



# Test Report

No.: ETR22100538

Date: 11-Jan-2022

Page: 1 of 12

RICHTEK TECHNOLOGY CORP.

14F, NO. 8, TAIYUEN 1ST., STREET, ZHUBEI CITY, HSINCHU COUNTY, TAIWAN 30288

The following sample(s) was/were submitted and identified by/on behalf of the applicant as:

Sample Submitted By : RICHTEK TECHNOLOGY CORP.  
Sample Name : RAW MATERIAL ICP DATA --- SILVER PASTE  
Style/Item No. : 84-1LMISR4/ AG03X7/ CRM-1033XX/ CRM-1151/ CRM-1076XX/  
CRM-1710/ 8360XX/ 84-3XX/ 8340XX/ 835X/ 8390XX/ 82XX/ 22XX/  
836X/ 2025D/ QMI-519/ QMI-XXX/ EN-49XXXX/ 8006XX/ 8008XXX/  
HP20VL/ EM7XX/ EM5XX/ABP8060/ ABP8062/ SP6xx/ DAF SERIALS

Sample Receiving Date : 04-Jan-2022  
Testing Period : 04-Jan-2022 to 11-Jan-2022

Test Requested : (1) As specified by client, with reference to RoHS 2011/65/EU Annex II and amending Directive (EU) 2015/863 to determine Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP contents in the submitted sample(s).

(2) Please refer to next pages for the other item(s).  
Test Results : Please refer to following pages.

Troy Chang  
Signed for and on behalf of  
SGS TAIWAN LTD.  
Chemical Laboratory - Taipei



PIN CODE: 36B36D16

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# Test Report

No.: ETR22100538

Date: 11-Jan-2022

Page: 2 of 12

RICHTEK TECHNOLOGY CORP.

14F, NO. 8, TAIYUEN 1ST., STREET, ZHUBEI CITY, HSINCHU COUNTY, TAIWAN 30288

## Test Part Description

No.1 : SILVER COLORED PASTE

## Test Result(s)

Test Item(s)	Method	Unit	MDL	Result
				No.1
Cadmium (Cd) (CAS No.: 7440-43-9)	With reference to IEC 62321-5: 2013, analysis was performed by ICP-OES.	mg/kg	2	n.d.
Lead (Pb) (CAS No.: 7439-92-1)	With reference to IEC 62321-5: 2013, analysis was performed by ICP-OES.	mg/kg	2	n.d.
Mercury (Hg) (CAS No.: 7439-97-6)	With reference to IEC 62321-4: 2013+AMD1: 2017, analysis was performed by ICP-OES.	mg/kg	2	n.d.
Hexavalent Chromium Cr(VI) (CAS No.: 18540-29-9)	With reference to IEC 62321-7-2: 2017, analysis was performed by UV-VIS.	mg/kg	8	n.d.
Monobromobiphenyl	With reference to IEC 62321-6: 2015, analysis was performed by GC/MS.	mg/kg	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.
Sum of PBBs		mg/kg	-	n.d.
Monobromodiphenyl ether		mg/kg	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.
Sum of PBDEs		mg/kg	-	n.d.

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# Test Report

No.: ETR22100538

Date: 11-Jan-2022

Page: 3 of 12

RICHTEK TECHNOLOGY CORP.

14F, NO. 8, TAIYUEN 1ST., STREET, ZHUBEI CITY, HSINCHU COUNTY, TAIWAN 30288

Test Item(s)	Method	Unit	MDL	Result
				No.1
Butyl benzyl phthalate (BBP) (CAS No.: 85-68-7)	With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.	mg/kg	50	n.d.
Dibutyl phthalate (DBP) (CAS No.: 84-74-2)		mg/kg	50	n.d.
Di-(2-ethylhexyl) phthalate (DEHP) (CAS No.: 117-81-7)		mg/kg	50	n.d.
Diisobutyl phthalate (DIBP) (CAS No.: 84-69-5)		mg/kg	50	n.d.
Diisodecyl phthalate (DIDP) (CAS No.: 26761-40-0, 68515-49-1)		mg/kg	50	n.d.
Diisononyl phthalate (DINP) (CAS No.: 28553-12-0, 68515-48-0)		mg/kg	50	n.d.
Di-n-octyl phthalate (DNOP) (CAS No.: 117-84-0)		mg/kg	50	n.d.
Di-ethyl phthalate (DEP) (CAS No.: 84-66-2)		mg/kg	50	n.d.
Dimethyl phthalate (DMP) (CAS No.: 131-11-3)		mg/kg	50	n.d.
Di-n-pentyl phthalate (DNPP) (CAS No.: 131-18-0)		mg/kg	50	n.d.
1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich (DIHP) (CAS No.: 71888-89-6)		mg/kg	50	n.d.
Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified ( $\alpha$ - HBCDD, $\beta$ - HBCDD, $\gamma$ - HBCDD) (CAS No.: 25637-99-4, 3194-55-6 (134237-51-7, 134237-50-6, 134237-52-8))	With reference to IEC 62321: 2008, analysis was performed by GC/MS.	mg/kg	5	n.d.
Fluorine (F) (CAS No.: 14762-94-8)	With reference to BS EN 14582: 2016, analysis was performed by IC.	mg/kg	50	n.d.
Chlorine (Cl) (CAS No.: 22537-15-1)		mg/kg	50	n.d.
Bromine (Br) (CAS No.: 10097-32-2)		mg/kg	50	n.d.
Iodine (I) (CAS No.: 14362-44-8)		mg/kg	50	n.d.
Red Phosphorus	Analysis was performed by Pyrolyzer-GC/MS.	**	-	Negative

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# Test Report

No.: ETR22100538

Date: 11-Jan-2022

Page: 4 of 12

RICHTEK TECHNOLOGY CORP.

14F, NO. 8, TAIYUEN 1ST., STREET, ZHUBEI CITY, HSINCHU COUNTY, TAIWAN 30288

Test Item(s)	Method	Unit	MDL	Result
				No.1
Antimony (Sb) (CAS No.: 7440-36-0)	With reference to US EPA 3050B: 1996, analysis was performed by ICP-OES.	mg/kg	2	n.d.
Beryllium (Be) (CAS No.: 7440-41-7)	With reference to US EPA 3050B: 1996, analysis was performed by ICP-OES.	mg/kg	2	n.d.

## Note :

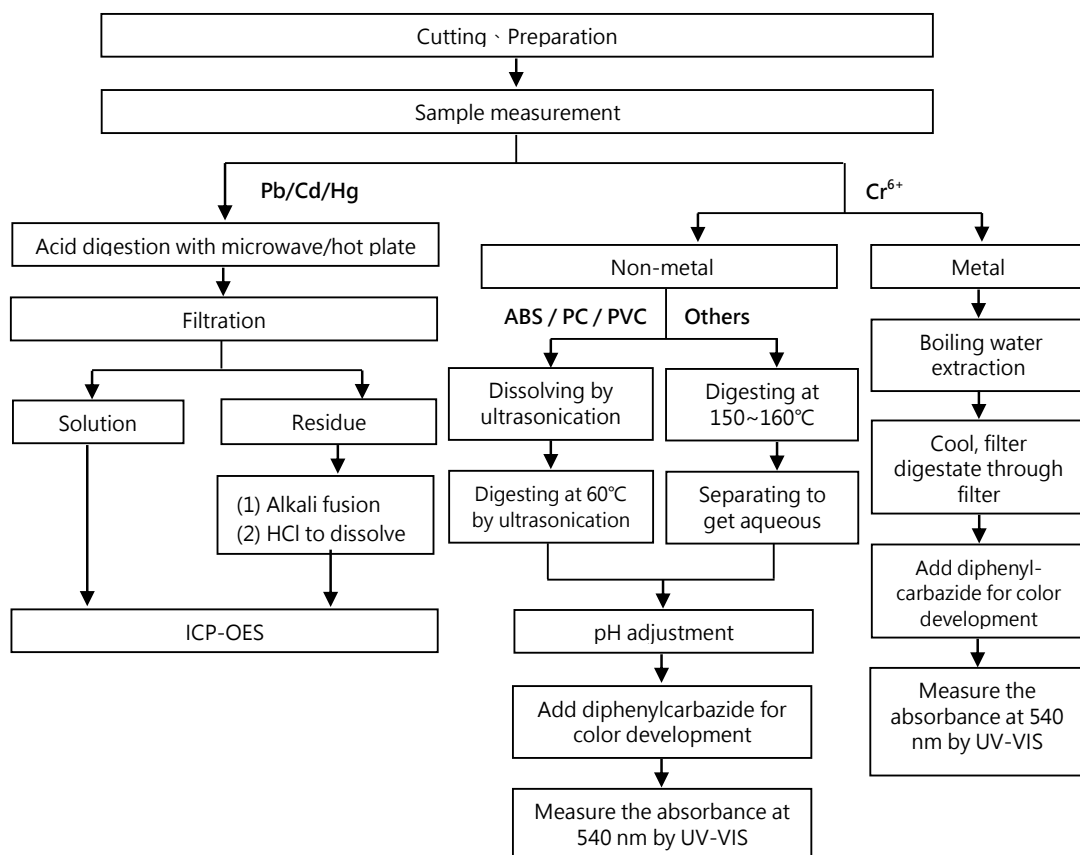
1. mg/kg = ppm ; 0.1wt% = 1000ppm
2. MDL = Method Detection Limit
3. n.d. = Not Detected ( Less than MDL)
4. "-" = Not Regulated
5. \*\*= Qualitative analysis (No Unit)
6. Negative = Undetectable ; Positive = Detectable

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## Analytical flow chart of Heavy Metal

These samples were dissolved totally by pre-conditioning method according to below flow chart.

(  $\text{Cr}^{6+}$  test method excluded )



# Test Report

No.: ETR22100538

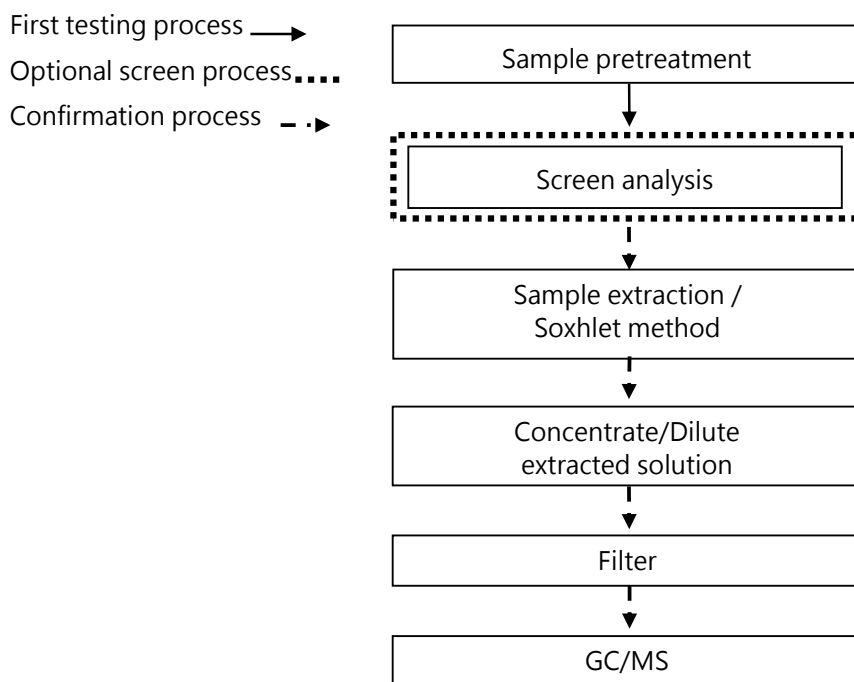
Date: 11-Jan-2022

Page: 6 of 12

RICHTEK TECHNOLOGY CORP.

14F, NO. 8, TAIYUEN 1ST., STREET, ZHUBEI CITY, HSINCHU COUNTY, TAIWAN 30288

## Analytical flow chart – PBBs / PBDEs



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# Test Report

No.: ETR22100538

Date: 11-Jan-2022

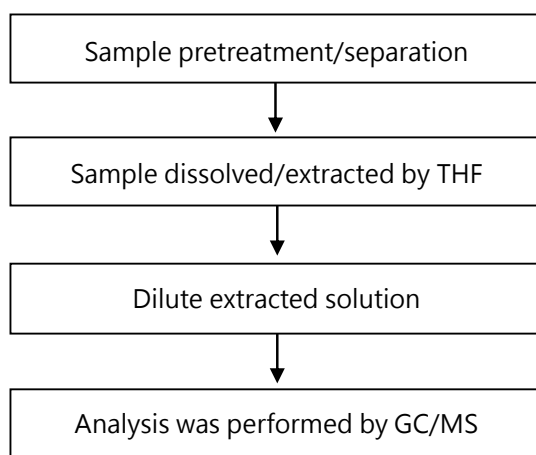
Page: 7 of 12

RICHTEK TECHNOLOGY CORP.

14F, NO. 8, TAIYUEN 1ST., STREET, ZHUBEI CITY, HSINCHU COUNTY, TAIWAN 30288

## Analytical flow chart - Phthalate

【Test method: IEC 62321-8】



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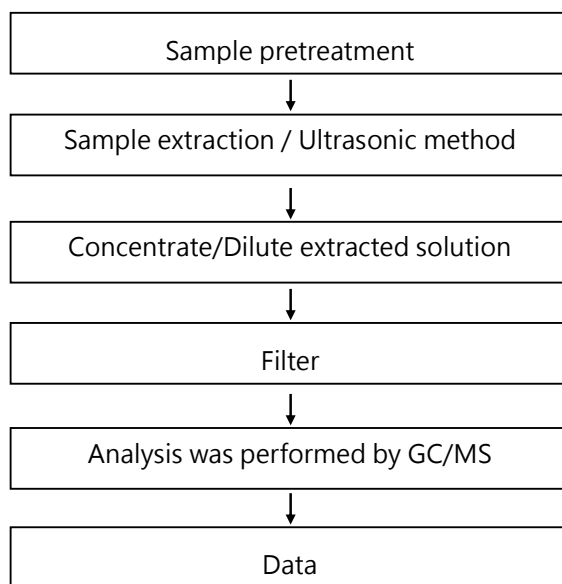
Date: 11-Jan-2022

Page: 8 of 12

RICHTEK TECHNOLOGY CORP.

14F, NO. 8, TAIYUEN 1ST., STREET, ZHUBEI CITY, HSINCHU COUNTY, TAIWAN 30288

## Analytical flow chart - HBCDD



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# Test Report

No.: ETR22100538

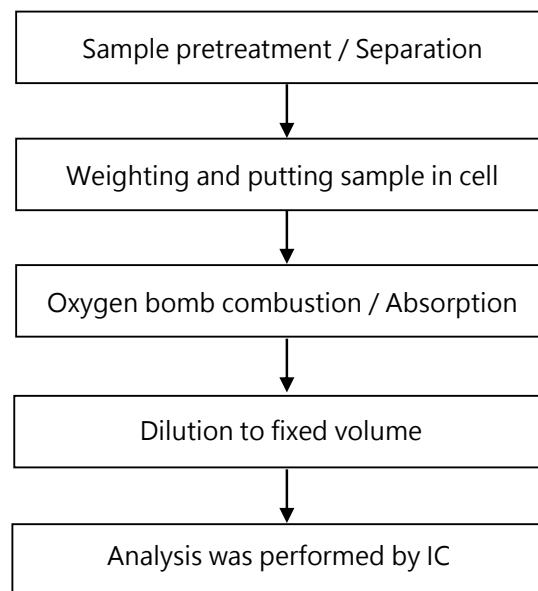
Date: 11-Jan-2022

Page: 9 of 12

RICHTEK TECHNOLOGY CORP.

14F, NO. 8, TAIYUEN 1ST., STREET, ZHUBEI CITY, HSINCHU COUNTY, TAIWAN 30288

## Analytical flow chart - Halogen



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# Test Report

No.: ETR22100538

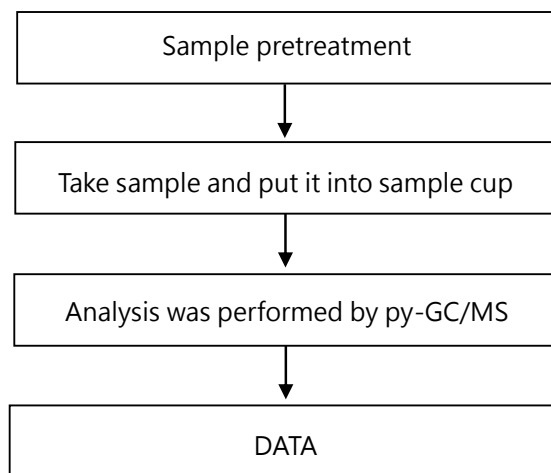
Date: 11-Jan-2022

Page: 10 of 12

RICHTEK TECHNOLOGY CORP.

14F, NO. 8, TAIYUEN 1ST., STREET, ZHUBEI CITY, HSINCHU COUNTY, TAIWAN 30288

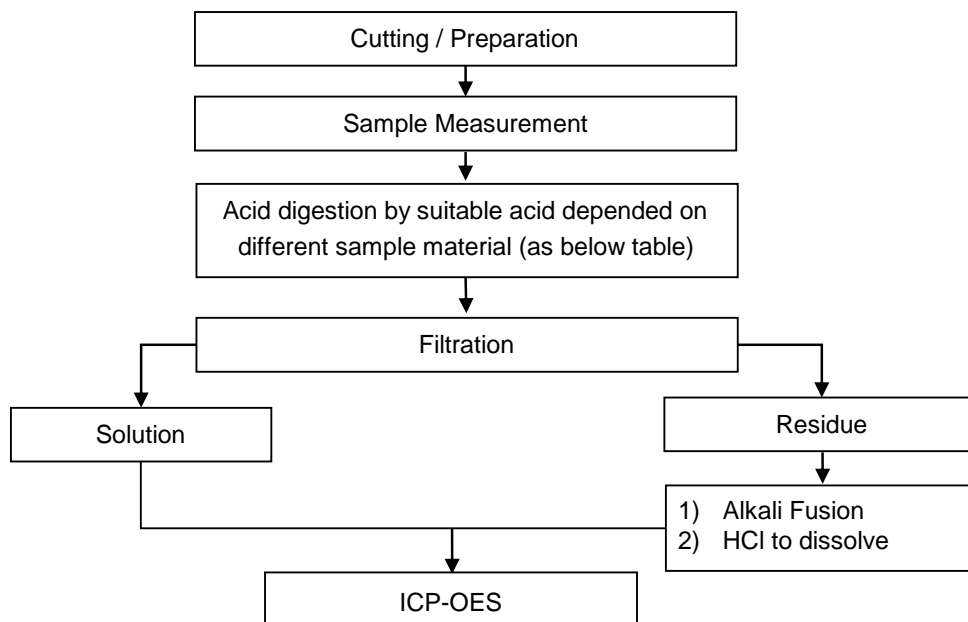
## Analytical flow chart - Red phosphorus



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## Flow Chart of digestion for the elements analysis performed by ICP-OES

These samples were dissolved totally by pre-conditioning method according to below flow chart.



Steel, copper, aluminum, solder	Aqua regia, HNO <sub>3</sub> , HCl, HF, H <sub>2</sub> O <sub>2</sub>
Glass	HNO <sub>3</sub> /HF
Gold, platinum, palladium, ceramic	Aqua regia
Silver	HNO <sub>3</sub>
Plastic	H <sub>2</sub> SO <sub>4</sub> , H <sub>2</sub> O <sub>2</sub> , HNO <sub>3</sub> , HCl
Others	Added appropriate reagent to total digestion

## Test Report

No.: ETR22100538

Date: 11-Jan-2022

Page: 12 of 12

RICHTEK TECHNOLOGY CORP.

14F, NO. 8, TAIYUEN 1ST., STREET, ZHUBEI CITY, HSINCHU COUNTY, TAIWAN 30288

\* The tested sample / part is marked by an arrow if it's shown on the photo. \*

### ETR22100538



\*\* End of Report \*\*

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