

**Test Report No.** 5456835

**Date** : 9-Jan-2023

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**Client : Thai Paper Co., Ltd.  
1 Siam Cemen Road  
Bangsue Bangkok 10800 Thailand**

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

Sample Name : BAC (CRYSTAL)  
Sample Description : Both Side Art Coated Paper (CRYSTAL)

The following sample(s) was/were identified by SGS as:

SGS Sample No. : 5708778  
Sample Condition : Sample is contained in a plastic bag.  
Quantity Submitted : 1 bag  
Sample Receiving Date : 30-Dec-2022  
Testing Period : 30-Dec-2022 to 09-Jan-2023

Test Requested : In accordance with the RoHS Directive 2011/65/EU (Annex II) [amended by Directive (EU) 2015/863] .Selected test (s) as requested by client.

Test Method : (1) Inhouse method: SOP no. LBCC-19015 based on IEC-62321-5 edition 1.0:2013-6 for Lead content, Analyzed by ICP-OES. Microwave digestion method  
(2) Inhouse method: SOP no. LBCC-19015 based on IEC-62321-5 edition 1.0:2013-6 for Cadmium content, Analyzed by ICP-OES. Microwave digestion method  
(3) Inhouse method: SOP no. LBCC-19015 based on IEC-62321-4 edition 1.1:2017-07 for Mercury Content, Analyzed by ICP-OES.  
(4) Inhouse method LBCC-19018 based on IEC-62321-7-2 edition 1.0:2017-03, determination of Hexavalent Chromium by Colorimetric Method. and/or Inhouse method LBCC-19015 based on IEC-62321-5 edition 1.0:2013-6, determination of Chromium  
(5) Inhouse method: SOP no. LBCC-19021 based on IEC-62321-6 edition 1.0:2015-06 for PBBs/PBDEs content, Analyzed by GC/MS.  
(6) Inhouse method: SOP no. LBCC-19022 based on IEC-62321-8 edition 1.0:2017-03 for Phthalates content, Analyzed was performed by GC/MS.

Test Results : Please refer to next page.

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**CONCLUSION**

Based on the performed tests on submitted sample(s), the results of Cadmium (Cd), Lead (Pb), Mercury (Hg), Hexavalent chromium (Cr-VI), Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs) and Phthalates such as Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP) comply with the limits as set by RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU where the decision rules based on simple acceptance which the probability of false accept may be as high as 50% in case the results is exactly on the tolerance limit.

**Signed for and on behalf of  
SGS (Thailand) Ltd.**



**Anchalee Wunnaphuek  
Acting – RSTS Lab Manager**

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**TEST RESULTS**

Test results by chemical method (Unit: mg/kg)

Test Item (s):	Method (Refer to)	Result (1)	MDL	RoHS Limit
Lead (Pb)	(1)	n.d.	2	1000
Cadmium (Cd)	(2)	n.d.	2	100
Mercury (Hg)	(3)	n.d.	2	1000
Hexavalent Chromium (Cr(VI))	(4)	n.d.	8	1000

Test Part Description  
Result (1) white paper

Note :

- (a) mg/kg = ppm ; 0.1wt% = 1000 ppm
- (b) n.d. = Not Detected (<MDL)
- (c) MDL = Method Detection Limit
- (d) The result of Hexavalent Chromium (Cr(VI)) is "ND" as the result of Chromium (Cr) is "ND", and confirmation test of Hexavalent Chromium (Cr(VI)) is not required.
- (e) If the Chromium (Cr) content is greater than the MDL of Hexavalent Chromium (Cr(VI)), confirmation test of Hexavalent Chromium (Cr(VI)) is required.
- (f) Test done on client submitted sample

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**TEST RESULTS**

Test results by chemical method (Unit: mg/kg)

Test Item (s):	Method (Refer to)	Result (1)	MDL	RoHS Limit
Sum of PBBs	(5)	n.d.	-	1000
Monobromobiphenyl		n.d.	5	-
Dibromobiphenyl		n.d.	5	-
Tribromobiphenyl		n.d.	5	-
Tetrabromobiphenyl		n.d.	5	-
Pentabromobiphenyl		n.d.	5	-
Hexabromobiphenyl		n.d.	5	-
Heptabromobiphenyl		n.d.	5	-
Octabromobiphenyl		n.d.	5	-
Nonabromobiphenyl		n.d.	5	-
Decabromobiphenyl		n.d.	5	-

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**TEST RESULTS**

Test results by chemical method (Unit: mg/kg)

Test Item (s):	Method (Refer to)	Result (1)	MDL	RoHS Limit
Sum of PBDEs	(5)	n.d.	-	1000
Monobromodiphenyl ether		n.d.	5	-
Dibromodiphenyl ether		n.d.	5	-
Tribromodiphenyl ether		n.d.	5	-
Tetrabromodiphenyl ether		n.d.	5	-
Pentabromodiphenyl ether		n.d.	5	-
Hexabromodiphenyl ether		n.d.	5	-
Heptabromodiphenyl ether		n.d.	5	-
Octabromodiphenyl ether		n.d.	5	-
Nonabromodiphenyl ether		n.d.	5	-
Decabromodiphenyl ether		n.d.	5	-

Test Part Description  
Result (1) white paper

- Note :
- (a) mg/kg = ppm ; 0.1 wt% = 1000 ppm
  - (b) n.d. = Not Detected
  - (c) MDL = Method Detection Limit
  - (d) "-" = Not regulated
  - (e) Test done on client submitted sample

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**TEST RESULTS**

**Phthalates Content for RoHS Directive 2011/65/EU Annex II [amended by Directive (EU) 2015/863], Analysis was performed by GC/MS.**

Analysis	Method (Refer to)	Result (1) (mg/kg)	MDL	RoHS Limit (mg/kg)
DBP (Di-butyl phthalate) (CAS No.: 84-74-2)	(6)	n.d.	50	1000
BBP (Benzyl butyl phthalate) (CAS No.: 85-68-7)	(6)	n.d.	50	1000
DEHP (Di-2-ethylhexyl phthalate) (CAS No.: 117-81-7)	(6)	n.d.	50	1000
DIBP (Di-isobutyl phthalate) (CAS No.: 84-69-5)	(6)	n.d.	50	1000

Test Part Description  
Result (1) white paper

Note :

- (a) mg/kg = ppm ; 0.1 wt% = 1000 ppm
- (b) n.d. = Not Detected
- (c) MDL = Method Detection Limit
- (d) Test done on client submitted sample

Remarks :

- (1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.
- (2) IEC 62321 series is equivalent to EN 62321 series.  
[https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP\\_ORG\\_ID,FSP\\_LANG\\_ID:1258637,25](https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP_ORG_ID,FSP_LANG_ID:1258637,25)
- (3) The restriction of DEHP, BBP, DBP and DIBP shall apply to medical devices, including in vitro medical devices, and monitoring and control instruments, including industrial monitoring and control instruments, from 22 July 2021

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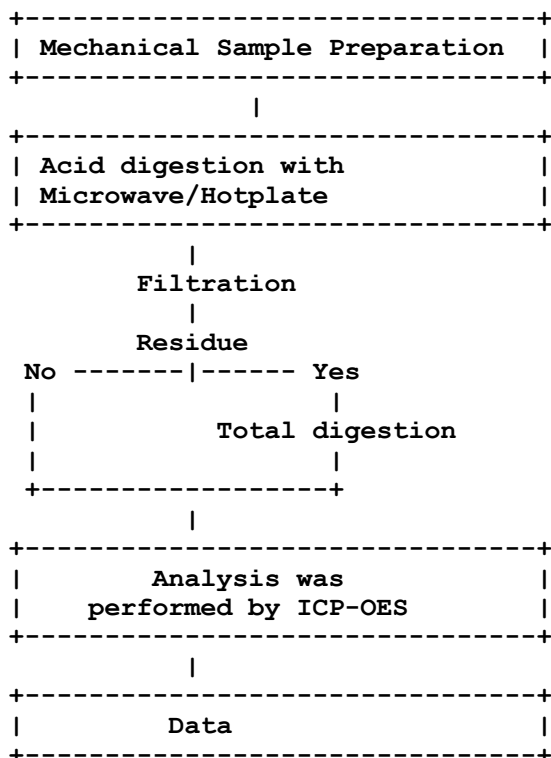
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**Flow chart of Pb,Cd,Hg Testing**

(Test method : IEC 62321)



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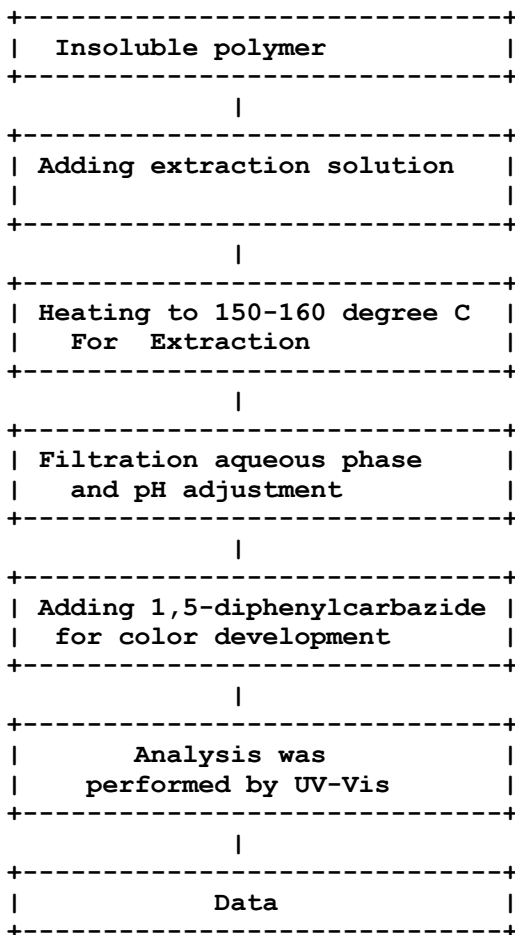
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**Flow chart of Hexavalent Chromium Testing**

(Test method : IEC 62321)



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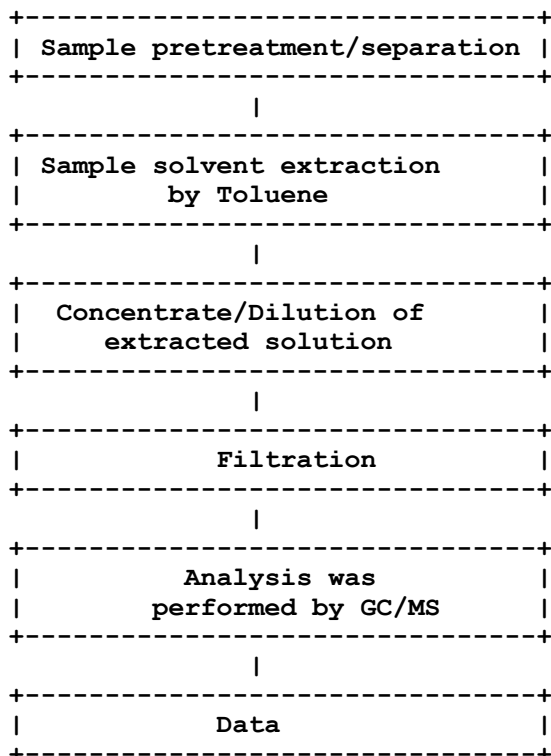
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Flow chart of PBBs, PBDEs Testing

(Test method : IEC 62321)



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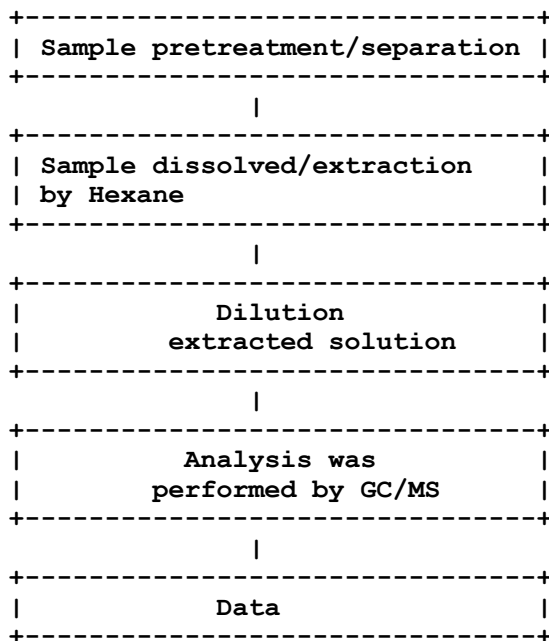
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Flow chart of Phthalates Testing

(Test method : IEC 62321)



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SAMPLE/ATTACHMENT PICTURE



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