

## Test Report

No. : CE/2015/45062

Date : 2015/05/04

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VOLTIVO GROUP LTD.

84-11F, NO. 52, SEC. 4, REN AI ROAD, 10685 TAIPEI, TAIWAN (R.O.C.)



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

Sample Submitted By : VOLTIVO GROUP LTD.  
Sample Description : EXCELFIL 3D PRINTING FILAMENT  
Style/Item No. : EF-PLA/ABS-300/175  
Sample Receiving Date : 2015/04/24  
Testing Period : 2015/04/24 TO 2015/05/04

### Test Requested

- (1) As specified by client, with reference to RoHS Directive 2011/65/EU Annex II to determine Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs contents in the submitted sample.
- (2) As specified by client, with reference to G/TBT/N/EU/256 of WTO/TBT to test DBP, BBP, DEHP, DIBP.
- (3) Please refer to next pages for the other item(s).

### Test Method

: Please refer to next page(s).

### Test Result(s)

: Please refer to next page(s).

### Conclusion

- (1) Based on the performed tests on submitted samples, the test result(s) of Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs comply with the limits as set by RoHS Directive 2011/65/EU Annex II.
- (2) Based on the performed tests on submitted samples, the test results of DBP, BBP, DEHP, DIBP comply with the limits as set by G/TBT/N/EU/256 of WTO/TBT.

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

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## Test Result(s)

PART NAME No.1 : BLACK PLASTIC

Test Item(s)	Unit	Method	MDL	Result	Limit
				No.1	
Cadmium (Cd)	mg/kg	With reference to IEC 62321-5: 2013 and performed by ICP-AES.	2	n.d.	100
Lead (Pb)	mg/kg	With reference to IEC 62321-5: 2013 and performed by ICP-AES.	2	n.d.	1000
Mercury (Hg)	mg/kg	With reference to IEC 62321-4: 2013 and performed by ICP-AES.	2	n.d.	1000
Hexavalent Chromium Cr(VI)	mg/kg	With reference to IEC 62321: 2008 and performed by UV-VIS.	2	n.d.	1000
BBP (Butyl Benzyl phthalate) (CAS No.: 85-68-7)	mg/kg	With reference to IEC 62321-8 (111/321/CD). Analysis was performed by GC/MS.	50	n.d.	1000
DBP (Dibutyl phthalate) (CAS No.: 84-74-2)	mg/kg	With reference to IEC 62321-8 (111/321/CD). Analysis was performed by GC/MS.	50	n.d.	1000
DEHP (Di- (2-ethylhexyl) phthalate) (CAS No.: 117-81-7)	mg/kg	With reference to IEC 62321-8 (111/321/CD). Analysis was performed by GC/MS.	50	n.d.	1000
DIBP (Di-isobutyl phthalate) (CAS No.: 84-69-5)	mg/kg	With reference to IEC 62321-8 (111/321/CD). Analysis was performed by GC/MS.	50	n.d.	1000
DIDP (Di-isodecyl phthalate) (CAS No.: 26761-40-0; 68515-49-1)	mg/kg	With reference to IEC 62321-8 (111/321/CD). Analysis was performed by GC/MS.	50	n.d.	-
DINP (Di-isononyl phthalate) (CAS No.: 28553-12-0; 68515-48-0)	mg/kg	With reference to IEC 62321-8 (111/321/CD). Analysis was performed by GC/MS.	50	n.d.	-
DNOP (Di-n-octyl phthalate) (CAS No.: 117-84-0)	mg/kg	With reference to IEC 62321-8 (111/321/CD). Analysis was performed by GC/MS.	50	n.d.	-

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Test Item(s)	Unit	Method	MDL	Result	Limit	
				No.1		
<b>Sum of PBBs</b>	mg/kg	With reference to IEC 62321: 2008 and performed by GC/MS.	-	n.d.	1000	
Monobromobiphenyl	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.	-	
<b>Sum of PBDEs</b>	mg/kg			-	n.d.	1000
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.	-	

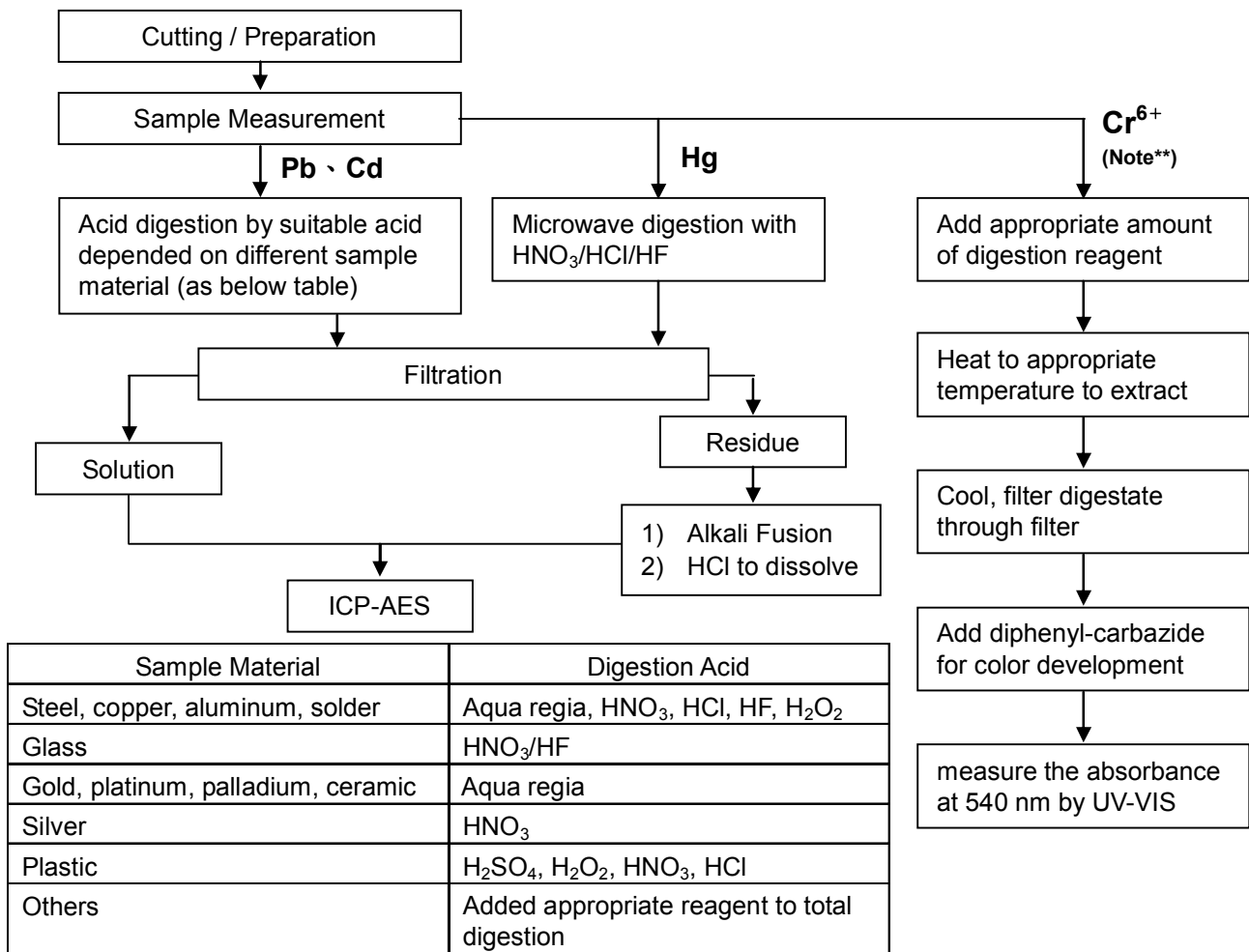
**Note :**

1. mg/kg = ppm ; 0.1wt% = 1000ppm
2. n.d. = Not Detected
3. MDL = Method Detection Limit
4. " - " = Not Regulated

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- 1) These samples were dissolved totally by pre-conditioning method according to below flow chart.  
(Cr<sup>6+</sup> test method excluded)
- 2) Name of the person who made measurement: Climbgreat Yang
- 3) Name of the person in charge of measurement: Troy Chang



**Note\*\* (For IEC 62321)**

- (1) For non-metallic material, add alkaline digestion reagent and heat to 90~95 °C.
- (2) For metallic material, add pure water and heat to boiling.

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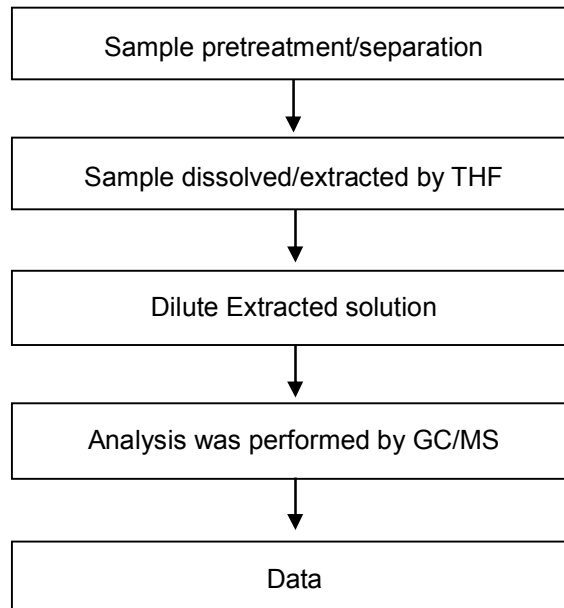
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### Analytical flow chart of phthalate content

- Name of the person who made measurement: Andy Shu
- Name of the person in charge of measurement: Troy Chang

#### 【Test method: IEC 62321-8】

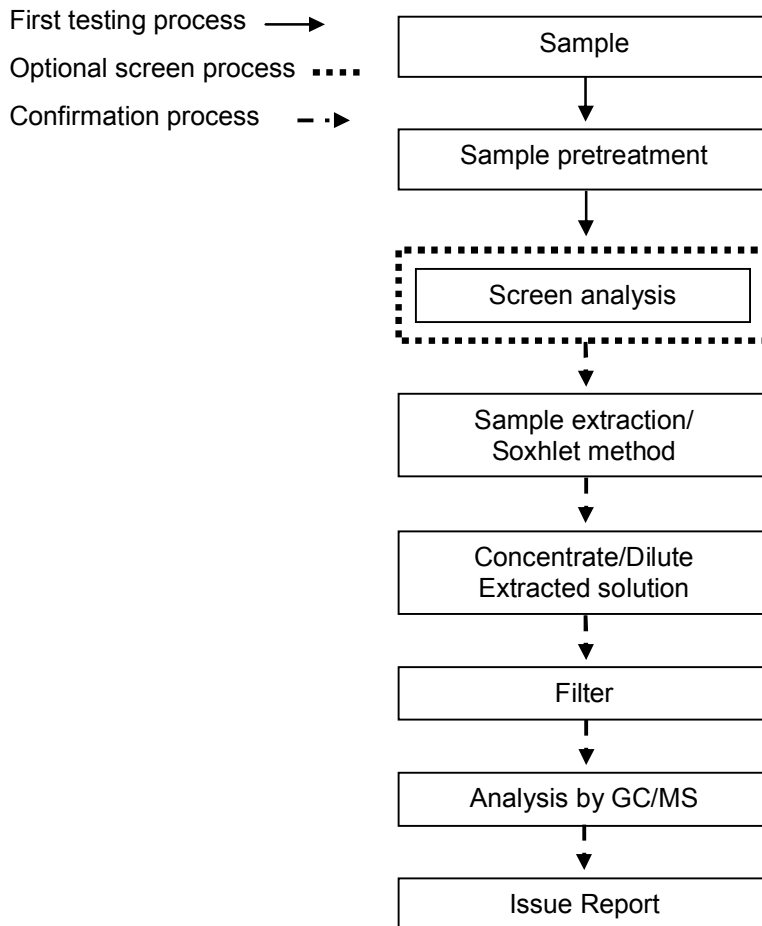


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### PBB/PBDE analytical FLOW CHART

- Name of the person who made measurement: Roman Wong
- Name of the person in charge of measurement: Troy Chang



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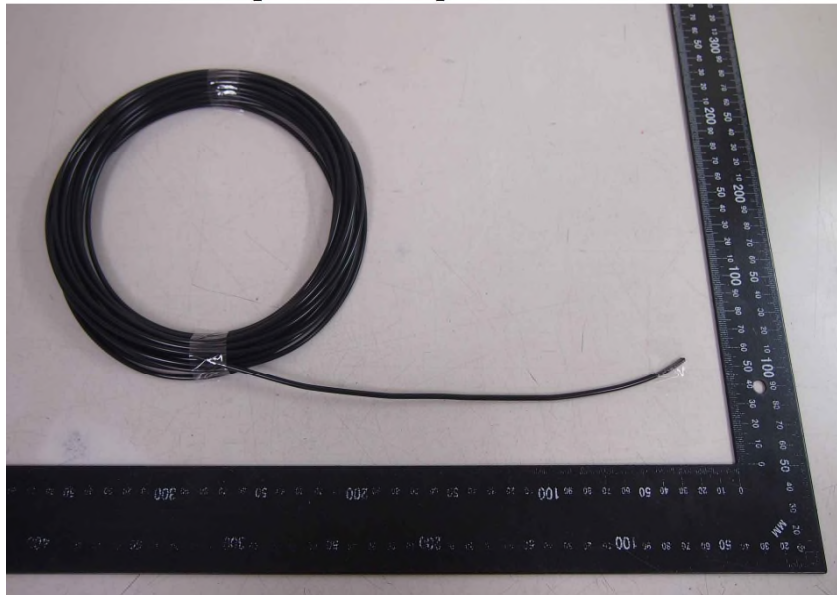
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\* The tested sample / part is marked by an arrow if it's shown on the photo. \*

### CE/2015/45062



\*\* End of Report \*\*

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