

**Test Report No.** 4128497

**Date :** 18-Jan-2019

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**Client : Nan Mee Industry Co., Ltd.**  
**1121 Moo 6 Teparuksa Road**  
**T. Teparuksa, A. Muang Samutprakarn 10270 Thailand**

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

Sample Name : PERMANENT INK BLACK COLOR FOR MARKING PEN-REFILL  
 Manufacturer/Vendor : NAN MEE INDUSTRY CO.,LTD.  
 Country of Origin : THAILAND

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

SGS Sample No. : 4266560  
 Sample Condition : Sample is contained in a glass bottle.  
 Quantity Submitted : 1 bottle

Sample Receiving Date : 11-Jan-2019  
 Testing Period : 14-Jan-2019 to 18-Jan-2019

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) IEC 62321-5 edition 1.0 : 2013 for Lead content, Analyzed by ICP-OES.  
 Microwave digestion method  
 (2) IEC 62321-5 edition 1.0 : 2013 for Cadmium content, Analyzed by ICP-OES.  
 Microwave digestion method  
 (3) IEC 62321-4 ,edition 1.1 : 2017 for Mercury Content, Analyzed by ICP-OES.  
 Microwave digestion method  
 (4) IEC 62321-7-2 edition 1.0 : 2017,determination of Hexavalent Chromium For Insoluble polymer by Colorimetric Method using UV-Vis.and/or with reference to IEC 62321-5:2013,determination of Chromium by ICP-OES.  
 (5) IEC 62321-6 edition 1.0 : 2015 for PBBs/PBDEs content, Analyzed by GC/MS.  
 (6) IEC 62321-8 edition 1.0 : 2017 for Phthalates content,Analyzed was performed by GC/MS.

Test Results : Please refer to next page.

**CONCLUSION**

Based on the performed tests on submitted sample(s),the results of Cadmium,Lead,Mercury,Hexavalent chromium,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) to be in compliance with the limits as set by RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.

**Signed for and on behalf of**  
**SGS (Thailand) Limited**



**Patcharee Treeporncharoen**  
**Laboratory manager - Chemical**

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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) black ink

**Note :**

- (a) mg/kg = ppm ; 0.1wt% = 1000 ppm
- (b) n.d. = Not Detected (<MDL)
- (c) MDL = Method Detection Limit
- d) Tested done on dried sample
- (e) 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.
- (f) If the Chromium (Cr) content is greater than the MDL of Hexavalent Chromium (Cr(VI)), confirmation test of Hexavalent Chromium (Cr(VI)) is required.

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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) black ink

Note :

- (a) mg/kg = ppm ; 0.1 wt% = 1000 ppm
- (b) n.d. = Not Detected
- (c) MDL = Method Detection Limit
- (d) "-" = Not regulated
- (e) Tested done on dried 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 6)	Result (1) (mg/kg)	MDL	RoHS Limit (mg/kg)
DEHP (Di-2-ethylhexyl phthalate) (CAS No.: 117-81-7)	IEC 62321-8 , Edition 1.0 , 2017	n.d.	50	1000
BBP (Benzyl butyl phthalate) (CAS No.: 85-68-7)	IEC 62321-8 , Edition 1.0 , 2017	n.d.	50	1000
DBP (Di-butyl phthalate) (CAS No.: 84-74-2)	IEC 62321-8 , Edition 1.0 , 2017	n.d.	50	1000
DIBP (Di-isobutyl phthalate) (CAS No.: 84-69-5)	IEC 62321-8 , Edition 1.0 , 2017	n.d.	50	1000

Note :

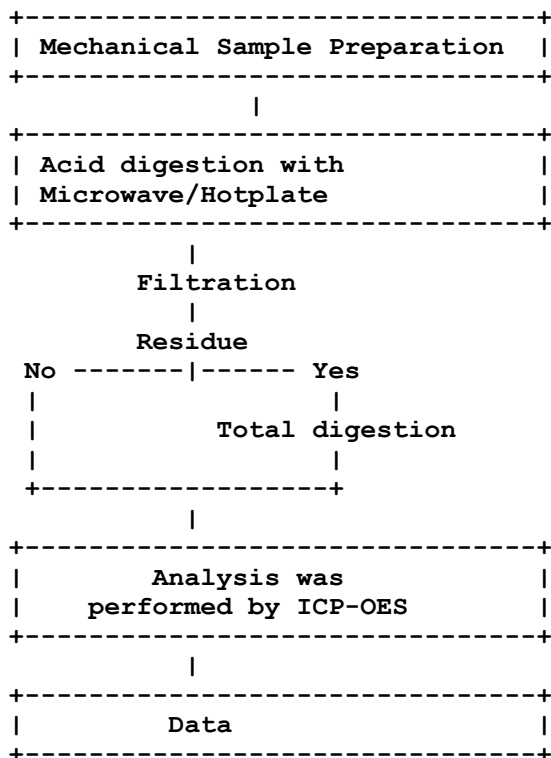
- (a) mg/kg = ppm ; 0.1 wt% = 1000 ppm
- (b) n.d. = Not Detected
- (c) MDL = Method Detection Limit
- (d) Result (1) black ink
- (e) Tested done on dried sample

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Flow chart of Pb,Cd,Hg Testing

(Test method : IEC 62321)



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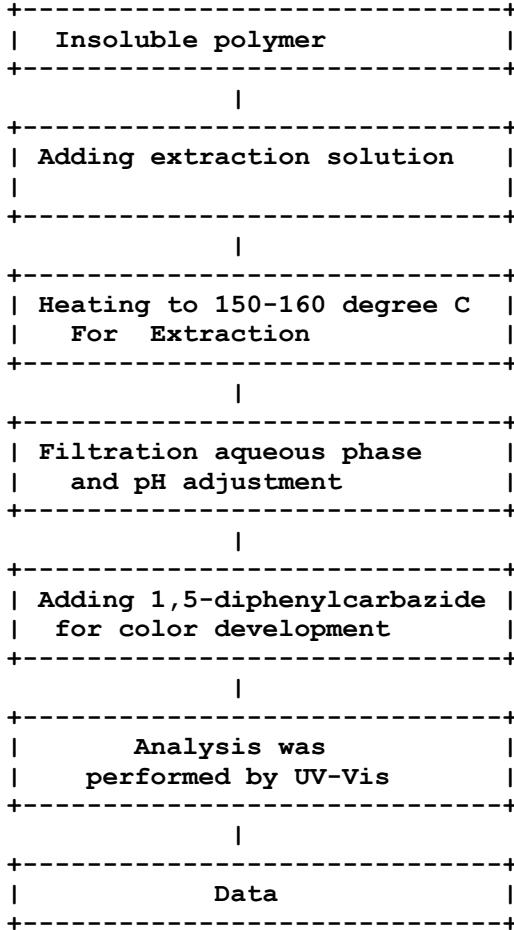
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Flow chart of Hexavalent Chromium Testing

(Test method : IEC 62321)



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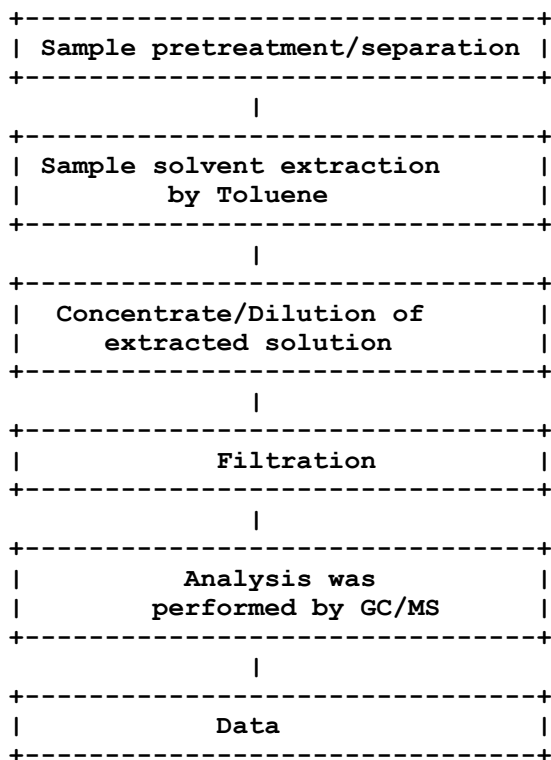
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Flow chart of PBBs, PBDEs Testing

(Test method : IEC 62321)



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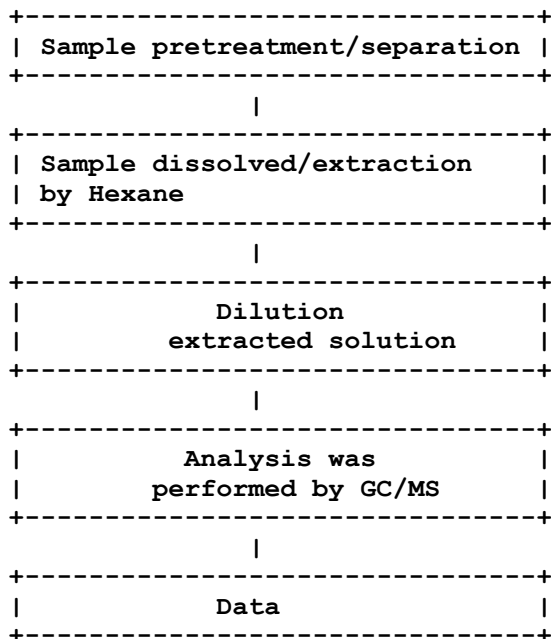
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Flow chart of Phthalates Testing

(Test method : IEC 62321)



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SAMPLE/ATTACHMENT PICTURE



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

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