



Test Report

No.: ETR21602388

Date: 28-Jun-2021

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NANTONG HORNBY ELECTRONIC CO.,LTD
SMARTENGRAND LTD.

NO.8, XING YUAN ROAD,RUCHENG INDUSTRIAL ZONE, RUGAO CITY, JIANGSU PROVINCE, P. R. C.
NO. 168, SEC. 2, ZHONGZHENG ROAD, SANXIA DISTRICT, NEW TAIPEI CITY, TAIWAN, R. O. C.

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

Sample Submitted By : NANTONG HORNBY ELECTRONIC CO.,LTD
Sample Name : GLASS SLEEVE \ LEAD WIRE
Used For. : DIODE (DO-34,DO-35,DO-41G,LS-31(Micro-MELF),LS-34(Quadro-MELF),
LL-34(Mini-MELF),LL-41(MELF))

=====
Sample Receiving Date : 15-Jun-2021
Testing Period : 15-Jun-2021 to 24-Jun-2021

Test Requested : 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).
Test Results : Please refer to following pages.
Conclusion : Based on the performed tests on submitted sample(s) and the declaration from the applicant, the test results of Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP comply with the limits as set by RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU with the exemption of Annex III 7(c)-I 【No.1】.


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



PIN CODE: 3CFDF334

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Test Part Description

- No.1 : TRANSPARENT GLASS (GLASS SLEEVE)
- No.2 : COPPER COLORED METAL (INCLUDING THE PLATING LAYER) (LEAD WIRE)

Test Result(s)

Test Item(s)	Method	Unit	MDL	Result		Limit
				No.1	No.2	
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.	n.d.	100
Lead (Pb) (CAS No.: 7439-92-1)	With reference to IEC 62321-5: 2013, analysis was performed by ICP-OES.	mg/kg	2	521000	---	(*E)
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.	1000
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.	n.d.	1000
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.	---	1000
Hexavalent Chromium Cr(VI) (CAS No.: 18540-29-9) (#2)	With reference to IEC 62321-7-1: 2015, analysis was performed by UV-VIS.	µg/cm ²	0.1	---	n.d.	-
Monobromobiphenyl	With reference to IEC 62321-6: 2015, analysis was performed by GC/MS.	mg/kg	5	n.d.	n.d.	-
Dibromobiphenyl		mg/kg	5	n.d.	n.d.	-
Tribromobiphenyl		mg/kg	5	n.d.	n.d.	-
Tetrabromobiphenyl		mg/kg	5	n.d.	n.d.	-
Pentabromobiphenyl		mg/kg	5	n.d.	n.d.	-
Hexabromobiphenyl		mg/kg	5	n.d.	n.d.	-
Heptabromobiphenyl		mg/kg	5	n.d.	n.d.	-
Octabromobiphenyl		mg/kg	5	n.d.	n.d.	-
Nonabromobiphenyl		mg/kg	5	n.d.	n.d.	-
Decabromobiphenyl		mg/kg	5	n.d.	n.d.	-
Sum of PBBs		mg/kg	-	n.d.	n.d.	1000

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Test Item(s)	Method	Unit	MDL	Result		Limit
				No.1	No.2	
Monobromodiphenyl ether	With reference to IEC 62321-6: 2015, analysis was performed by GC/MS.	mg/kg	5	n.d.	n.d.	-
Dibromodiphenyl ether		mg/kg	5	n.d.	n.d.	-
Tribromodiphenyl ether		mg/kg	5	n.d.	n.d.	-
Tetrabromodiphenyl ether		mg/kg	5	n.d.	n.d.	-
Pentabromodiphenyl ether		mg/kg	5	n.d.	n.d.	-
Hexabromodiphenyl ether		mg/kg	5	n.d.	n.d.	-
Heptabromodiphenyl ether		mg/kg	5	n.d.	n.d.	-
Octabromodiphenyl ether		mg/kg	5	n.d.	n.d.	-
Nonabromodiphenyl ether		mg/kg	5	n.d.	n.d.	-
Decabromodiphenyl ether		mg/kg	5	n.d.	n.d.	-
Sum of PBDEs		mg/kg	-	n.d.	n.d.	1000
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.	n.d.
Dibutyl phthalate (DBP) (CAS No.: 84-74-2)	With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.	mg/kg	50	n.d.	n.d.	1000
Di-(2-ethylhexyl) phthalate (DEHP) (CAS No.: 117-81-7)	With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.	mg/kg	50	n.d.	n.d.	1000
Diisobutyl phthalate (DIBP) (CAS No.: 84-69-5)	With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.	mg/kg	50	n.d.	n.d.	1000

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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. "---" = Not Conducted
6. (#2) =
 - a. The sample is positive for Cr(VI) if the Cr(VI) concentration is greater than 0.13 $\mu\text{g}/\text{cm}^2$. The sample coating is considered to contain Cr(VI).
 - b. The sample is negative for Cr(VI) if Cr(VI) is n.d. (concentration less than 0.10 $\mu\text{g}/\text{cm}^2$). The coating is considered a non-Cr(VI) based coating
 - c. The result between 0.10 $\mu\text{g}/\text{cm}^2$ and 0.13 $\mu\text{g}/\text{cm}^2$ is considered to be inconclusive - unavoidable coating variations may influence the determination.
7. The statement of compliance conformity is based on comparison of testing results and limits.
8. (*E): By client's claim, it is on the RoHS exemption list.

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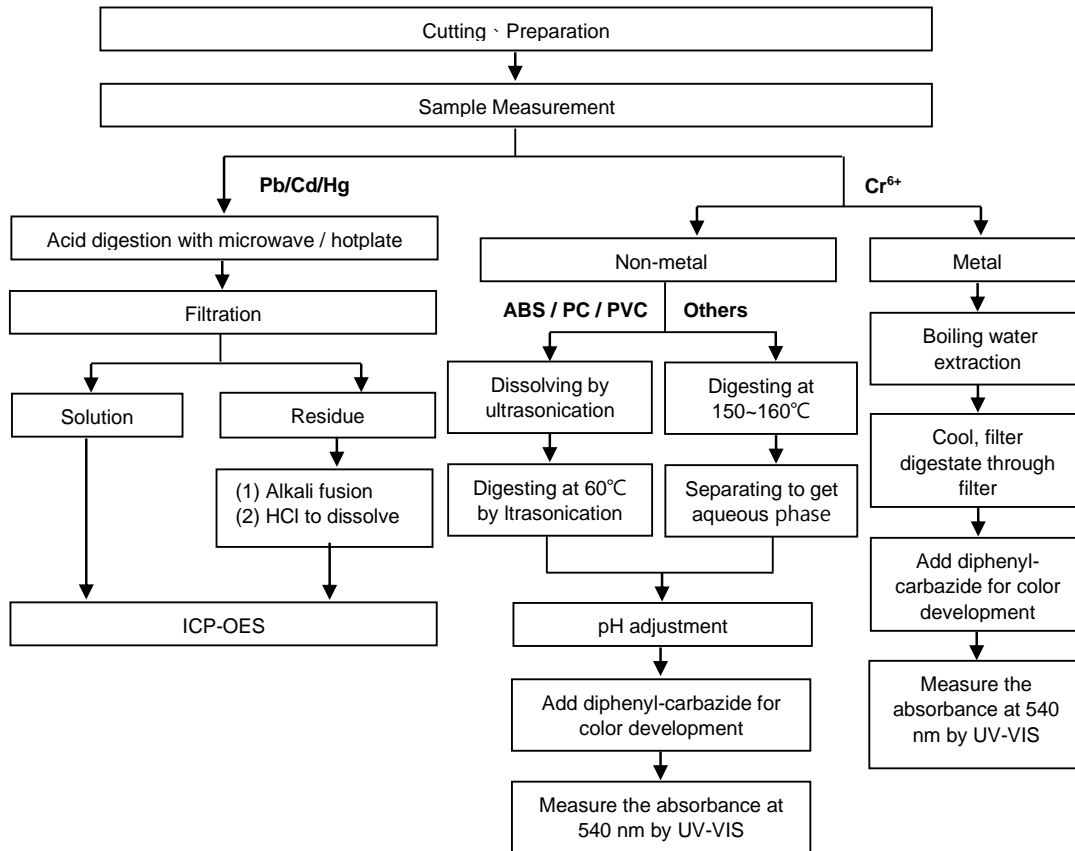
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Analytical flow chart of Heavy Metal

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

(Cr⁶⁺ test method excluded)

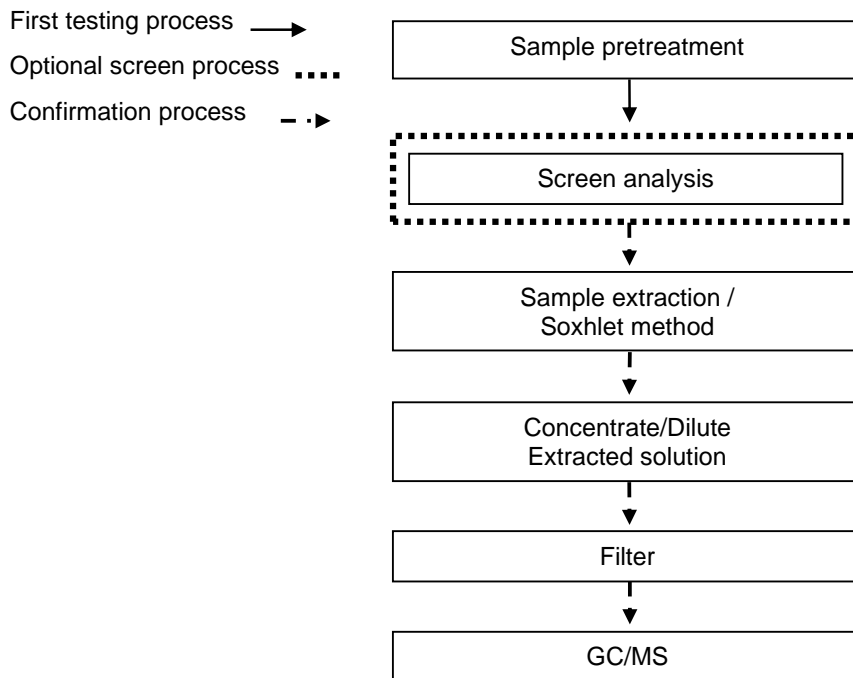


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Analytical flow chart – PBBs / PBDEs



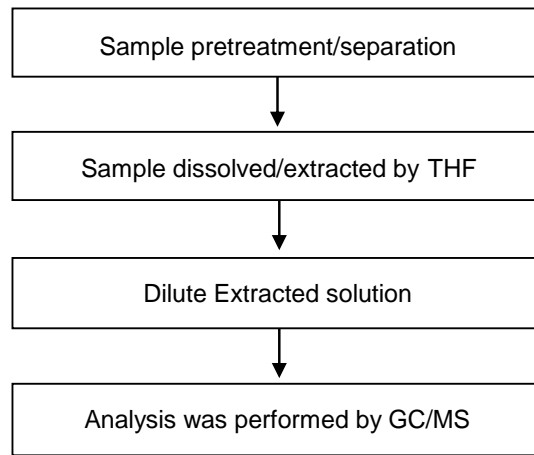
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Analytical flow chart - Phthalate

【Test method: IEC 62321-8】



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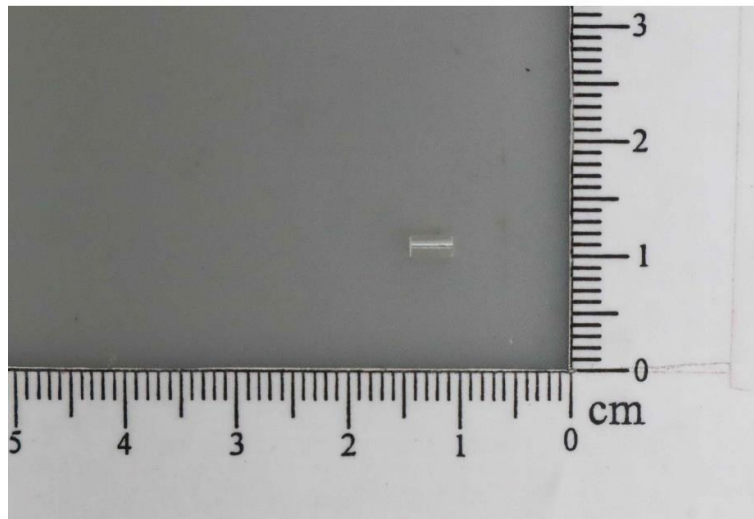
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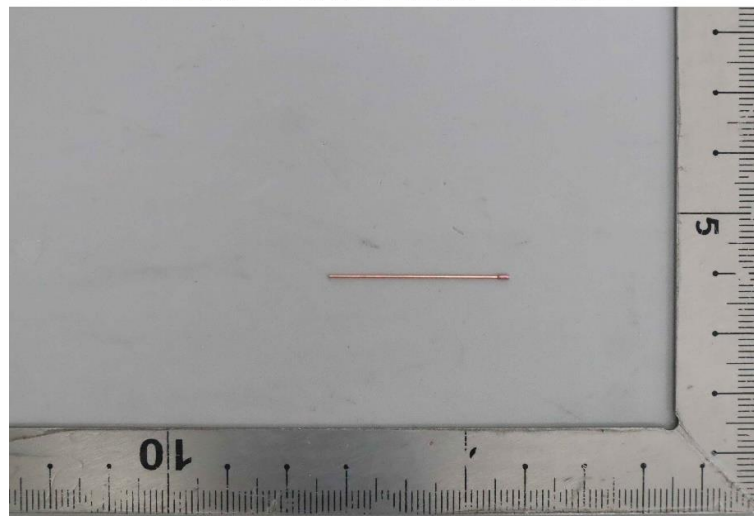
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* The tested sample / part is marked by an arrow if it's shown on the photo. *

ETR21602388 NO.1



ETR21602388 NO.2



** End of Report **

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