

Test Report No. 4833106

Date : 4-Feb-2021

Page 1 of 11

Client : Terminal Lugs Co.,Ltd
110/6 Moo2 Krungnont-Jongthanom Road
Mahasawat , Bangkruay Nonthaburi 11130 Thailand

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

Sample Name : INSULATED (Black PVC)
 Client Reference Informat: INSULATED RING TERMINALS, INSULATED SPADE TERMINALS
 Country of Origin : THAILAND

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

SGS Sample No. : 5019135
 Sample Condition : Sample is contained in a plastic bag.
 Quantity Submitted : 1 bag

Sample Receiving Date : 27-Jan-2021
 Testing Period : 28-Jan-2021 to 04-Feb-2021

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 Soluble polymer by Colorimetric Method using UV-Vis.
 (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.

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4534819

Test Report No. 4833106

Date : 4-Feb-2021

Page 2 of 11

CONCLUSION

Based on the performed tests on selected part of 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.

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



**Patcharee Treeporncharoen
Laboratory manager - Chemical**

4534819

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Test Report No. 4833106

Date : 4-Feb-2021

Page 3 of 11

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 plastic

Note :

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

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4534819

Test Report No. 4833106

Date : 4-Feb-2021

Page 4 of 11

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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4534819

Test Report No. 4833106

Date : 4-Feb-2021

Page 5 of 11

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 plastic

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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4534819

Test Report No. 4833106

Date : 4-Feb-2021

Page 6 of 11
TEST RESULTS
Phthalates Content for RoHS Directive 2011/65/EU Annex II [amended by Directive (EU) 2015/863], Analysis was performed by GC/MS.

Test item (s) :	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 plastic
- (e) 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
- (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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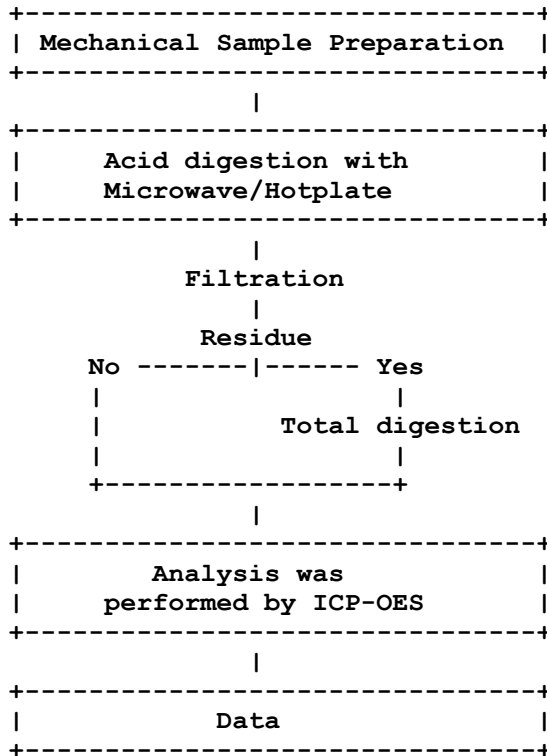
Test Report No. 4833106

Date : 4-Feb-2021

Page 7 of 11

Flow chart of Pb,Cd,Hg Testing

(Test method : IEC 62321)



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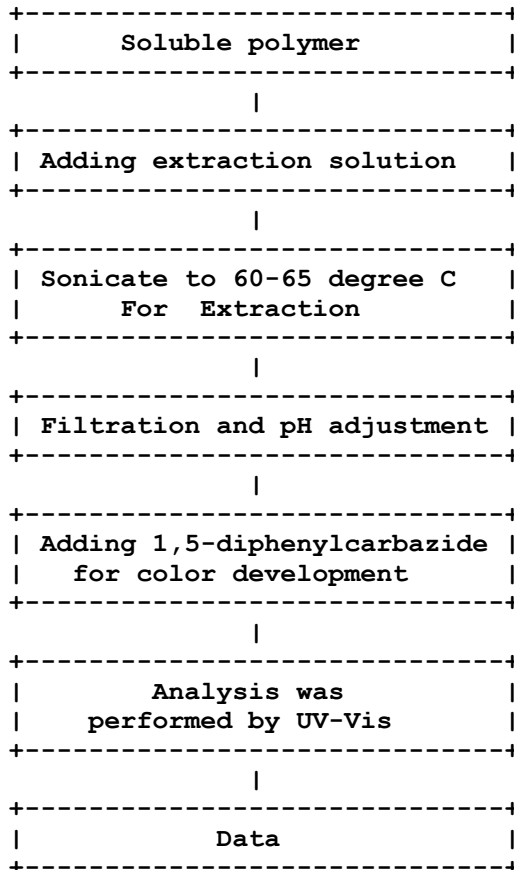
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Flow chart of Hexavalent Chromium Testing

(Test method : IEC 62321)



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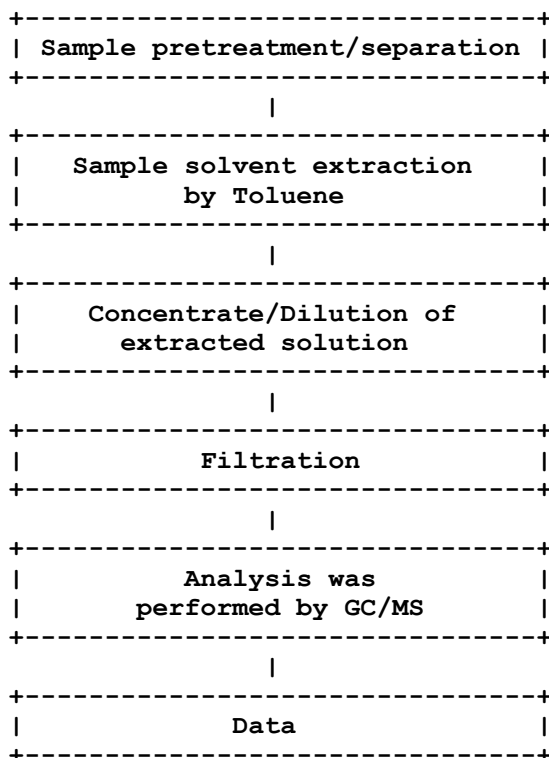
Test Report No. 4833106

Date : 4-Feb-2021

Page 9 of 11

Flow chart of PBBs, PBDEs Testing

(Test method : IEC 62321)



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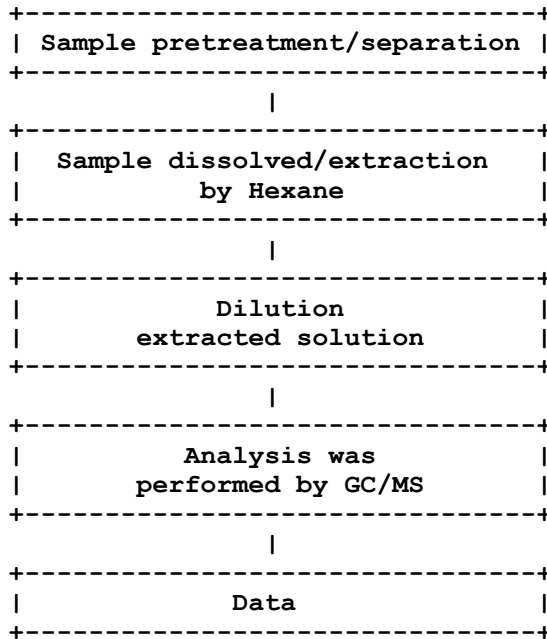
Test Report No. 4833106

Date : 4-Feb-2021

Page 10 of 11

Flow chart of Phthalates Testing

(Test method : IEC 62321)



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4534819

Test Report No. 4833106

Date : 4-Feb-2021

Page 11 of 11

SAMPLE/ATTACHMENT PICTURE



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

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