



## Test Report

No.: GZ1003027555/CHEM

Date: MAR 30, 2010

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LUCKY LIGHT ELECTRONICS CO., LTD  
E&F, 15/F, COOPERATIVE FINANCE BUILDING SHENNAN RD., LUOHU DIST., SHENZHEN, CHINA

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

SGS Job No. : SZ12414656  
SGS Internal Reference No. : 5.1  
Date of Sample Received : MAR 23, 2010  
Testing Period : MAR 23, 2010 TO MAR 30, 2010

Test Requested : Selected test (s) as requested by client.

Test Method : Please refer to next page(s).

Test Result(s) : Please refer to next page(s).

Conclusion : A: Based on the performed tests on submitted sample(s), the results **comply with** the RoHS Directive 2002/95/EC and its subsequent amendments.

Signed for and on behalf of  
SGS-CSTC Ltd.

Manson Yang  
Sr. Engineer

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SGS Standards Technical Services Co., Ltd.  
Guangzhou Industrial Chemical Laboratory

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### Test Results:

Description for specimen 1 : White plastic w/ black surface

### A: RoHS Directive 2002/95/EC

Test Item(s)	Unit	Test Method (Reference)	Result	MDL	Limit
Cadmium (Cd)	mg/kg	IEC 62321: 2008, ICP-OES	N.D.	2	100
Lead (Pb)	mg/kg	IEC 62321: 2008, ICP-OES	N.D.	2	1000
Mercury (Hg)	mg/kg	IEC 62321: 2008, ICP-OES	N.D.	2	1000
Hexavalent Chromium (CrVI) by alkaline extraction	mg/kg	IEC 62321: 2008, UV-Vis	N.D.	2	1000
Sum of PBBs	mg/kg	-	N.D.	-	1000
Monobromobiphenyl	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Dibromobiphenyl	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Tribromobiphenyl	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Tetrabromobiphenyl	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Pentabromobiphenyl	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Hexabromobiphenyl	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Heptabromobiphenyl	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Octabromobiphenyl	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Nonabromobiphenyl	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Decabromobiphenyl	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Sum of PBDEs	mg/kg	-	N.D.	-	1000
Monobromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Dibromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Tribromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Tetrabromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Pentabromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Hexabromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Heptabromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Octabromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Nonabromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Decabromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	

### Note:

1. mg/kg = ppm
2. N.D. = Not Detected (< MDL)
3. MDL = Method Detection Limit
4. "-" = Not regulated

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## B: PAHs (Polynuclear Aromatic Hydrocarbons)

Test Item(s)	Unit	Test Method	Results	MDL
Naphthalene (NAP)	mg/kg	ZEK 01.2-08, GC-MS	0.6	0.2
Acenaphthylene (ANY)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Acenaphthene (ANA)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Fluorene (FLU)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Phenanthrene (PHE)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Anthracene (ANT)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Fluoranthene (FLT)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Pyrene (PYR)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Benzo(a)anthracene (BaA)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Chrysene (CHR)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Benzo(b)fluoranthene (BbF)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Benzo(k)fluoranthene (BkF)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Benzo(a)pyrene (BaP)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Indeno(1-,2,3-cd)pyrene (IPY)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Dibenzo(a,h)anthracene (DBA)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Benzo(g,h,i)perylene (BPE)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Sum of 16 PAHs acc. US EPA	mg/kg	-	0.6	-

Note:

1. mg/kg = ppm

2. N.D. = Not Detected (< MDL)

3. MDL = Method Detection Limit

## ZEK 01.2-08 : Restraining maximum values for products

Parameter	Category 1	Category 2	Category 3
	Material indented to be put in the mouth or material for toys with normal skin contact for children aged < 36 months	Materials those are not included in Category 1, with predictable contact with the skin longer than 30 s. (long-term skin contact).	Materials those are not included in Category 1 or 2, with predictable skin contact up to 30 s (short-term skin contact).
Benzo[a]pyrene (mg/kg)	<MDL (<0.2)***	1	20
Sum of 16 PAH (US EPA) (mg/kg)**	<MDL (<0.2)***	10	200

Remark:

\*\*= Only PAH substances >0.2 mg/kg are taken into account while calculating the sum of PAHs

\*\*\* = In case that the maximum values exceed the limits of category 1, but are within the limits of category 2, one may confirm the suitability of the tested material which indented to be put in the mouth by additional specific migration tests of PAH components based on DIN EN 1186ff and §64 LFGB 80.30-1. The conclusion of the migration test results must be made based on food law criteria.

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**C: PFOS (Perfluorooctanoic acid & Perfluorooctane sulfonates)**

Test Item(s)	Unit	Test Method (Reference)	Result	MDL
Perfluorooctanoic acid (PFOA)	µg/m <sup>2</sup>	EPA 3550C: 2007, LC-MS	N.D.	1
Perfluorooctane sulfonates (PFOS)				
PFOS – Acid	µg/m <sup>2</sup>	EPA 3550C: 2007, LC-MS	N.D.	1
PFOS – Metal Salt				
PFOS – Amide				

**Note:**

1. mg/kg = ppm
2. N.D. = Not Detected (< MDL)
3. MDL = Method Detection Limit

For reference: Entry 53 of Regulation (EC) No 552/2009 amending Annex XVII of REACH Regulation (EC) No 1907/2006 (previously restricted under Directive 2006/122/EC):

(1) May not be placed on the market or used as a substance or constituent of preparations in a concentration equal to or higher than 0,005 % by mass.

(2) May not be placed on the market in semi-finished products or articles, or parts thereof, if the concentration of PFOS is equal to or higher than 0,1 % by mass calculated with reference to the mass of structurally or microstructurally distinct parts that contain PFOS or, for textiles or other coated materials, if the amount of PFOS is equal to or higher than 1µg /m<sup>2</sup> of the coated material.

**D: Halogen**

Test Item(s)	Unit	Test Method (Reference)	Result	MDL
Fluorine (F)	mg/kg	BS EN 14582:2007, IC	238	50
Chlorine (Cl)	mg/kg	BS EN 14582:2007, IC	297	50
Bromine (Br)	mg/kg	BS EN 14582:2007, IC	N.D.	50
Iodine (I)	mg/kg	BS EN 14582:2007, IC	N.D.	50

**Note:**

1. mg/kg = ppm
2. N.D. = Not Detected (< MDL)
3. MDL = Method Detection Limit

**E: TBBPA (Tetrabromobisphenol A)**

Test Item(s)	Unit	Test Method (Reference)	Result	MDL
Tetrabromobisphenol A (TBBPA)	mg/kg	EPA 3550C: 2007, GC-MS	N.D.	10

**Note:**

1. mg/kg = ppm
2. N.D. = Not Detected (< MDL)
3. MDL = Method Detection Limit

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### F: Dimethyl Fumarate

Test Item(s)	Unit	Test Method (Reference)	Result	MDL	Limit
Dimethyl Fumarate	mg/kg	SGS In-house method(GZTC CHEM-TOP-095), GC-MS	N.D.	0.1	0.1

### Comment

**PASS**

#### Note:

1. mg/kg = ppm
2. N.D. = Not Detected (< MDL)
3. MDL = Method Detection Limit

#### Reference Information (2009/251/EC requirement):

The presence of DMF in products should be determined against the maximum limit of 0.1 mg DMF per kg of product or part of the product.

Description for specimen 2 : Black "PCB"

### A: RoHS Directive 2002/95/EC

Test Item(s)	Unit	Test Method (Reference)	Result	MDL	Limit
Cadmium (Cd)	mg/kg	IEC 62321: 2008, ICP-OES	N.D.	2	100
Lead (Pb)	mg/kg	IEC 62321: 2008, ICP-OES	N.D.	2	1000
Mercury (Hg)	mg/kg	IEC 62321: 2008, ICP-OES	N.D.	2	1000
Hexavalent Chromium (CrVI) by alkaline extraction	mg/kg	IEC 62321: 2008, UV-Vis	N.D.	2	1000
Sum of PBBs	mg/kg	-	N.D.	-	1000
Monobromobiphenyl	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Dibromobiphenyl	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Tribromobiphenyl	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Tetrabromobiphenyl	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Pentabromobiphenyl	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Hexabromobiphenyl	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Heptabromobiphenyl	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Octabromobiphenyl	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Nonabromobiphenyl	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Decabromobiphenyl	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Sum of PBDEs	mg/kg	-	N.D.	-	1000
Monobromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Dibromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Tribromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Tetrabromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Pentabromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Hexabromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Heptabromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	

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Octabromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5
Nonabromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5
Decabromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5

### Note:

1. mg/kg = ppm
2. N.D. = Not Detected (< MDL)
3. MDL = Method Detection Limit
4. "-" = Not regulated

### B: PAHs (Polynuclear Aromatic Hydrocarbons)

Test Item(s)	Unit	Test Method	Results	MDL
Naphthalene (NAP)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Acenaphthylene (ANY)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Acenaphthene (ANA)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Fluorene (FLU)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Phenanthrene (PHE)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Anthracene (ANT)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Fluoranthene (FLT)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Pyrene (PYR)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Benzo(a)anthracene (BaA)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Chrysene (CHR)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Benzo(b)fluoranthene (BbF)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Benzo(k)fluoranthene (BkF)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Benzo(a)pyrene (BaP)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Indeno(1-,2,3-cd)pyrene (IPY)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Dibenzo(a,h)anthracene (DBA)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Benzo(g,h,i)perylene (BPE)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Sum of 16 PAHs acc. US EPA	mg/kg	-	N.D.	-

### Note:

1. mg/kg = ppm
2. N.D. = Not Detected (< MDL)
3. MDL = Method Detection Limit

### ZEK 01.2-08 : Restraining maximum values for products

Parameter	Category 1	Category 2	Category 3
	Material indented to be put in the mouth or material for toys with normal skin contact for children aged < 36 months	Materials those are not included in Category 1, with predictable contact with the skin longer than 30 s. (long-term skin contact).	Materials those are not included in Category 1 or 2, with predictable skin contact up to 30 s (short-term skin contact).
Benzo[a]pyrene (mg/kg)	<MDL (<0.2)***	1	20

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Sum of 16 PAH (US EPA) (mg/kg)**	<MDL (<0.2)***	10	200
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Remark:

\*\*= Only PAH substances >0.2 mg/kg are taken into account while calculating the sum of PAHs

\*\*\* = In case that the maximum values exceed the limits of category 1, but are within the limits of category 2, one may confirm the suitability of the tested material which intended to be put in the mouth by additional specific migration tests of PAH components based on DIN EN 1186ff and §64 LFGB 80.30-1. The conclusion of the migration test results must be made based on food law criteria.

### C: PFOA & PFOS (Perfluorooctanoic acid & Perfluorooctane sulfonates)

Test Item(s)	Unit	Test Method (Reference)	Result	MDL
Perfluorooctanoic acid (PFOA)	µg/m <sup>2</sup>	EPA 3550C: 2007, LC-MS	N.D.	1
Perfluorooctane sulfonates (PFOS)				
PFOS – Acid	µg/m <sup>2</sup>	EPA 3550C: 2007, LC-MS	29	1
PFOS – Metal Salt				
PFOS – Amide				

Note:

1. mg/kg = ppm
2. N.D. = Not Detected (< MDL)
3. MDL = Method Detection Limit

For reference: Entry 53 of Regulation (EC) No 552/2009 amending Annex XVII of REACH Regulation (EC) No 1907/2006 (previously restricted under Directive 2006/122/EC):

(1) May not be placed on the market or used as a substance or constituent of preparations in a concentration equal to or higher than 0,005 % by mass.

(2) May not be placed on the market in semi-finished products or articles, or parts thereof, if the concentration of PFOS is equal to or higher than 0,1 % by mass calculated with reference to the mass of structurally or microstructurally distinct parts that contain PFOS or, for textiles or other coated materials, if the amount of PFOS is equal to or higher than 1 µg /m<sup>2</sup> of the coated material.

### D: Halogen

Test Item(s)	Unit	Test Method (Reference)	Result	MDL
Fluorine (F)	mg/kg	BS EN 14582:2007, IC	756	50
Chlorine (Cl)	mg/kg	BS EN 14582:2007, IC	770	50
Bromine (Br)	mg/kg	BS EN 14582:2007, IC	64672	50
Iodine (I)	mg/kg	BS EN 14582:2007, IC	N.D.	50

Note:

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2. N.D. = Not Detected (< MDL)
3. MDL = Method Detection Limit

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### E: TBBPA (Tetrabromobisphenol A)

Test Item(s)	Unit	Test Method (Reference)	Result	MDL
Tetrabromobisphenol A (TBBPA)	mg/kg	EPA 3550C: 2007, GC-MS	N.D.	10

Note:

1. mg/kg = ppm
2. N.D. = Not Detected (< MDL)
3. MDL = Method Detection Limit

### F: Dimethyl Fumarate

Test Item(s)	Unit	Test Method (Reference)	Result	MDL	Limit
Dimethyl Fumarate	mg/kg	SGS In-house method(GZTC CHEM-TOP-095), GC-MS	N.D.	0.1	0.1

**Comment****PASS**

Note:

1. mg/kg = ppm
2. N.D. = Not Detected (< MDL)
3. MDL = Method Detection Limit

Reference Information (2009/251/EC requirement):

The presence of DMF in products should be determined against the maximum limit of 0.1 mg DMF per kg of product or part of the product.

Description for specimen 3 : White part

### A: RoHS Directive 2002/95/EC

Test Item(s)	Unit	Test Method (Reference)	Result	MDL	Limit
Cadmium (Cd)	mg/kg	IEC 62321: 2008, ICP-OES	N.D.	2	100
Lead (Pb)	mg/kg	IEC 62321: 2008, ICP-OES	N.D.	2	1000
Mercury (Hg)	mg/kg	IEC 62321: 2008, ICP-OES	N.D.	2	1000
Hexavalent Chromium (CrVI) by alkaline extraction	mg/kg	IEC 62321: 2008, UV-Vis	N.D.	2	1000
Sum of PBBs	mg/kg	-	N.D.	-	1000
Monobromobiphenyl	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Dibromobiphenyl	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Tribromobiphenyl	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Tetrabromobiphenyl	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Pentabromobiphenyl	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Hexabromobiphenyl	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Heptabromobiphenyl	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Octabromobiphenyl	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Nonabromobiphenyl	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Decabromobiphenyl	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	

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## Test Report

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Sum of PBDEs	mg/kg	-	N.D.	-	1000
Monobromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Dibromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Tribromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Tetrabromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Pentabromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Hexabromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Heptabromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Octabromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Nonabromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	
Decabromodiphenyl ether	mg/kg	IEC 62321: 2008, GC-MS	N.D.	5	

### Note:

1. mg/kg = ppm
2. N.D. = Not Detected (< MDL)
3. MDL = Method Detection Limit
4. "-" = Not regulated

### B: PAHs (Polynuclear Aromatic Hydrocarbons)

Test Item(s)	Unit	Test Method	Results	MDL
Naphthalene (NAP)	mg/kg	ZEK 01.2-08, GC-MS	0.5	0.2
Acenaphthylene (ANY)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Acenaphthene (ANA)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Fluorene (FLU)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Phenanthrene (PHE)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Anthracene (ANT)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Fluoranthene (FLT)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Pyrene (PYR)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Benzo(a)anthracene (BaA)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Chrysene (CHR)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Benzo(b)fluoranthene (BbF)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Benzo(k)fluoranthene (BkF)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Benzo(a)pyrene (BaP)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Indeno(1-,2,3-cd)pyrene (IPY)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Dibenzo(a,h)anthracene (DBA)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Benzo(g,h,i)perylene (BPE)	mg/kg	ZEK 01.2-08, GC-MS	N.D.	0.2
Sum of 16 PAHs acc. US EPA	mg/kg	-	0.5	-

### Note:

1. mg/kg = ppm
2. N.D. = Not Detected (< MDL)
3. MDL = Method Detection Limit

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## ZEK 01.2-08 : Restraining maximum values for products

Parameter	Category 1	Category 2	Category 3
	Material indented to be put in the mouth or material for toys with normal skin contact for children aged < 36 months	Materials those are not included in Category 1, with predictable contact with the skin longer than 30 s. (long-term skin contact).	Materials those are not included in Category 1 or 2, with predictable skin contact up to 30 s (short-term skin contact).
Benzo[a]pyrene (mg/kg)	<MDL (<0.2)***	1	20
Sum of 16 PAH (US EPA) (mg/kg)**	<MDL (<0.2)***	10	200

Remark:

\*\* = Only PAH substances >0.2 mg/kg are taken into account while calculating the sum of PAHs

\*\*\* = In case that the maximum values exceed the limits of category 1, but are within the limits of category 2, one may confirm the suitability of the tested material which indented to be put in the mouth by additional specific migration tests of PAH components based on DIN EN 1186ff and §64 LFGB 80.30-1. The conclusion of the migration test results must be made based on food law criteria.

## C: PFOS (Perfluorooctanoic acid & Perfluorooctane sulfonates)

Test Item(s)	Unit	Test Method (Reference)	Result	MDL
Perfluorooctanoic acid (PFOA)	mg/kg	EPA 3550C: 2007, LC-MS	N.D.	10
Perfluorooctane sulfonates (PFOS)				
PFOS – Acid	mg/kg	EPA 3550C: 2007, LC-MS	N.D.	10
PFOS – Metal Salt				
PFOS – Amide				

Note:

1. mg/kg = ppm
2. N.D. = Not Detected (< MDL)
3. MDL = Method Detection Limit

For reference: Entry 53 of Regulation (EC) No 552/2009 amending Annex XVII of REACH Regulation (EC) No 1907/2006 (previously restricted under Directive 2006/122/EC):

(1) May not be placed on the market or used as a substance or constituent of preparations in a concentration equal to or higher than 0,005 % by mass.

(2) May not be placed on the market in semi-finished products or articles, or parts thereof, if the concentration of PFOS is equal to or higher than 0,1 % by mass calculated with reference to the mass of structurally or microstructurally distinct parts that contain PFOS or, for textiles or other coated materials, if the amount of PFOS is equal to or higher than 1µg /m<sup>2</sup> of the coated material.

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### D: Halogen

Test Item(s)	Unit	Test Method (Reference)	Result	MDL
Fluorine (F)	mg/kg	BS EN 14582:2007, IC	N.D.	50
Chlorine (Cl)	mg/kg	BS EN 14582:2007, IC	672	50
Bromine (Br)	mg/kg	BS EN 14582:2007, IC	3127	50
Iodine (I)	mg/kg	BS EN 14582:2007, IC	N.D.	50

Note:

1. mg/kg = ppm
2. N.D. = Not Detected (< MDL)
3. MDL = Method Detection Limit

### E: TBBPA (Tetrabromobisphenol A)

Test Item(s)	Unit	Test Method (Reference)	Result	MDL
Tetrabromobisphenol A (TBBPA)	mg/kg	EPA 3550C: 2007, GC-MS	N.D.	10

Note:

1. mg/kg = ppm
2. N.D. = Not Detected (< MDL)
3. MDL = Method Detection Limit

### F: Dimethyl Fumarate

Test Item(s)	Unit	Test Method (Reference)	Result	MDL	Limit
Dimethyl Fumarate	mg/kg	SGS In-house method(GZTC CHEM-TOP-095), GC-MS	N.D.	0.1	0.1

**Comment****PASS**

Note:

1. mg/kg = ppm
2. N.D. = Not Detected (< MDL)
3. MDL = Method Detection Limit

Reference Information (2009/251/EC requirement):

The presence of DMF in products should be determined against the maximum limit of 0.1 mg DMF per kg of product or part of the product.

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Description for specimen 4 : Silvery metal pin

### A: RoHS Directive 2002/95/EC

Test Item(s)	Unit	Test Method (Reference)	Result	MDL	Limit
Cadmium (Cd)	mg/kg	IEC 62321: 2008, ICP-OES	N.D.	2	100
Lead (Pb)	mg/kg	IEC 62321: 2008, ICP-OES	N.D.	2	1000
Mercury (Hg)	mg/kg	IEC 62321: 2008, ICP-OES	N.D.	2	1000
Hexavalent Chromium (CrVI) by boiling water extraction	-	IEC 62321: 2008, UV-Vis	Negative	◇	#

#### Note:

1. mg/kg = ppm
2. N.D. = Not Detected (< MDL)
3. MDL = Method Detection Limit
4. ◇ = Spot test:  
Negative = Absence of CrVI coating, Positive = Presence of CrVI coating;  
(The tested sample should be further verified by boiling water extraction method if the spot test result is negative or cannot be confirmed.)  
Boiling water extraction:  
Negative = Absence of CrVI coating  
Positive = Presence of CrVI coating; the detected concentration in boiling water extraction solution is equal or greater than 0.02 mg/kg with 50 cm<sup>2</sup> sample surface area.  
Storage conditions and production date of the tested sample are unavailable and thus results of Cr(VI) represent status of the sample at the time of testing.
5. # = Positive indicates the presence of CrVI on the tested area.  
Negative indicates the absence of CrVI on the tested area.
6. "-" = Not regulated

Remark: As requested by client, the testing of specimen 2 was conducted as whole / part sample, for the sample can't be disjointed.

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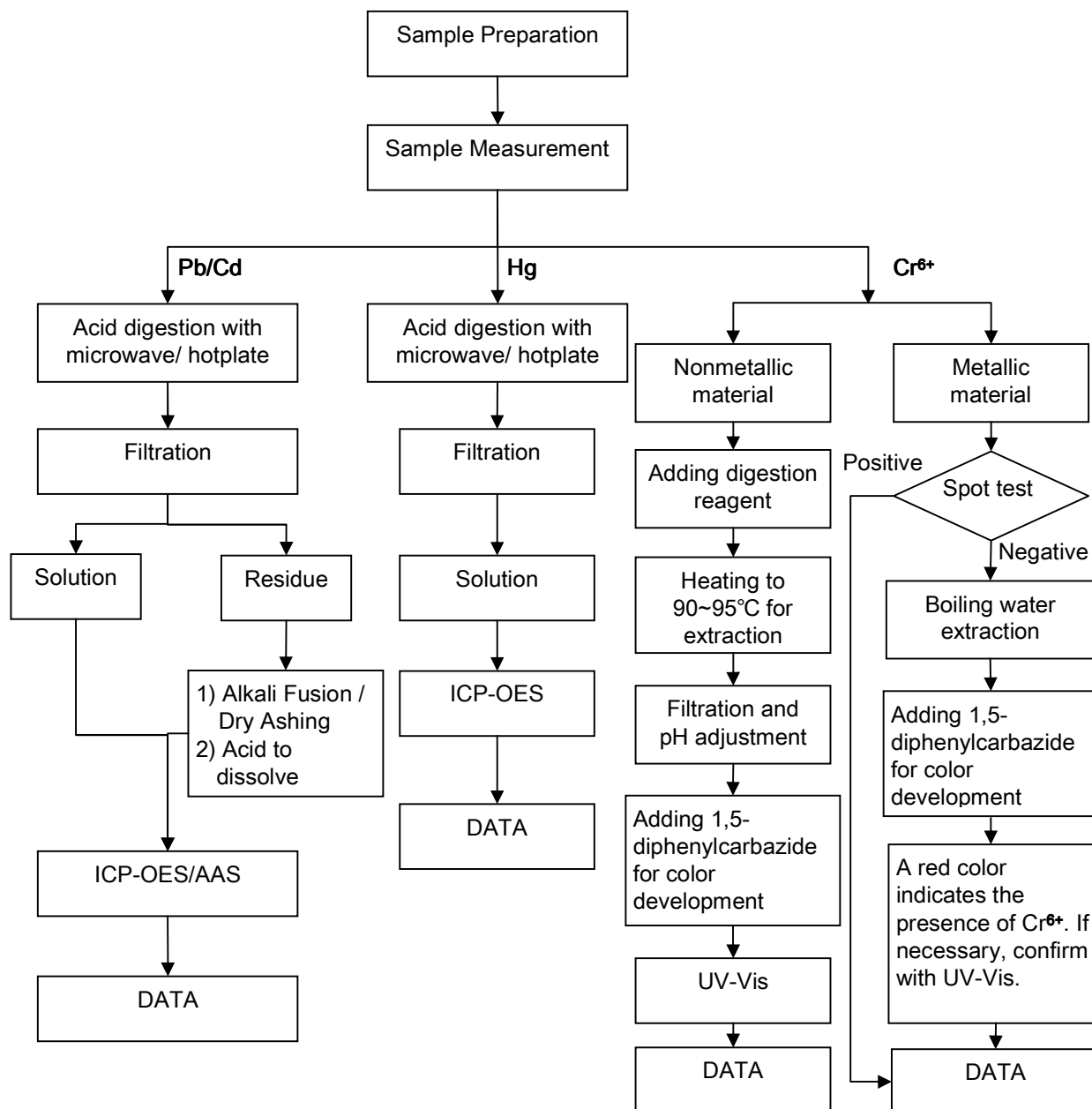
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### ATTACHMENTS

#### Testing Flow Chart

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



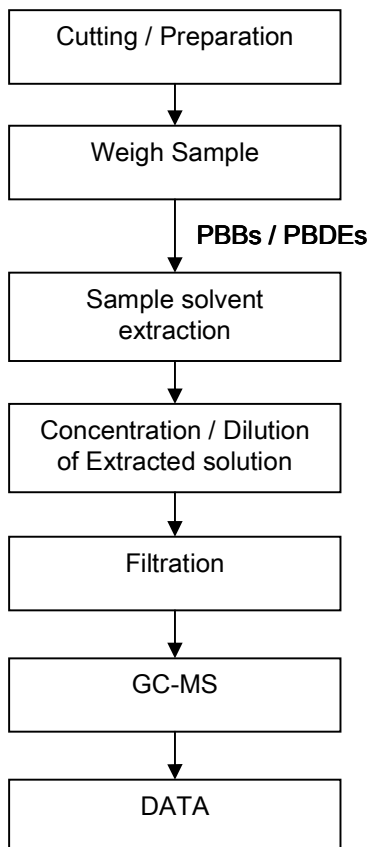
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### Testing Flow Chart

- 1) Name of the person who made measurement: Tina Zhao
- 2) Name of the person in charge of measurement: Ryan Yang



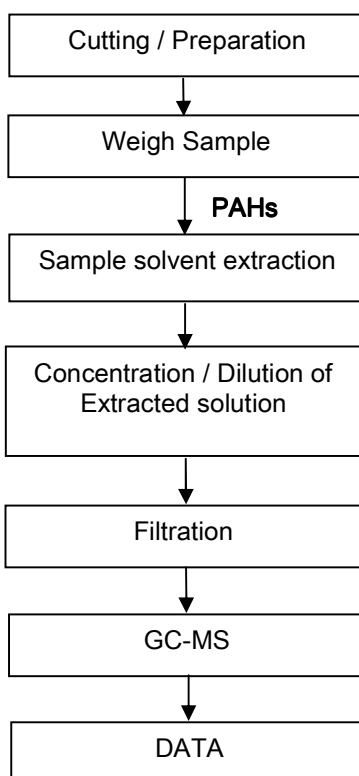
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### Testing Flow Chart

- 1) Name of the person who made measurement: Cutey Yu
- 2) Name of the person in charge of measurement: Ryan Yang



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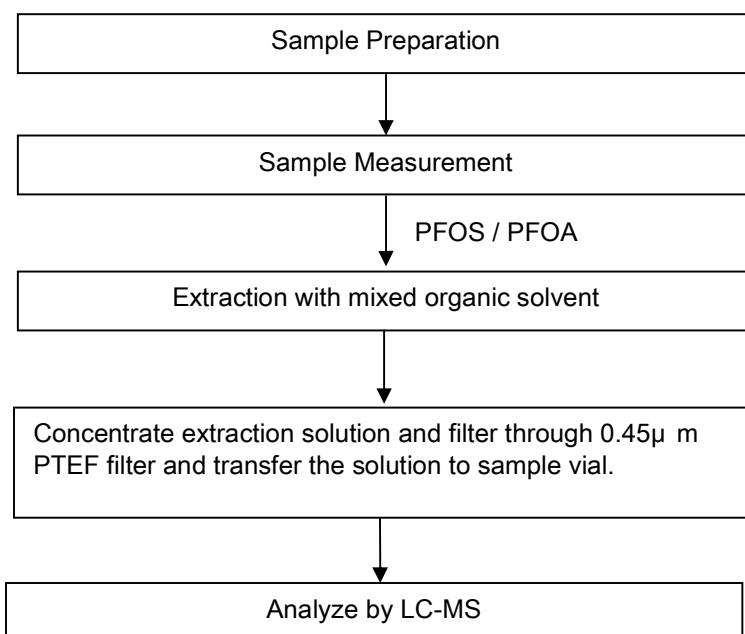
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### ATTACHMENTS

#### Testing Flow Chart

- 1) Name of the person who made measurement: Cindy Huang
- 2) Name of the person in charge of measurement: Ryan Yang



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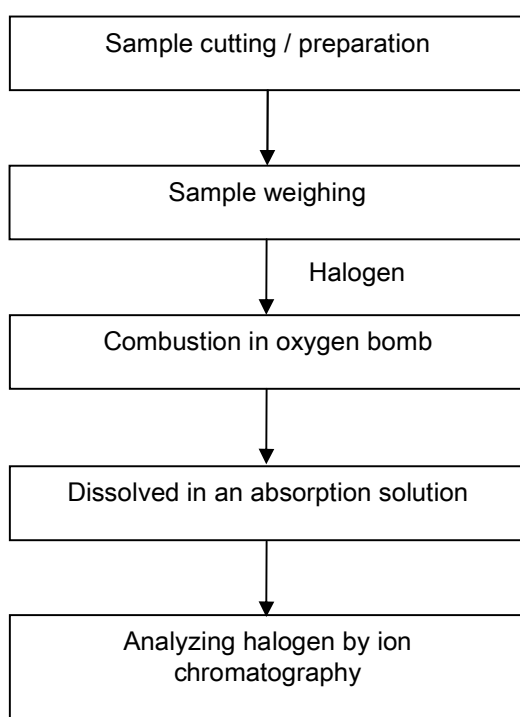




### ATTACHMENTS

#### Testing Flow Chart

- 1) Name of the person who made measurement: Sawen Chen
- 2) Name of the person in charge of measurement: Michael Tso



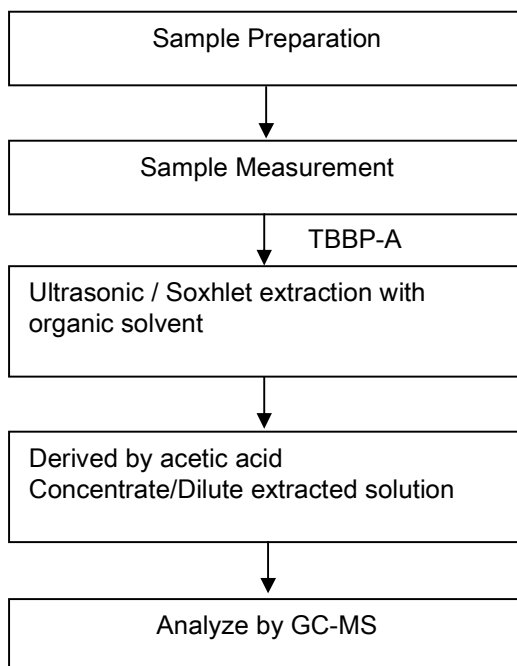
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### ATTACHMENTS

#### Testing Flow Chart

- 1) Name of the person who made measurement: Cutey Yu
- 2) Name of the person in charge of measurement: Ryan Yang

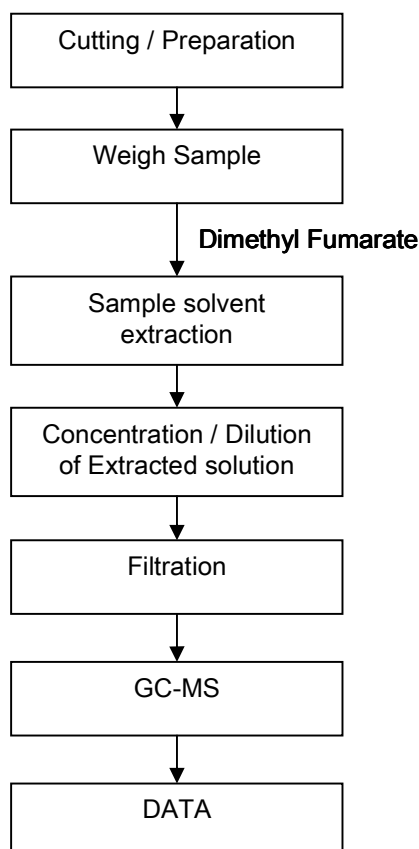


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### Testing Flow Chart

- 1) Name of the person who made measurement: Lina Tang
- 2) Name of the person in charge of measurement: Ryan Yang

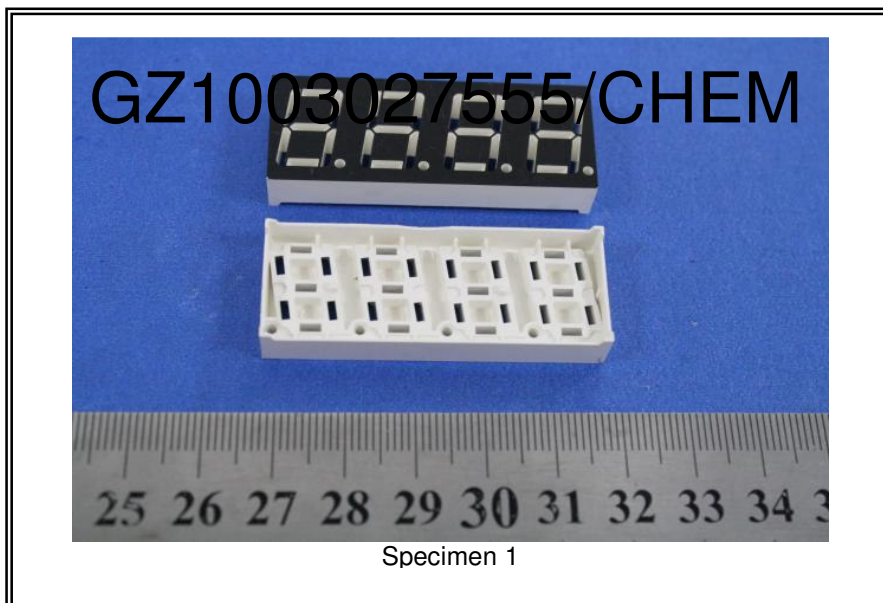


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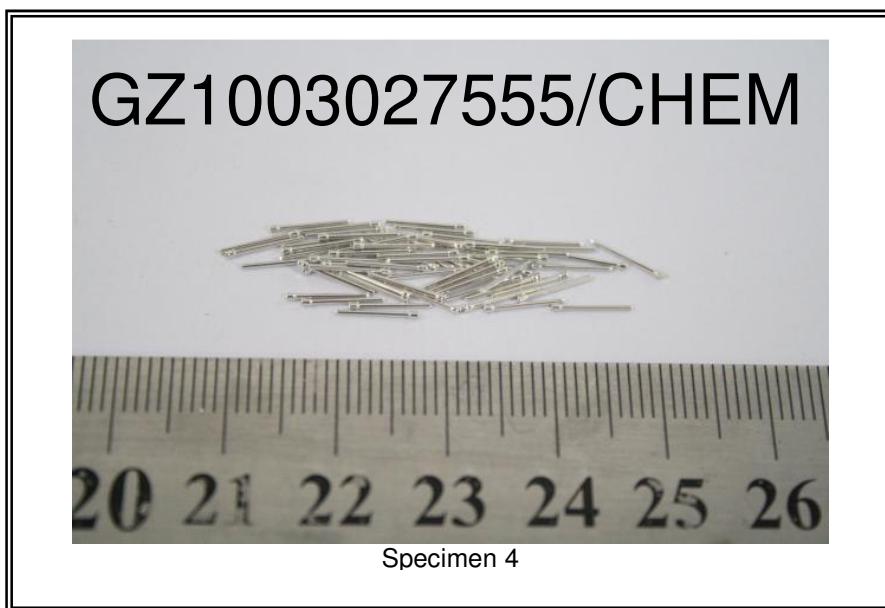


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