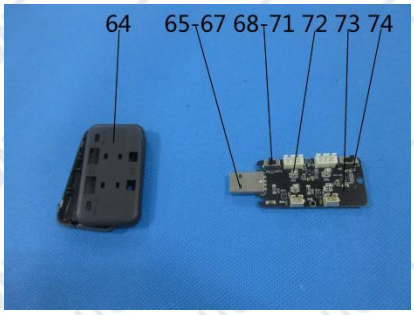
Material No.	Description (Location)	Photo(s) of tested materials
44	White plastic(fixed)	
45	Silvery metal(pin)	
46	Black plastic(button,switch)	
47	Silvery metal(shell,switch)	
48	Silvery metal sheet(switch)	
49	Translucent yellow plastic(tape,switch)	
50	Silvery metal(connector,switch)	
51	White plastic(pedestal,switch)	
52	Silvery metal(socket)	
53	Black plastic(fixed,switch)	
54	Silvery metal(pin)	
55	Black body(inductor)	
56	Black body(resistor)	
57	Silvery metal(solder)	
58	White body(LED)	
59	Black PCB	
60	Black body(IC)	
61	Brown body(capacitor)	
62	Black body(triode)	
63	Black body(diode)	

Material No.	Description (Location)	Photo(s) of tested materials
64	Black plastic(shell)	
65	Silvery metal(USB plug)	
66	White plastic(fixed)	
67	Silvery metal(pin)	
68	Black plastic(button,switch)	
69	Silvery metal(shell,switch)	
70	Silvery metal(connector,switch)	
71	Brown PCB(switch)	
72	Transparent body(LED)	
73	Black PCB	
74	Silvery metal(solder)	

Test Result(s):

(1) Lead (Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)), Polybrominated Biphenyls (PBBs) and Polybrominated DiphenylEthers (PBDEs)

Test Method: IEC62321-3-1: 2013, IEC62321-4: 2013+A1:2017, IEC62321-5: 2013, IEC62321-6: 2015,IEC 62321-7-1:2015, IEC 62321-7-2: 2017, analyzed by EDXRF & ICP-OES & GC-MS & UV-Vis.

No.	EDXRF Result (1)					Chemical Result (2) (mg/kg)	Remark(3)	Conclusion
	Pb	Cd	Hg	Cr	Br			
1	BL	BL	BL	BL	BL	—	—	PASS
2	BL	BL	BL	BL	BL	—	—	PASS
3	BL	BL	BL	BL	NA	—	—	PASS
4	BL	BL	BL	BL	BL	—	—	PASS
5	BL	BL	BL	BL	NA	—	—	PASS
6	BL	BL	BL	BL	BL	—	—	PASS
7	BL	BL	BL	BL	NA	—	—	PASS
8	BL	BL	BL	BL	NA	—	—	PASS
9	BL	BL	BL	BL	NA	—	—	PASS

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No.	EDXRF Result (1)					Chemical Result (2) (mg/kg)	Remark(3)	Conclusion
	Pb	Cd	Hg	Cr	Br			
10	BL	BL	BL	BL	NA	—	—	PASS
11	BL	BL	BL	BL	BL	—	—	PASS
12	BL	BL	BL	BL	BL	—	—	PASS
13	BL	BL	BL	BL	NA	—	—	PASS
14	BL	BL	BL	BL	BL	—	—	PASS
15	BL	BL	BL	BL	BL	—	—	PASS
16	BL	BL	BL	BL	BL	—	—	PASS
17	BL	BL	BL	BL	BL	—	—	PASS
18	BL	BL	BL	BL	NA	—	—	PASS
19	BL	BL	BL	BL	NA	—	—	PASS
20	BL	BL	BL	BL	BL	—	—	PASS
21	BL	BL	BL	BL	BL	—	—	PASS
22	BL	BL	BL	BL	BL	—	—	PASS
23	BL	BL	BL	BL	BL	—	—	PASS
24	BL	BL	BL	BL	BL	—	—	PASS
25	BL	BL	BL	BL	NA	—	—	PASS
26	BL	BL	BL	BL	BL	—	—	PASS
27	BL	BL	BL	BL	BL	—	—	PASS
28	BL	BL	BL	BL	NA	—	—	PASS
29	BL	BL	BL	BL	NA	—	—	PASS
30	BL	BL	BL	BL	NA	—	—	PASS
31	BL	BL	BL	BL	BL	—	—	PASS
32	BL	BL	BL	BL	BL	—	—	PASS
33	BL	BL	BL	BL	NA	—	—	PASS
34	BL	BL	BL	BL	BL	—	—	PASS
35	BL	BL	BL	BL	NA	—	—	PASS
36	BL	BL	BL	BL	BL	—	—	PASS

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No.	EDXRF Result (1)					Chemical Result (2) (mg/kg)	Remark(3)	Conclusion
	Pb	Cd	Hg	Cr	Br			
37	BL	BL	BL	BL	BL	—	—	PASS
38	OL	BL	BL	BL	NA	Pb: 28800#	Copper alloy	PASS
39	BL	BL	BL	BL	BL	—	—	PASS
40	BL	BL	BL	BL	BL	—	—	PASS
41	BL	BL	BL	BL	BL	—	—	PASS
42	BL	BL	BL	BL	BL	—	—	PASS
43	BL	BL	BL	BL	BL	—	—	PASS
44	BL	BL	BL	BL	BL	—	—	PASS
45	BL	BL	BL	BL	NA	—	—	PASS
46	BL	BL	BL	BL	BL	—	—	PASS
47	BL	BL	BL	BL	NA	—	—	PASS
48	BL	BL	BL	BL	NA	—	—	PASS
49	BL	BL	BL	BL	BL	—	—	PASS
50	BL	BL	BL	BL	NA	—	—	PASS
51	BL	BL	BL	BL	BL	—	—	PASS
52	BL	BL	BL	BL	NA	—	—	PASS
53	BL	BL	BL	BL	BL	—	—	PASS
54	BL	BL	BL	BL	NA	—	—	PASS
55	BL	BL	BL	BL	BL	—	—	PASS
56	BL	BL	BL	BL	BL	—	—	PASS
57	BL	BL	BL	BL	NA	—	—	PASS
58	BL	BL	BL	BL	BL	—	—	PASS
59	BL	BL	BL	BL	X	PBBs: N.D. PBDEs: N.D.	—	PASS
60	BL	BL	BL	BL	BL	—	—	PASS
61	BL	BL	BL	BL	BL	—	—	PASS
62	BL	BL	BL	BL	BL	—	—	PASS

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No.	EDXRF Result (1)					Chemical Result (2) (mg/kg)	Remark(3)	Conclusion
	Pb	Cd	Hg	Cr	Br			
63	BL	BL	BL	BL	BL	—	—	PASS
64	BL	BL	BL	BL	X	PBBs: N.D. PBDEs: N.D.	—	PASS
65	BL	BL	BL	BL	NA	—	—	PASS
66	BL	BL	BL	BL	BL	—	—	PASS
67	BL	BL	BL	BL	NA	—	—	PASS
68	BL	BL	BL	BL	BL	—	—	PASS
69	BL	BL	BL	BL	NA	—	—	PASS
70	BL	BL	BL	BL	NA	—	—	PASS
71	BL	BL	BL	BL	BL	—	—	PASS
72	BL	BL	BL	BL	BL	—	—	PASS
73	BL	BL	BL	BL	X	PBBs: N.D. PBDEs: N.D.	—	PASS
74	BL	BL	BL	BL	NA	—	—	PASS

Remark:

(1) ①Results are obtained by EDXRF for primary screening, and further wet chemical testing by ICP-OES (for Cd, Pb, Hg), UV-VIS (for Cr(VI)) and GC/MS (for PBBs, PBDEs) is recommended to be performed, if an inconclusive result was found (as “X” in below table) (unit: mg/kg).

②OL = Over Limit, BL = Below Limit, X = Inconclusive, NA = Not Applicable.

③The EDXRF screening test for RoHS elements – The reading may be different to the actual content in the sample be of non-uniformity composition.

Element	Polymer	Metal	Composite Materials
Cd	BL ≤(70-3σ)< X <(130+3σ)≤ OL	BL ≤(70-3σ)< X <(130+3σ)≤ OL	LOD < X <(150+3σ)≤ OL
Pb	BL ≤(700-3σ)< X <(1300+3σ)≤ OL	BL ≤(700-3σ)< X <(1300+3σ)≤ OL	BL ≤(500-3σ)< X <(1500+3σ)≤ OL
Hg	BL ≤(700-3σ)< X <(1300+3σ)≤ OL	BL ≤(700-3σ)< X <(1300+3σ)≤ OL	BL ≤(500-3σ)< X <(1500+3σ)≤ OL
Br	BL ≤ (300-3σ)< X	NA	BL ≤ (250-3σ)< X
Cr	BL ≤ (700-3σ)< X	BL ≤ (700-3σ)< X	BL ≤ (500-3σ)< X

Units and limits in EU RoHS Directive 2011/65/EU:

Element	Pb	Cd	Hg	Cr(VI)	PBBs(single)	PBDEs(single)
Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Limit	1000	100	1000	1000	1000	1000

(2) ① mg/kg = ppm = 0.0001%, N.D. = Not Detected (Less than MDL).

②Unit and MDL (Method detection limit) in wet chemical test.

Element	Pb	Cd	Hg	Cr(VI)	PBBs(single)	PBDEs(single)
Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
MDL	2	2	2	8	5	5

③According to IEC 62321-7-1:2015, result on Cr(VI) for metal sample is shown as Positive/Negative. Negative = Absence of Cr(VI) coating, Positive = Presence of Cr(VI) coating.
Storage condition and production date of the tested sample are unavailable and thus results of Cr(VI) represent status of the sample at the time of testing.

④ According to IEC 62321-3-1:2013, this column represents the results of wet chem test.

(3) This column represents the exempted decoration of material or other related testing sample's information. According to the declaration from the client, Lead in specimen(s) is exempted by RoHS Directive (2011/65 / EU) annex III and its amendment base on:

Copper alloy containing up to 4 % lead by weight.

(2) Phthalates (DBP, BBP, DEHP, DIBP) content

Test Method: IEC 62321-8: 2017, analyzed by gas chromatographic- mass spectrometer (GC-MS).

Substances	**DBP**	**BBP**	**DEHP**	**DIBP**	**Conclusion**
CAS No.	84-74-2	85-68-7	117-81-7	84-69-5	
Limit (mg/kg)	1000	1000	1000	1000	
MDL (mg/kg)	20	20	20	20	
Material No.	**Result (mg/kg)**				
1	N.D.	N.D.	N.D.	N.D.	PASS
2	N.D.	N.D.	N.D.	N.D.	PASS
4	N.D.	N.D.	N.D.	N.D.	PASS
6	N.D.	N.D.	N.D.	N.D.	PASS
11	N.D.	N.D.	N.D.	N.D.	PASS

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Substances	DBP	BBP	DEHP	DIBP	Conclusion
CAS No.	84-74-2	85-68-7	117-81-7	84-69-5	
Limit (mg/kg)	1000	1000	1000	1000	
MDL (mg/kg)	20	20	20	20	
Material No.	Result (mg/kg)				
12	N.D.	N.D.	N.D.	N.D.	PASS
14	N.D.	N.D.	N.D.	N.D.	PASS
15	N.D.	N.D.	N.D.	N.D.	PASS
16	N.D.	N.D.	N.D.	N.D.	PASS
17	N.D.	N.D.	N.D.	N.D.	PASS
20	170	N.D.	N.D.	N.D.	PASS
21	150	N.D.	N.D.	N.D.	PASS
22	157	N.D.	N.D.	N.D.	PASS
23	N.D.	N.D.	N.D.	N.D.	PASS
24	N.D.	N.D.	N.D.	N.D.	PASS
26	N.D.	N.D.	N.D.	N.D.	PASS
27	N.D.	N.D.	N.D.	N.D.	PASS
31	N.D.	N.D.	N.D.	N.D.	PASS
32	N.D.	N.D.	N.D.	N.D.	PASS
34	N.D.	N.D.	N.D.	N.D.	PASS
36	N.D.	N.D.	N.D.	N.D.	PASS
37	N.D.	N.D.	N.D.	N.D.	PASS
39	N.D.	N.D.	N.D.	N.D.	PASS
40	N.D.	N.D.	N.D.	N.D.	PASS
41	N.D.	N.D.	205	N.D.	PASS
42	N.D.	N.D.	210	N.D.	PASS
43	N.D.	N.D.	209	N.D.	PASS
44	N.D.	N.D.	N.D.	N.D.	PASS
46	N.D.	N.D.	N.D.	N.D.	PASS

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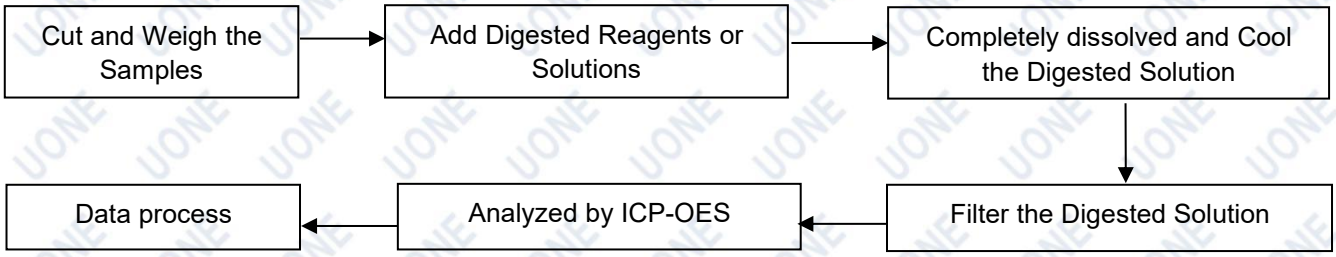
Substances	DBP	BBP	DEHP	DIBP	Conclusion
CAS No.	84-74-2	85-68-7	117-81-7	84-69-5	
Limit (mg/kg)	1000	1000	1000	1000	
MDL (mg/kg)	20	20	20	20	
Material No.	Result (mg/kg)				
49	N.D.	N.D.	N.D.	N.D.	PASS
51	N.D.	N.D.	N.D.	N.D.	PASS
53	N.D.	N.D.	N.D.	N.D.	PASS
55	N.D.	N.D.	N.D.	N.D.	PASS
56	N.D.	N.D.	N.D.	N.D.	PASS
58	N.D.	N.D.	N.D.	N.D.	PASS
59	N.D.	N.D.	N.D.	N.D.	PASS
60	N.D.	N.D.	N.D.	N.D.	PASS
61	N.D.	N.D.	N.D.	N.D.	PASS
62	N.D.	N.D.	N.D.	N.D.	PASS
63	N.D.	N.D.	N.D.	N.D.	PASS
64	N.D.	N.D.	N.D.	N.D.	PASS
66	N.D.	N.D.	N.D.	N.D.	PASS
68	N.D.	N.D.	N.D.	N.D.	PASS
71	N.D.	N.D.	N.D.	N.D.	PASS
72	N.D.	N.D.	N.D.	N.D.	PASS
73	N.D.	N.D.	N.D.	N.D.	PASS

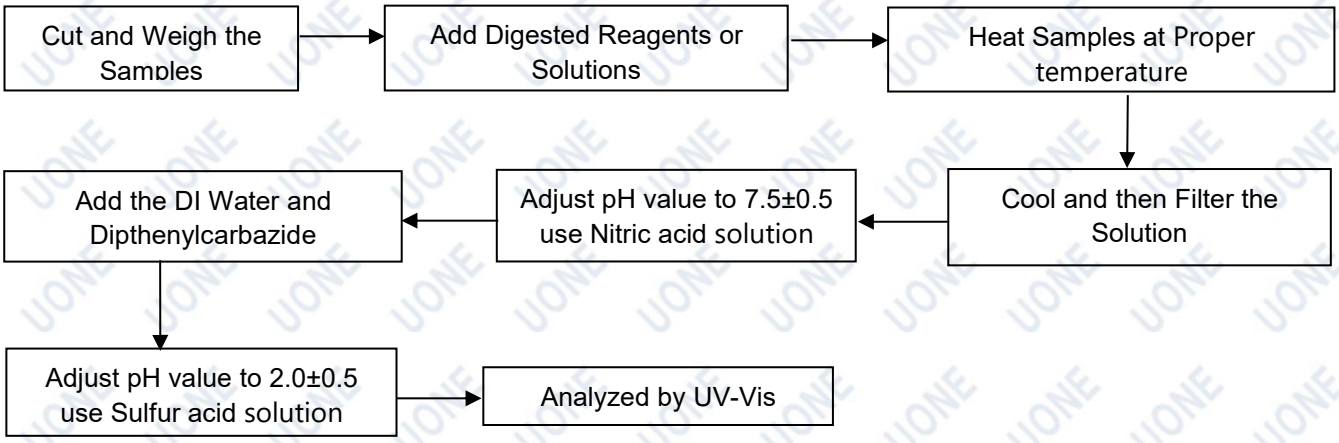
Note:
1. mg/kg = milligram per kilogram (ppm).
2. MDL= method detection limit.
3. N.D.=not detected(less than MDL).

Test Process Flow

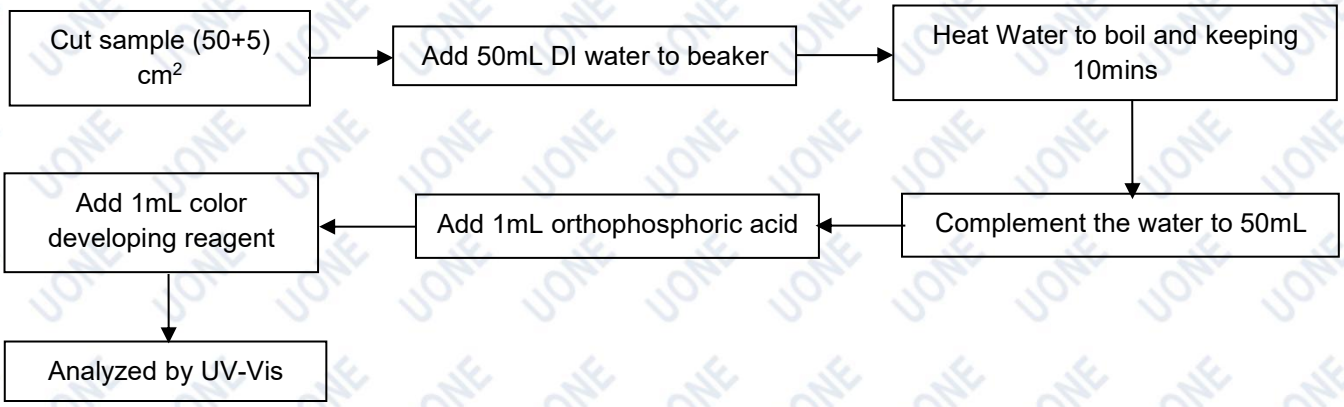
1. Lead, Cadmium, Mercury



2. Hexavalent Chromium (Non-metal)

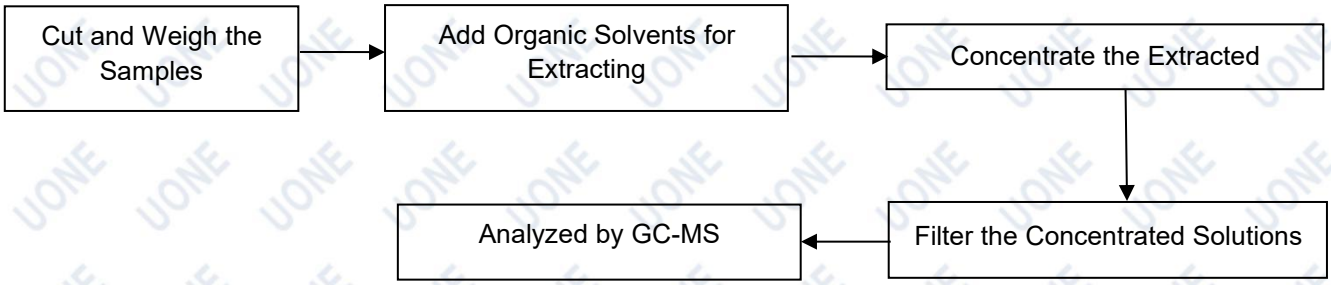


Hexavalent Chromium (Metal)



Test Process Flow (Continued):

3. PBBs & PBDEs, Phthalates



Photo(s) of Sample:

End of Report