Test Report

No. SHAEC1728480201

Description

Date: 05 Jan 2018

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Test Results :

Test Part Description :

Specimen No.

SN1

SGS Sample ID

SHA17-284802.001

SHA17-284802.002

Silvery metal pin part

Black body part (mix all\*)

SN2

Remarks :

(1) 1 mg/kg = 0.0001%

(2) MDL = Method Detection Limit

(3) ND = Not Detected ( < MDL )

(4) "-" = Not Regulated

RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.

Test Method : With reference to IEC 62321-4:2013+AMD1:2017, IEC62321-5:2013, IEC62321-7-2:2017, IEC

62321-6:2015 and IEC62321-8:2017, analyzed by ICP-OES, AAS, UV-Vis and GC-MS.

Test Item(s)

Limit

Unit

MDL

2

002

4

Lead (Pb)

1000

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

Cadmium (Cd)

Mercury (Hg)

Hexavalent Chromium (Cr(VI))

Sum of PBBs

Monobromobiphenyl

Dibromobiphenyl

100

1000

1000

1000

-

-

-

-

-

-

-

-

-

-

2

2

8

-

5

5

5

5

5

5

5

5

5

5

-

5

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

Tribromobiphenyl

Tetrabromobiphenyl

Pentabromobiphenyl

Hexabromobiphenyl

Heptabromobiphenyl

Octabromobiphenyl

Nonabromobiphenyl

Decabromobiphenyl

Sum of PBDEs

Monobromodiphenyl ether

Dibromodiphenyl ether

Tribromodiphenyl ether

Tetrabromodiphenyl ether

1000

-

-

-

-

5

5

5



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Test Item(s).

Unit.

MDL

5

002.

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

Pentabromodiphenyl ether

Hexabromodiphenyl ether

Heptabromodiphenyl ether

Octabromodiphenyl ether

Nonabromodiphenyl ether

Decabromodiphenyl ether

Di-butyl Phthalate (DBP)

Benzyl Butyl Phthalate (BBP)

Di-2-Ethyl Hexyl Phthalate (DEHP)

Diisobutyl Phthalates (DIBP)

-

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

-

-

-

-

-

5

5

5

5

5

1000

1000

1000

1000

50

50

50

50

Notes :

(1)The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.

IEC 62321 series is equivalent to EN 62321 series

http://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101::::FSP\_ORG\_ID,FSP\_LANG

\_ID:1258637,25

(2)On 4 June 2015, Commission Directive (EU) 2015/863 was published in the Official Journal of

the European Union (OJEU) to include the phthalates BBP, DBP, DEHP and DIBP into

ANNEX II of the Rohs Recast Directive. The new law restricts each phthalate to no more than

0.1% in each homogeneous material of an electrical product.

(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.

(4)The restriction of DEHP, BBP, DBP and DIBP shall not apply to cables or spare parts for the

repair, the reuse, the updating of functionalities or upgrading of capacity of EEE placed on the

market before 22 July 2019, and of medical devices, including in vitro medical devices, and

monitoring and control instruments, including industrial monitoring and control

instruments, placed on the market before 22 July 2021.

(5)The restriction of DEHP, BBP and DBP shall not apply to toys which are already subject to

the restriction of DEHP, BBP and DBP through entry 51 of Annex XVII to Regulation (EC) No

1907/2006.

RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU

Test Method : With reference to IEC 62321-4:2013+AMD1:2017, IEC62321-5:2013 and IEC62321-7-1:2015,

analyzed by ICP-OES and UV-Vis .



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Test Item(s).

Unit.

MDL

2

2

001.

ND

17

Cadmium (Cd)

Lead (Pb)

Mercury (Hg)

Hexavalent Chromium (Cr(VI))▼

100

1000

1000

-

mg/kg

mg/kg

mg/kg

µg/cm²

2

0.10

ND

ND

Notes :

(1)The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.

IEC 62321 series is equivalent to EN 62321 series

http://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101::::FSP\_ORG\_ID,FSP\_LANG

\_ID:1258637,25

(2)▼ = a. The sample is positive for CrVI if the CrVI concentration is greater than 0.13 μg/cm².

The sample coating is considered to contain CrVI

b. The sample is negative for CrVI if CrVI is ND (concentration less than 0.10 μg/cm²). The

coating is considered a non-CrVI based coating

c. The result between 0.10 μg/cm² and 0.13 μg/cm² is considered to be inconclusive -

unavoidable coating variations may influence the determination

Information on storage conditions and production date of the tested sample is unavailable

and thus Cr(VI) results represent status of the sample at the time of testing.

Sulfur.

Test Method : With reference to EN 14582: 2007, analysis was performed by Ion Chromatograph (IC).

Test Item(s).

Sulfur (S)

Unit.

MDL

50

002.

ND

mg/kg

Polychlorinated Naphthalenes (PCNs).

Test Method : With reference to US EPA 8081B: 2007, analysis was performed by GC-MS

Test Item(s).

Unit.

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

MDL

002.

ND

ND

ND

ND

ND

ND

2-Chlorinated Naphthalene

1,4-Dichlorinated Naphthalene

1,5-Dichlorinated Naphthalene

1,2-Dichlorinated Naphthalene

1,8-Dichlorinated Naphthalene

1,2,3-Trichlorinated Naphthalene

5

5

5

5

5

5



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Test Item(s).

Unit.

mg/kg

mg/kg

mg/kg

mg/kg

MDL

002.

ND

ND

ND

ND

1,2,3,4-Tetrachlorinated Naphthalene

5

5

5

5

1,2,3,4,6-Pentachlorinated Naphthalene

Octa-chlorinaed Naphthalene

1-Chlorinated Naphthalene

Organic-tin compounds.

Test Method : With reference to ISO 17353: 2004 with carbamate, analysis was performed by GC-MS.

Test Item(s).

Unit.

mg/kg

mg/kg

mg/kg

MDL

0.02

0.02

0.02

002.

ND

ND

Tributyl tin (TBT)

Tripropyltin (TPT)

Dibutyl tin (DBT)

ND

Alkanes C10-C13, chloro (short-chain chlorinated paraffins) (SCCP)

Test Method : With reference to ISO 18219: 2015, analysis was performed by GC-NCl-MS

Test Item(s).

Unit.

MDL

50

002.

ND

Alkanes C10-C13, chloro (short-chain chlorinated

paraffins) (SCCP)

mg/kg

Hexabromocyclododecane (HBCDD)

Test Method : With reference to US EPA 3550C: 2007, analysis was performed by GC-MS.

Test Item(s).

CAS NO.

Unit.

MDL

10

002.

ND

Hexabromocyclododecane

(HBCDD)

25637-99-4,

3194- 55-6

mg/kg

Bisphenol-A.



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Test Method : Extraction by organic solvent, analysis by HPLC-DAD-MS.

Test Item(s)

Bisphenol-A

Unit

MDL

1

002

ND

mg/kg

Polychlorinated Terphenyls (PCTs)

Test Method : With reference to US EPA 8082A: 2007, analysis was performed by GC-MS

Test Item(s)

Aroclor 5432

Aroclor 5442

Unit

mg/kg

mg/kg

MDL

002

ND

ND

5

5

PFOS (Perfluorooctane Sulfonates) and PFOA (Perfluorooctanoic Acid)

Test Method : With reference to US EPA 3550C: 2007, analysis was performed by HPLC-MS.

Test Item(s)

Perfluorooctanesulfonate (PFOS)^

Perfluorooctanoic Acid (PFOA)

Limit

1000

Unit

mg/kg

mg/kg

MDL

10

10

002

ND

ND

-

Notes :

(1) Max. limit specified by commission regulation (EU) No. 757/2010 amending regulation (EC) No

850/2004

(2)^ PFOS refer to Perfluorooctanesulfonic acid and its derivatives including Perfluoroctanesulfonic acid,

Perfluoroctane sulfonamide, N-Methylperfluoroctane sulfonamide, N-Ethylperfluoroctane sulfonamide,

N-Methylperfluoroctane sulfonamidoethanol and N-Ethylperfluoroctane sulfonamidoethanol.

Polycyclic aromatic hydrocarbons (PAHs).

Test Method : With reference to AfPS GS 2014:01 PAK, analysis was performed by GC-MS.

Test Item(s)

Unit

mg/kg

MDL

0.1

002

ND

Benzo(a)pyrene(BaP)

Benzo(e)pyrene(BeP)

Benzo(a)anthracene(BaA)

Benzo(b)fluoranthene(BbF)

Benzo(j)fluoranthene(BjF)

Benzo(k)fluoranthene(BkF)

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

0.1

0.1

0.1

0.1

0.1

ND

ND

ND

ND

ND



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Unit.

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Test Item(s).

Chrysene(CHR)

MDL

0.1

002.

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

Dibenzo(a,h)anthracene(DBA)

Benzo(g,h,i)perylene(BPE)

Indeno(1,2,3-c,d)pyrene(IPY)

Acenaphthylene(ANY)

Acenaphthene(ANA)

Fluorene(FLU)

Phenanthrene(PHE)

Pyrene(PYR)

Anthracene(ANT)

0.1

0.1

0.1

0.1

0.1

0.1

0.1

0.1

0.1

0.1

-

Fluoranthene(FLT)

Sum of Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Pyrene,

Anthracene, Fluoranthene

Naphthalene(NAP)

Sum of 18 PAHs

mg/kg

mg/kg

0.1

-

ND

ND



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Phthalates Content.

Test Method : With reference to EN 14372:2004, analysis was performed by GC-MS.

Test Item(s).

Dibutyl Phthalate (DBP)

Benzylbutyl Phthalate (BBP)

Bis-(2-ethylhexyl) Phthalate (DEHP)

Diisononyl Phthalate (DINP)

CAS NO.

84-74-2

85-68-7

Unit.

%

%

%

%

MDL

0.003

0.003

0.003

0.01

002.

ND

ND

ND

ND

117-81-7

28553-12-0

/68515-48-0

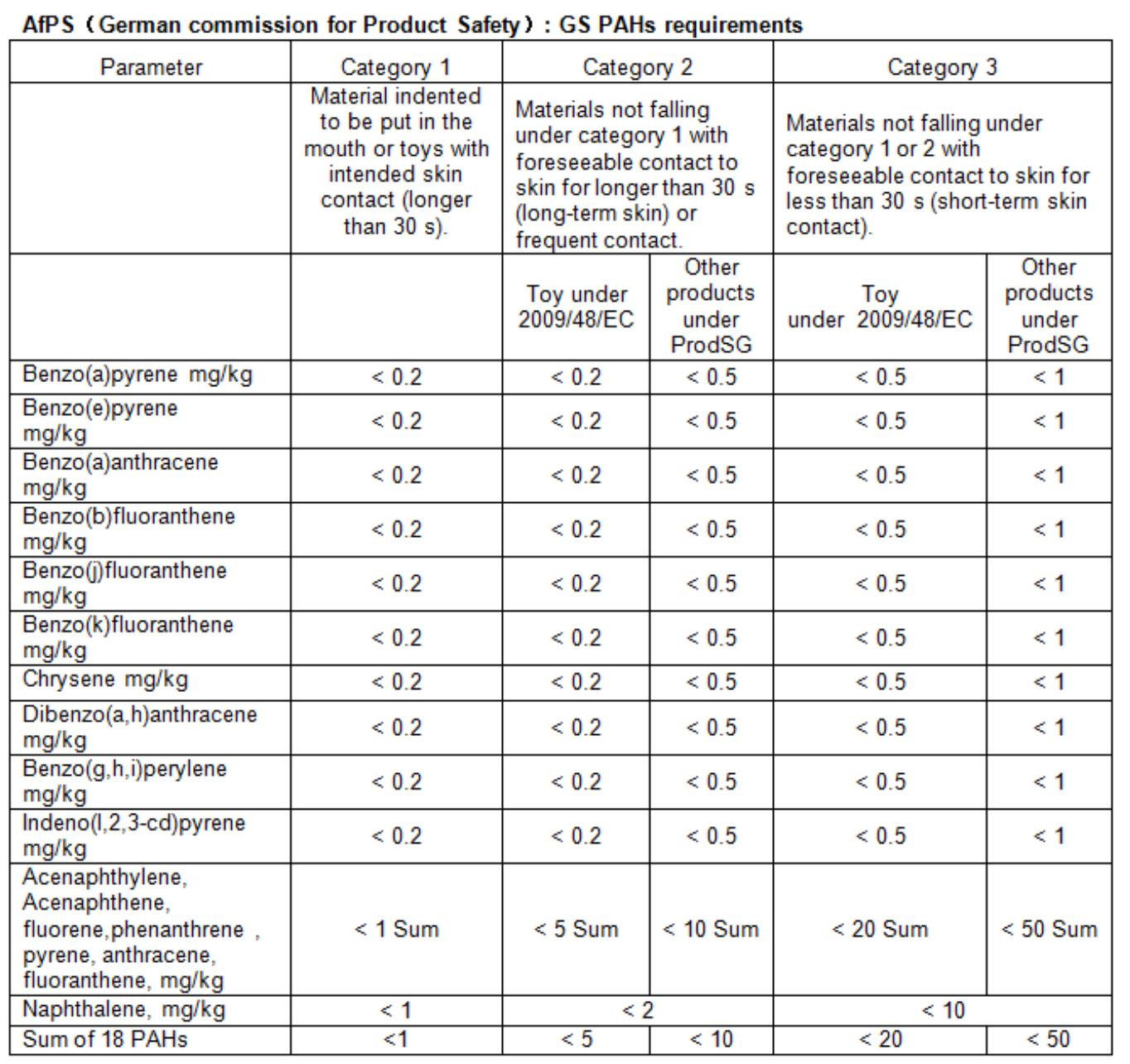
117-84-0

Di-n-octyl Phthalate (DNOP)

%

0.003

ND



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Test Item(s).

Diisodecyl Phthalate (DIDP)

CAS NO.

Unit.

%

MDL

0.01

002.

ND

26761-40-0

/68515-49-1

131-11-3

84-66-2

84-69-5

131-18-0

84-61-7

84-62-8

523-31-9

27554-26-3

131-16-8

84-76-4

Dimethyl Phthalate (DMP)

Diethyl Phthalate (DEP)

%

%

%

%

%

%

%

%

%

%

%

0.003

0.003

0.003

0.003

0.003

0.003

0.003

0.01

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

Diisobutyl Phthalate (DIBP)

Di-n-pentyl Phthalates (DnPP)

Dicyclohexyl Phthalate (DCHP)

Diphenyl Phthalate (DPhP)

Dibenzyl Phthalate (DBzP)

Diisooctyl Phthalate (DiOP)

Dipropyl Phthalate (DPrP)

Dinonyl Phthalate (DNP)

0.003

0.003

0.003

Di-n-hexyl Phthalate (DnHP)

84-75-3

Notes :

(1) DBP,BBP,DEHP Reference information: Entry 51 of Regulation (EC) No 552/2009 amending Annex

XVII of REACH Regulation (EC) No 1907/2006 (previously restricted under Directive 2005/84/EC):

i) Shall not be used as substances or in mixtures, in concentrations greater than 0.1 % by weight of

the plasticised material, in toys and childcare articles.

ii) Toys and childcare articles containing these phthalates in a concentration greater than 0.1 % by

weight of the plasticised material shall not be placed on the market.

Please refer to Regulation (EC) No 552/2009 to get more detail information

DINP, DNOP, DIDP Reference information: Entry 52 of Regulation (EC) No 552/2009 amending

Annex XVII of REACH Regulation (EC) No 1907/2006 (previously restricted under Directive

2005/84/EC).

i) Shall not be used as substances or in mixtures, in concentrations greater than 0.1 % by weight of

the plasticised material, in toys and childcare articles which can be placed in the mouth by

children.

ii) Such toys and childcare articles containing these phthalates in a concentration greater than 0.1 %

by weight of the plasticised material shall not be placed on the market.

Please refer to Regulation (EC) No 552/2009 to get more detail information

Polychlorinated Biphenyls (PCBs).

Test Method : With reference to US EPA 8082A: 2007, analysis was performed by GC-MS

Test Item(s)

2,4,4’-Trichlorobiphenyl (PCB 28)

CAS NO.

7012-37-5

Unit

mg/kg

MDL

0.5

002

ND

2,2’,5,5’-Tetrachloro-biphenyl (PCB 52)

2,2’,4,5,5’-Pentachloro-biphenyl (PCB 101)

35693-99-3

37680-73-2

mg/kg

mg/kg

0.5

0.5

ND

ND



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Test Item(s).

CAS NO.

Unit.

mg/kg

mg/kg

mg/kg

mg/kg

MDL

0.5

0.5

0.5

0.5

002.

ND

ND

ND

ND

2,3’,4,4’,5-Pentachlorobiphenyl (PCB 118)

2,2’,3,4,4’,5’-Hexachloro-biphenyl (PCB 138)

2,2’,4,4’,5,5’-Hexachloro-biphenyl (PCB 153)

2,2’,3,4,4’,5,5’-Heptachlorobiphenyl (PCB 180)

31508-00-6

35065-28-2

35065-27-1

35065-29-3

Benzotriazole UV Absorbant

Test Method : With reference to US EPA 3550C: 2007, analysis was performed by GC-MS.

Test Item(s).

Unit.

mg/kg

MDL

5

002.

ND

2-(3,5-Di-tert-butyl-2-hydroxyphenyl) benzotriazole (UV-320) (CAS No:

3846-71-7)

2-(3’,5’-Di-tert-butyl-2’-hydroxyphenyl)-5-chloro benzotriazole (UV-327) (CAS

No: 3864-99-1)

2-(2’-hydroxy-3’,5’-di-tert- amylphenyl) benzotriazole (UV-328) (CAS No:

25973-55-1)

mg/kg

mg/kg

mg/kg

5

5

5

ND

ND

ND

TinUVin 350 (UV-350) (CAS No: 36437-37-3)

\*The sample(s) was/were analyzed on behalf of the applicant as mixing sample in one testing. The

above result(s) was/were only given as the informality value and only for reference.



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**ATTACHMENTS**

**Pb/Cd/Hg/Cr6+/PBBs/PBDEs Testing Flow Chart**

1) Name of the person who made testing: Meria Jin/Gary Xu/ Xiaolong Yang/Sielina Song

2) Name of the person in charge of testing: Jan Shi/Jessy Huang/Luna Xu/Shara Wang

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

6+

(Cr and PBBs/PBDEs test method excluded)

Sample Preparation

Sample Measurement

**Cr6+**

**Pb/Cd/Hg/Cr**

Acid digestion with

**PBBs/PBDEs**

Sample solvent

Nonmetallic

material

Metallic

material

microwave /

hotplate

extraction

ABS/PC/PVC

Others

Concentration/

Dilution of

extraction solution

Boiling water

extraction

Filtration

Dissolving by

ultrasonicatio

Digesting at

150~160°C

Adding 1,5-

diphenylcarb

azide for

Solution

Residue

Filtration

GC-MS

DATA

Digesting at

60°C by

ultrasonicatio

Separating to

get aqueous

phase

color

1) Alkali Fusion /

Dry Ashing

2) Acid to

UV-Vis.

DATA

pH adjustment

ICP-OES/AAS

DATA

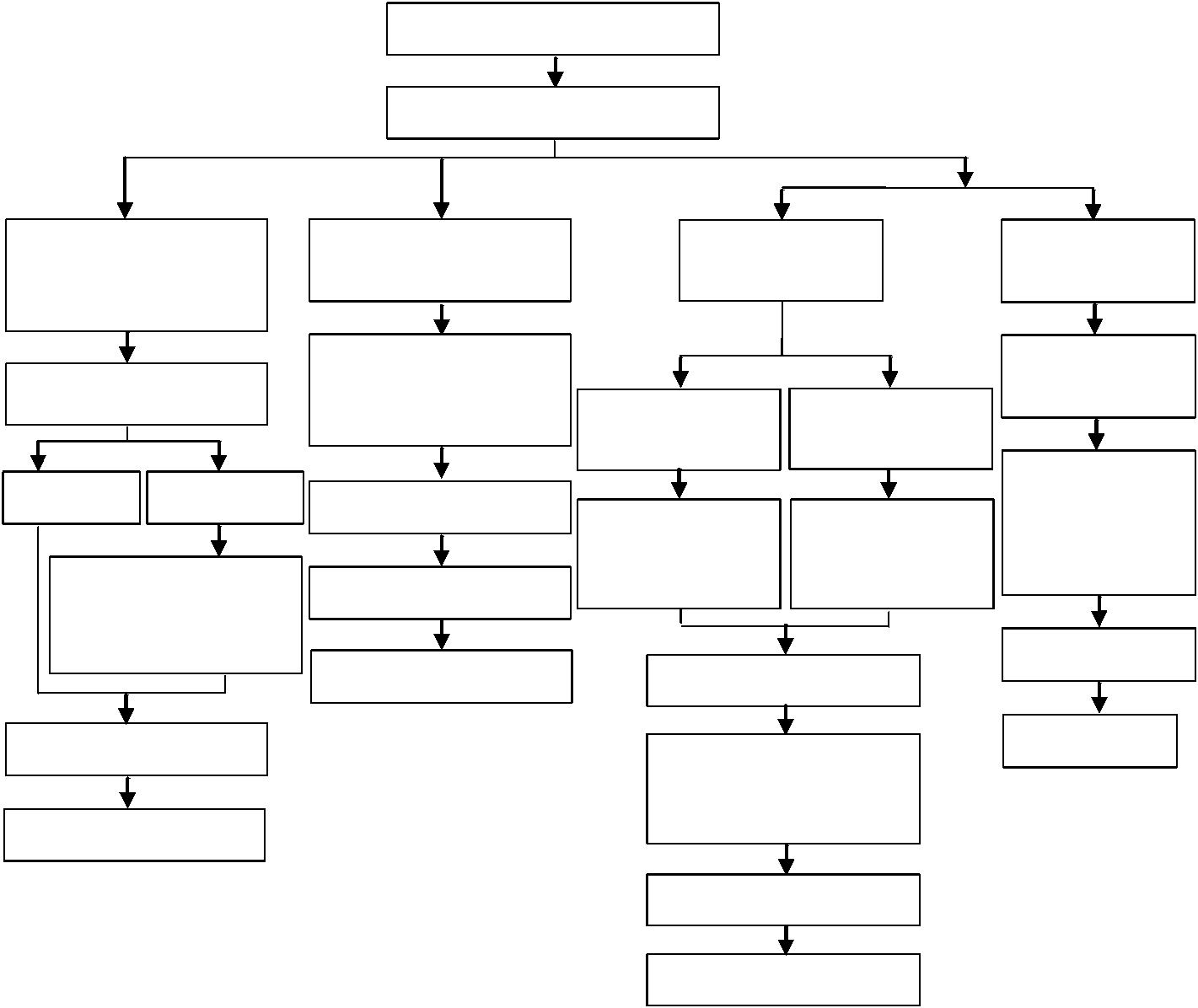
Adding 1,5-

diphenylcarbazide

for color

UV-Vis

DATA



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**ATTACHMENTS**

**Phthalates Testing Flow Chart**

1) Name of the person who made testing: Sherlock Gao

2) Name of the person in charge of testing: Jessy Huang

Sample cutting/preparation

Sample measurement

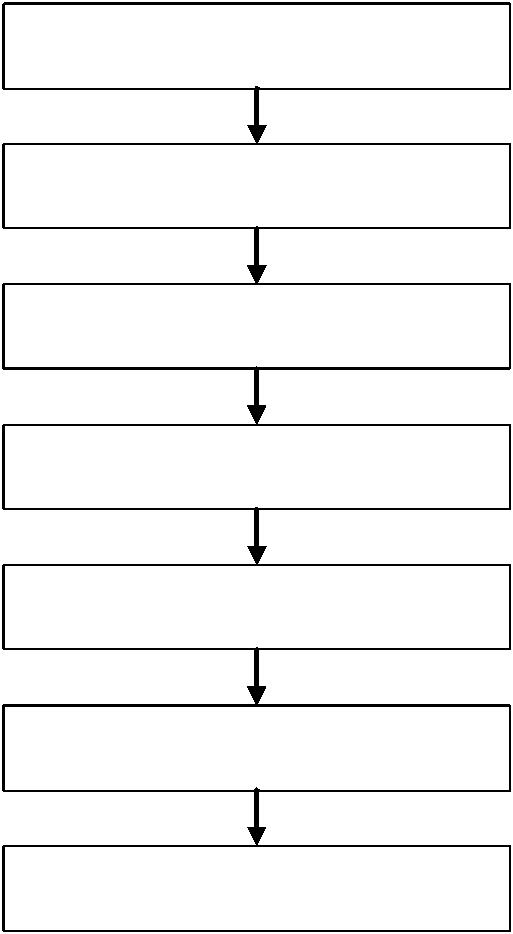
Solvent extraction

Concentration/Dilution

Filtration

GC-MS

DATA



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**ATTACHMENTS**

**HBCDD Testing Flow Chart**

1) Name of the person who made testing: Gary Xu

2) Name of the person in charge of testing: Jessy Huang

Sample cutting/preparation

Sample measurement

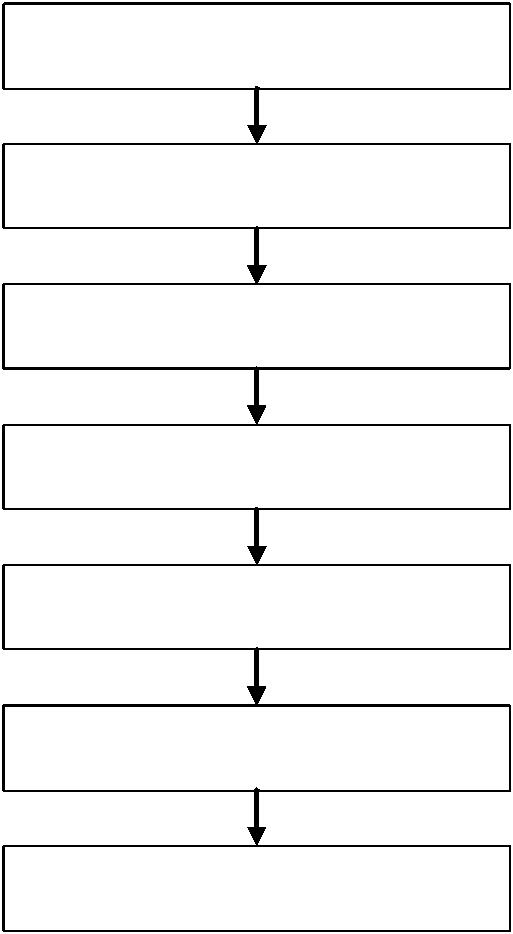
Solvent extraction

Concentration/Dilution

Filtration

GC-MS

DATA



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**ATTACHMENTS**

**PFOS/PFOA Testing Flow Chart**

1) Name of the person who made testing: Jane Yang

2) Name of the person in charge of testing: Myra Ma

Sample cutting/preparation

Sample measurement

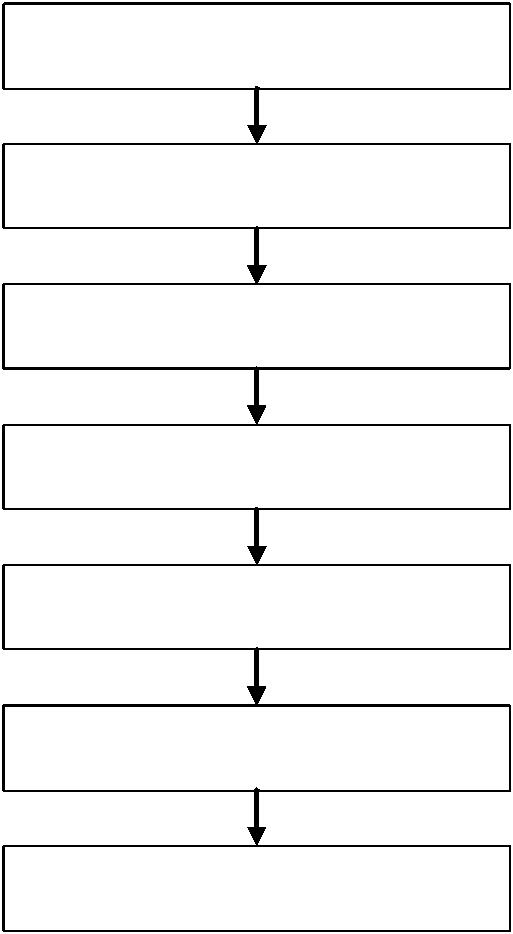
Solvent extraction

Concentration/Dilution

Filtration

LC-MS

DATA



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**ATTACHMENTS**

**BPA Testing Flow Chart**

1) Name of the person who made testing: Alfred Chen

2) Name of the person in charge of testing: Judy Li

Sample cutting/preparation

Sample measurement

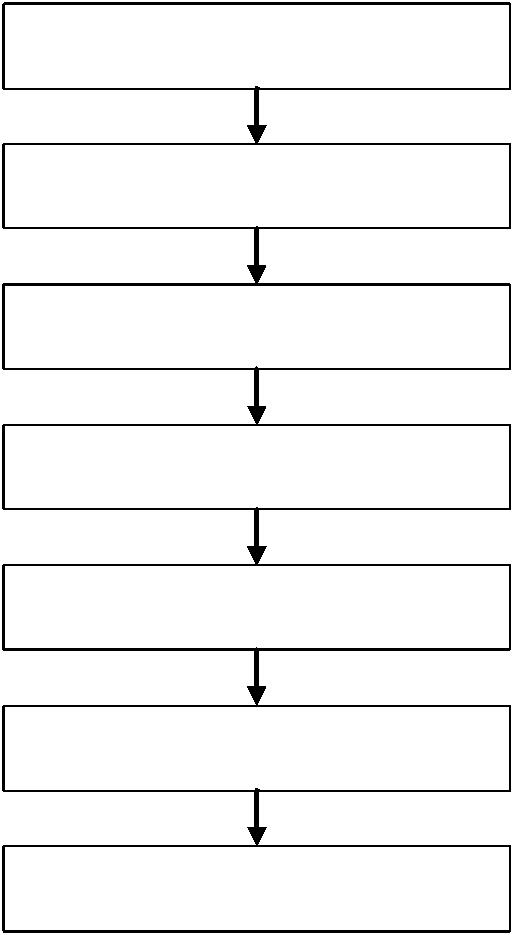
Solvent extraction

Concentration/Dilution

Filtration

HPLC-DAD-MS/LC\_MS

DATA



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**ATTACHMENTS**

**PAHs Testing Flow Chart**

1) Name of the person who made testing: Sherlock Gao

2) Name of the person in charge of testing: Jessy Huang

Sample cutting/preparation

Sample measurement

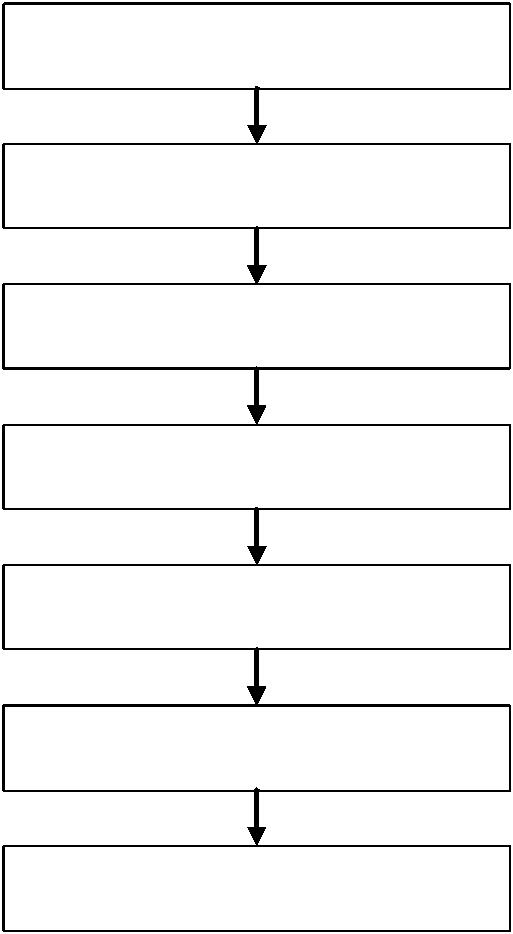
Solvent extraction

Concentration/Dilution

Filtration

GC-MS

DATA



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**ATTACHMENTS**

**PCB/ PCT/ PCN Testing Flow Chart**

1) Name of the person who made testing: Jenny Zhang

2) Name of the person in charge of testing: Zirco Yu

Sample cutting/preparation

Sample measurement

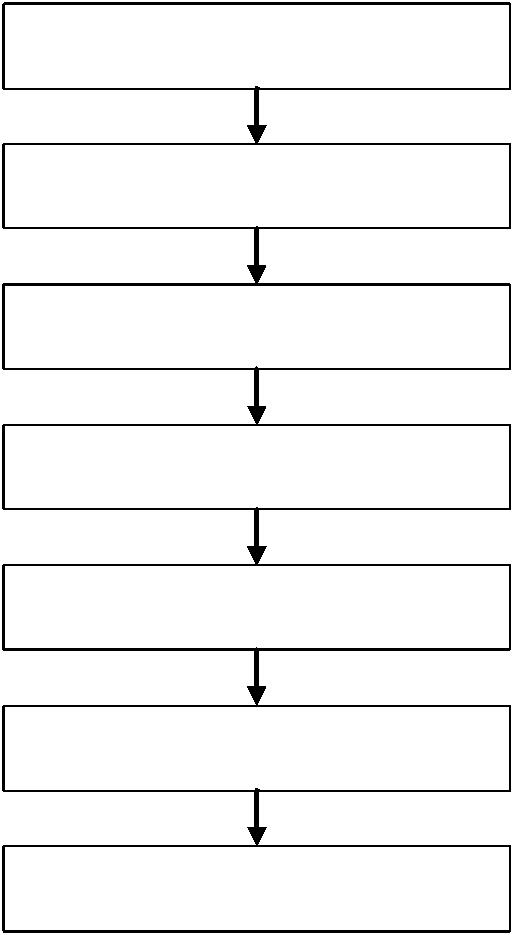
Solvent extraction

Concentration/Dilution

Filtration

GC-MS

DATA



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**ATTACHMENTS**

**Organotin Testing Flow Chart**

1) Name of the person who made testing: Alex Deng

2) Name of the person in charge of testing: Jessy Huang

Sample cutting/preparation

Sample measurement

Solvent extraction

Derivatization

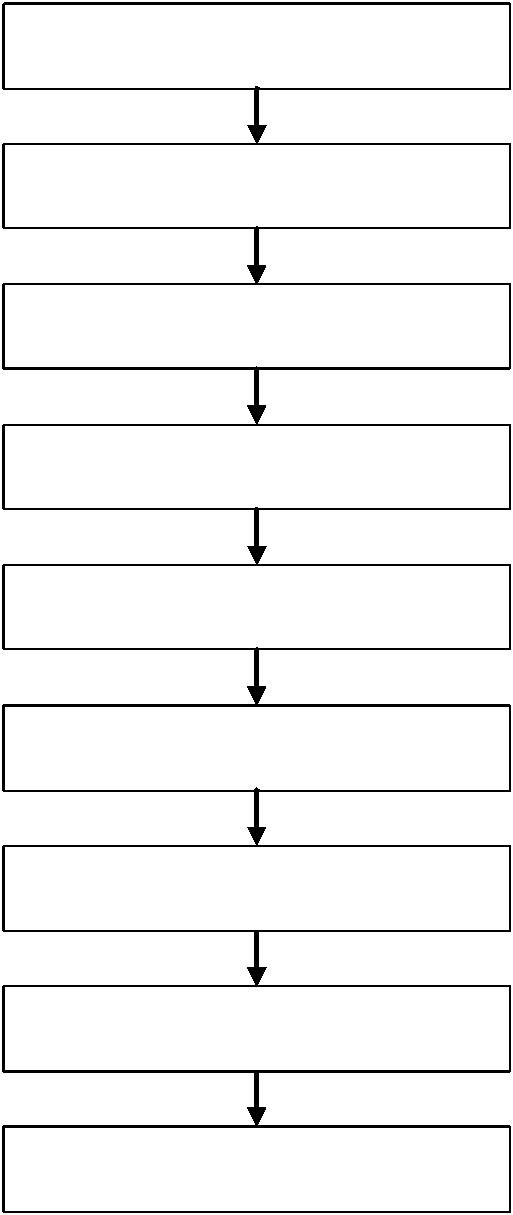
Liquid-liquid extraction

Concentration/Dilution

Filtration

GC-MS

DATA



Test Report

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**ATTACHMENTS**

**Benzotriazole Testing Flow Chart**

1) Name of the person who made testing: Sherlock Gao

2) Name of the person in charge of testing: Jessy Huang

Sample cutting/preparation

Sample measurement

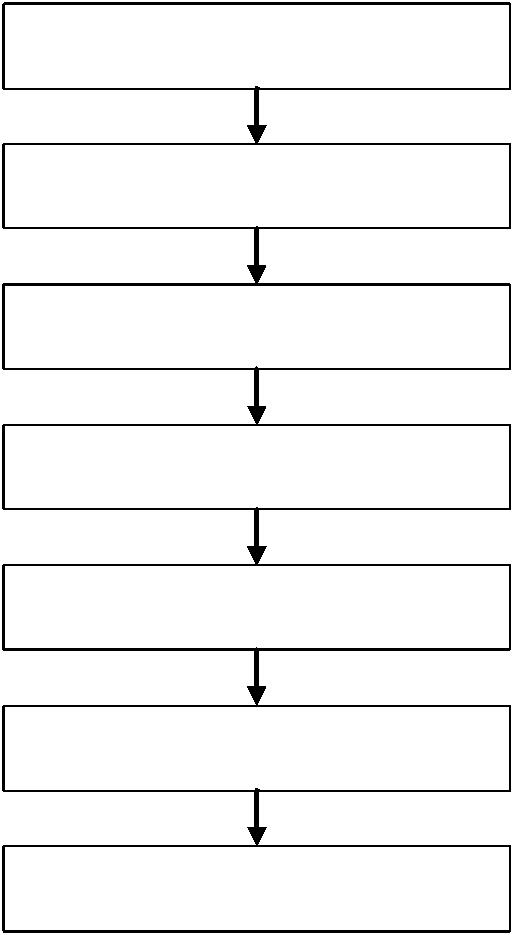
Solvent extraction

Concentration/Dilution

Filtration

GC-MS

DATA



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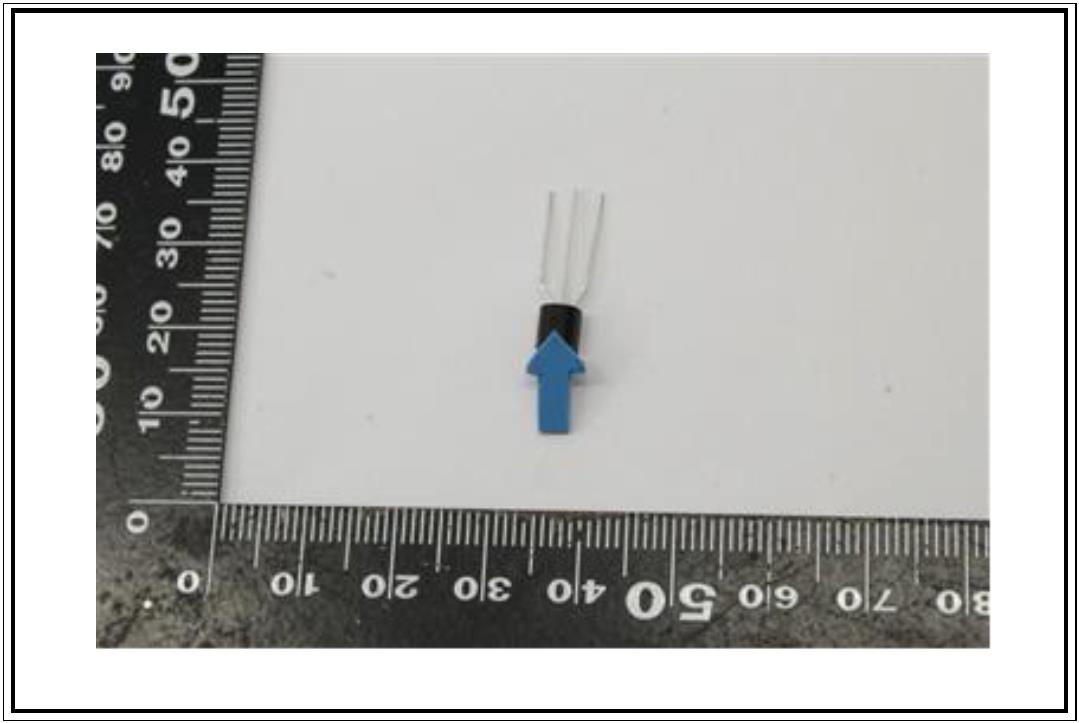
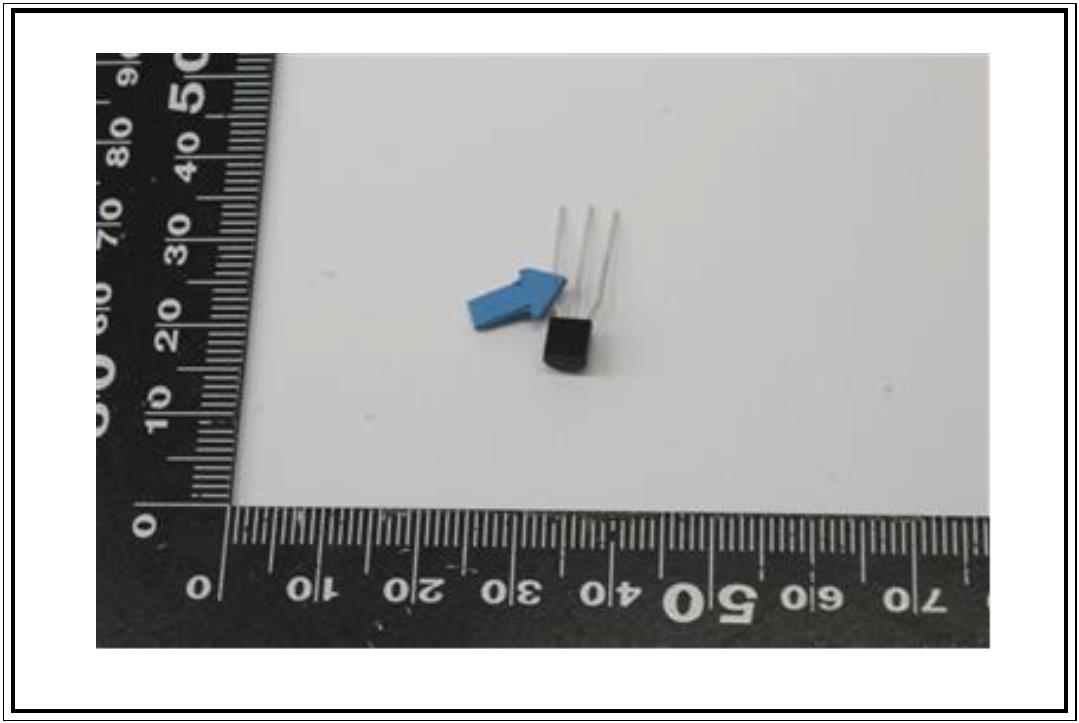
Sample photo:

SHA17-284802.001

SHA17-284802.002

SGS authenticate the photo on original report only

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



Test Report

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Description

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Test Results :

Test Part Description :

Specimen No.

SN1

SGS Sample ID

SHA17-284802.001

SHA17-284802.002

Silvery metal pin part

Black body part (mix all\*)

SN2

Remarks :

(1) 1 mg/kg = 0.0001%

(2) MDL = Method Detection Limit

(3) ND = Not Detected ( < MDL )

(4) "-" = Not Regulated

RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.

Test Method : With reference to IEC 62321-4:2013+AMD1:2017, IEC62321-5:2013, IEC62321-7-2:2017, IEC

62321-6:2015 and IEC62321-8:2017, analyzed by ICP-OES, AAS, UV-Vis and GC-MS.

Test Item(s)

Limit

Unit

MDL

2

002

4

Lead (Pb)

1000

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

Cadmium (Cd)

Mercury (Hg)

Hexavalent Chromium (Cr(VI))

Sum of PBBs

Monobromobiphenyl

Dibromobiphenyl

100

1000

1000

1000

-

-

-

-

-

-

-

-

-

-

2

2

8

-

5

5

5

5

5

5

5

5

5

5

-

5

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

Tribromobiphenyl

Tetrabromobiphenyl

Pentabromobiphenyl

Hexabromobiphenyl

Heptabromobiphenyl

Octabromobiphenyl

Nonabromobiphenyl

Decabromobiphenyl

Sum of PBDEs

Monobromodiphenyl ether

Dibromodiphenyl ether

Tribromodiphenyl ether

Tetrabromodiphenyl ether

1000

-

-

-

-

5

5

5



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Limit.

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Test Item(s).

Unit.

MDL

5

002.

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

Pentabromodiphenyl ether

Hexabromodiphenyl ether

Heptabromodiphenyl ether

Octabromodiphenyl ether

Nonabromodiphenyl ether

Decabromodiphenyl ether

Di-butyl Phthalate (DBP)

Benzyl Butyl Phthalate (BBP)

Di-2-Ethyl Hexyl Phthalate (DEHP)

Diisobutyl Phthalates (DIBP)

-

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

-

-

-

-

-

5

5

5

5

5

1000

1000

1000

1000

50

50

50

50

Notes :

(1)The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.

IEC 62321 series is equivalent to EN 62321 series

http://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101::::FSP\_ORG\_ID,FSP\_LANG

\_ID:1258637,25

(2)On 4 June 2015, Commission Directive (EU) 2015/863 was published in the Official Journal of

the European Union (OJEU) to include the phthalates BBP, DBP, DEHP and DIBP into

ANNEX II of the Rohs Recast Directive. The new law restricts each phthalate to no more than

0.1% in each homogeneous material of an electrical product.

(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.

(4)The restriction of DEHP, BBP, DBP and DIBP shall not apply to cables or spare parts for the

repair, the reuse, the updating of functionalities or upgrading of capacity of EEE placed on the

market before 22 July 2019, and of medical devices, including in vitro medical devices, and

monitoring and control instruments, including industrial monitoring and control

instruments, placed on the market before 22 July 2021.

(5)The restriction of DEHP, BBP and DBP shall not apply to toys which are already subject to

the restriction of DEHP, BBP and DBP through entry 51 of Annex XVII to Regulation (EC) No

1907/2006.

RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU

Test Method : With reference to IEC 62321-4:2013+AMD1:2017, IEC62321-5:2013 and IEC62321-7-1:2015,

analyzed by ICP-OES and UV-Vis .



Test Report

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Test Item(s).

Unit.

MDL

2

2

001.

ND

17

Cadmium (Cd)

Lead (Pb)

Mercury (Hg)

Hexavalent Chromium (Cr(VI))▼

100

1000

1000

-

mg/kg

mg/kg

mg/kg

µg/cm²

2

0.10

ND

ND

Notes :

(1)The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.

IEC 62321 series is equivalent to EN 62321 series

http://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101::::FSP\_ORG\_ID,FSP\_LANG

\_ID:1258637,25

(2)▼ = a. The sample is positive for CrVI if the CrVI concentration is greater than 0.13 μg/cm².

The sample coating is considered to contain CrVI

b. The sample is negative for CrVI if CrVI is ND (concentration less than 0.10 μg/cm²). The

coating is considered a non-CrVI based coating

c. The result between 0.10 μg/cm² and 0.13 μg/cm² is considered to be inconclusive -

unavoidable coating variations may influence the determination

Information on storage conditions and production date of the tested sample is unavailable

and thus Cr(VI) results represent status of the sample at the time of testing.

Sulfur.

Test Method : With reference to EN 14582: 2007, analysis was performed by Ion Chromatograph (IC).

Test Item(s).

Sulfur (S)

Unit.

MDL

50

002.

ND

mg/kg

Polychlorinated Naphthalenes (PCNs).

Test Method : With reference to US EPA 8081B: 2007, analysis was performed by GC-MS

Test Item(s).

Unit.

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

MDL

002.

ND

ND

ND

ND

ND

ND

2-Chlorinated Naphthalene

1,4-Dichlorinated Naphthalene

1,5-Dichlorinated Naphthalene

1,2-Dichlorinated Naphthalene

1,8-Dichlorinated Naphthalene

1,2,3-Trichlorinated Naphthalene

5

5

5

5

5

5



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Test Item(s).

Unit.

mg/kg

mg/kg

mg/kg

mg/kg

MDL

002.

ND

ND

ND

ND

1,2,3,4-Tetrachlorinated Naphthalene

5

5

5

5

1,2,3,4,6-Pentachlorinated Naphthalene

Octa-chlorinaed Naphthalene

1-Chlorinated Naphthalene

Organic-tin compounds.

Test Method : With reference to ISO 17353: 2004 with carbamate, analysis was performed by GC-MS.

Test Item(s).

Unit.

mg/kg

mg/kg

mg/kg

MDL

0.02

0.02

0.02

002.

ND

ND

Tributyl tin (TBT)

Tripropyltin (TPT)

Dibutyl tin (DBT)

ND

Alkanes C10-C13, chloro (short-chain chlorinated paraffins) (SCCP)

Test Method : With reference to ISO 18219: 2015, analysis was performed by GC-NCl-MS

Test Item(s).

Unit.

MDL

50

002.

ND

Alkanes C10-C13, chloro (short-chain chlorinated

paraffins) (SCCP)

mg/kg

Hexabromocyclododecane (HBCDD)

Test Method : With reference to US EPA 3550C: 2007, analysis was performed by GC-MS.

Test Item(s).

CAS NO.

Unit.

MDL

10

002.

ND

Hexabromocyclododecane

(HBCDD)

25637-99-4,

3194- 55-6

mg/kg

Bisphenol-A.



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Test Method : Extraction by organic solvent, analysis by HPLC-DAD-MS.

Test Item(s)

Bisphenol-A

Unit

MDL

1

002

ND

mg/kg

Polychlorinated Terphenyls (PCTs)

Test Method : With reference to US EPA 8082A: 2007, analysis was performed by GC-MS

Test Item(s)

Aroclor 5432

Aroclor 5442

Unit

mg/kg

mg/kg

MDL

002

ND

ND

5

5

PFOS (Perfluorooctane Sulfonates) and PFOA (Perfluorooctanoic Acid)

Test Method : With reference to US EPA 3550C: 2007, analysis was performed by HPLC-MS.

Test Item(s)

Perfluorooctanesulfonate (PFOS)^

Perfluorooctanoic Acid (PFOA)

Limit

1000

Unit

mg/kg

mg/kg

MDL

10

10

002

ND

ND

-

Notes :

(1) Max. limit specified by commission regulation (EU) No. 757/2010 amending regulation (EC) No

850/2004

(2)^ PFOS refer to Perfluorooctanesulfonic acid and its derivatives including Perfluoroctanesulfonic acid,

Perfluoroctane sulfonamide, N-Methylperfluoroctane sulfonamide, N-Ethylperfluoroctane sulfonamide,

N-Methylperfluoroctane sulfonamidoethanol and N-Ethylperfluoroctane sulfonamidoethanol.

Polycyclic aromatic hydrocarbons (PAHs).

Test Method : With reference to AfPS GS 2014:01 PAK, analysis was performed by GC-MS.

Test Item(s)

Unit

mg/kg

MDL

0.1

002

ND

Benzo(a)pyrene(BaP)

Benzo(e)pyrene(BeP)

Benzo(a)anthracene(BaA)

Benzo(b)fluoranthene(BbF)

Benzo(j)fluoranthene(BjF)

Benzo(k)fluoranthene(BkF)

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

0.1

0.1

0.1

0.1

0.1

ND

ND

ND

ND

ND



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Unit.

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Test Item(s).

Chrysene(CHR)

MDL

0.1

002.

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

Dibenzo(a,h)anthracene(DBA)

Benzo(g,h,i)perylene(BPE)

Indeno(1,2,3-c,d)pyrene(IPY)

Acenaphthylene(ANY)

Acenaphthene(ANA)

Fluorene(FLU)

Phenanthrene(PHE)

Pyrene(PYR)

Anthracene(ANT)

0.1

0.1

0.1

0.1

0.1

0.1

0.1

0.1

0.1

0.1

-

Fluoranthene(FLT)

Sum of Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Pyrene,

Anthracene, Fluoranthene

Naphthalene(NAP)

Sum of 18 PAHs

mg/kg

mg/kg

0.1

-

ND

ND



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Phthalates Content.

Test Method : With reference to EN 14372:2004, analysis was performed by GC-MS.

Test Item(s).

Dibutyl Phthalate (DBP)

Benzylbutyl Phthalate (BBP)

Bis-(2-ethylhexyl) Phthalate (DEHP)

Diisononyl Phthalate (DINP)

CAS NO.

84-74-2

85-68-7

Unit.

%

%

%

%

MDL

0.003

0.003

0.003

0.01

002.

ND

ND

ND

ND

117-81-7

28553-12-0

/68515-48-0

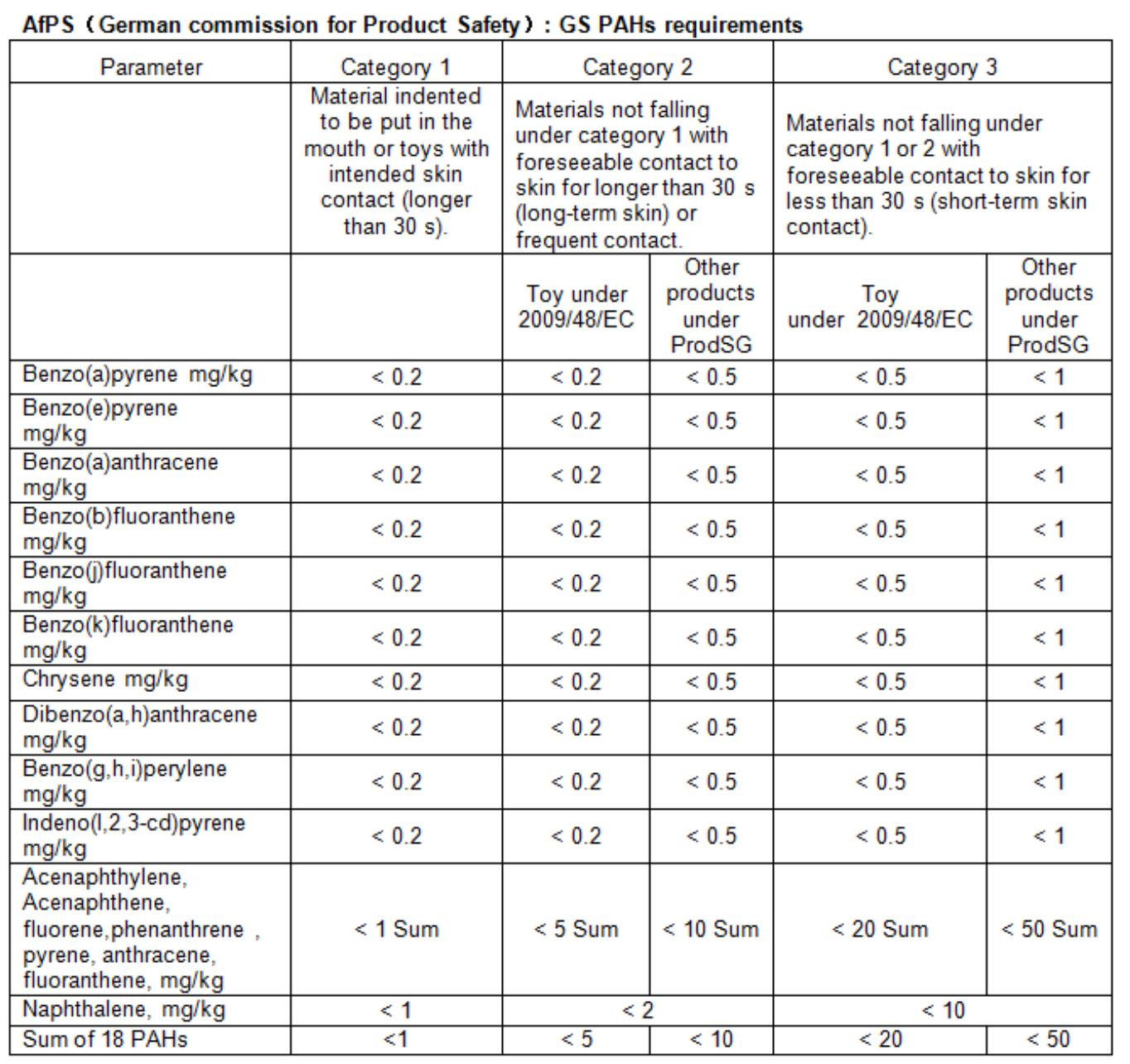
117-84-0

Di-n-octyl Phthalate (DNOP)

%

0.003

ND



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Test Item(s).

Diisodecyl Phthalate (DIDP)

CAS NO.

Unit.

%

MDL

0.01

002.

ND

26761-40-0

/68515-49-1

131-11-3

84-66-2

84-69-5

131-18-0

84-61-7

84-62-8

523-31-9

27554-26-3

131-16-8

84-76-4

Dimethyl Phthalate (DMP)

Diethyl Phthalate (DEP)

%

%

%

%

%

%

%

%

%

%

%

0.003

0.003

0.003

0.003

0.003

0.003

0.003

0.01

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

Diisobutyl Phthalate (DIBP)

Di-n-pentyl Phthalates (DnPP)

Dicyclohexyl Phthalate (DCHP)

Diphenyl Phthalate (DPhP)

Dibenzyl Phthalate (DBzP)

Diisooctyl Phthalate (DiOP)

Dipropyl Phthalate (DPrP)

Dinonyl Phthalate (DNP)

0.003

0.003

0.003

Di-n-hexyl Phthalate (DnHP)

84-75-3

Notes :

(1) DBP,BBP,DEHP Reference information: Entry 51 of Regulation (EC) No 552/2009 amending Annex

XVII of REACH Regulation (EC) No 1907/2006 (previously restricted under Directive 2005/84/EC):

i) Shall not be used as substances or in mixtures, in concentrations greater than 0.1 % by weight of

the plasticised material, in toys and childcare articles.

ii) Toys and childcare articles containing these phthalates in a concentration greater than 0.1 % by

weight of the plasticised material shall not be placed on the market.

Please refer to Regulation (EC) No 552/2009 to get more detail information

DINP, DNOP, DIDP Reference information: Entry 52 of Regulation (EC) No 552/2009 amending

Annex XVII of REACH Regulation (EC) No 1907/2006 (previously restricted under Directive

2005/84/EC).

i) Shall not be used as substances or in mixtures, in concentrations greater than 0.1 % by weight of

the plasticised material, in toys and childcare articles which can be placed in the mouth by

children.

ii) Such toys and childcare articles containing these phthalates in a concentration greater than 0.1 %

by weight of the plasticised material shall not be placed on the market.

Please refer to Regulation (EC) No 552/2009 to get more detail information

Polychlorinated Biphenyls (PCBs).

Test Method : With reference to US EPA 8082A: 2007, analysis was performed by GC-MS

Test Item(s)

2,4,4’-Trichlorobiphenyl (PCB 28)

CAS NO.

7012-37-5

Unit

mg/kg

MDL

0.5

002

ND

2,2’,5,5’-Tetrachloro-biphenyl (PCB 52)

2,2’,4,5,5’-Pentachloro-biphenyl (PCB 101)

35693-99-3

37680-73-2

mg/kg

mg/kg

0.5

0.5

ND

ND



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Test Item(s).

CAS NO.

Unit.

mg/kg

mg/kg

mg/kg

mg/kg

MDL

0.5

0.5

0.5

0.5

002.

ND

ND

ND

ND

2,3’,4,4’,5-Pentachlorobiphenyl (PCB 118)

2,2’,3,4,4’,5’-Hexachloro-biphenyl (PCB 138)

2,2’,4,4’,5,5’-Hexachloro-biphenyl (PCB 153)

2,2’,3,4,4’,5,5’-Heptachlorobiphenyl (PCB 180)

31508-00-6

35065-28-2

35065-27-1

35065-29-3

Benzotriazole UV Absorbant

Test Method : With reference to US EPA 3550C: 2007, analysis was performed by GC-MS.

Test Item(s).

Unit.

mg/kg

MDL

5

002.

ND

2-(3,5-Di-tert-butyl-2-hydroxyphenyl) benzotriazole (UV-320) (CAS No:

3846-71-7)

2-(3’,5’-Di-tert-butyl-2’-hydroxyphenyl)-5-chloro benzotriazole (UV-327) (CAS

No: 3864-99-1)

2-(2’-hydroxy-3’,5’-di-tert- amylphenyl) benzotriazole (UV-328) (CAS No:

25973-55-1)

mg/kg

mg/kg

mg/kg

5

5

5

ND

ND

ND

TinUVin 350 (UV-350) (CAS No: 36437-37-3)

\*The sample(s) was/were analyzed on behalf of the applicant as mixing sample in one testing. The

above result(s) was/were only given as the informality value and only for reference.



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**ATTACHMENTS**

**Pb/Cd/Hg/Cr6+/PBBs/PBDEs Testing Flow Chart**

1) Name of the person who made testing: Meria Jin/Gary Xu/ Xiaolong Yang/Sielina Song

2) Name of the person in charge of testing: Jan Shi/Jessy Huang/Luna Xu/Shara Wang

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

6+

(Cr and PBBs/PBDEs test method excluded)

Sample Preparation

Sample Measurement

**Cr6+**

**Pb/Cd/Hg/Cr**

Acid digestion with

**PBBs/PBDEs**

Sample solvent

Nonmetallic

material

Metallic

material

microwave /

hotplate

extraction

ABS/PC/PVC

Others

Concentration/

Dilution of

extraction solution

Boiling water

extraction

Filtration

Dissolving by

ultrasonicatio

Digesting at

150~160°C

Adding 1,5-

diphenylcarb

azide for

Solution

Residue

Filtration

GC-MS

DATA

Digesting at

60°C by

ultrasonicatio

Separating to

get aqueous

phase

color

1) Alkali Fusion /

Dry Ashing

2) Acid to

UV-Vis.

DATA

pH adjustment

ICP-OES/AAS

DATA

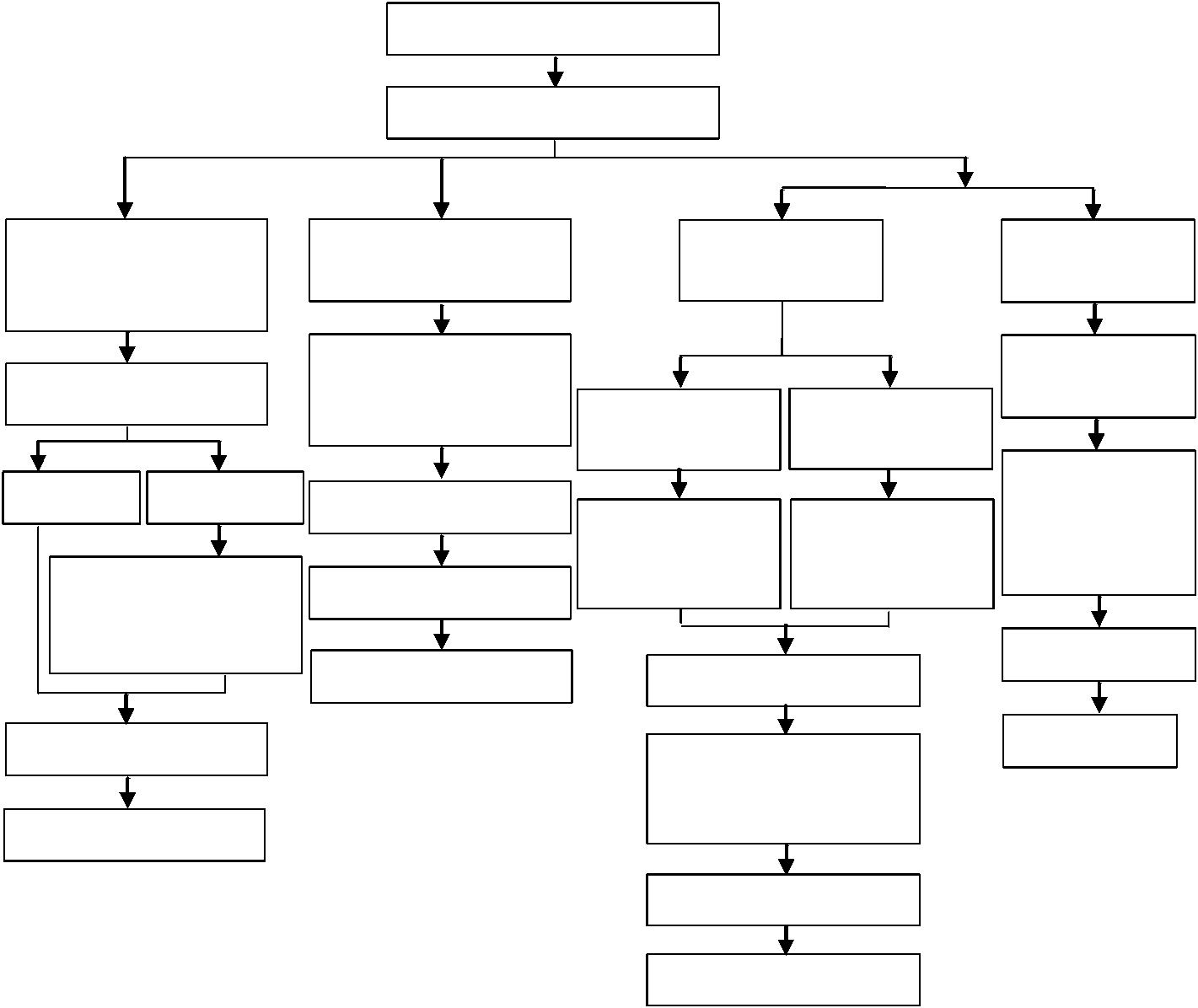
Adding 1,5-

diphenylcarbazide

for color

UV-Vis

DATA



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**ATTACHMENTS**

**Phthalates Testing Flow Chart**

1) Name of the person who made testing: Sherlock Gao

2) Name of the person in charge of testing: Jessy Huang

Sample cutting/preparation

Sample measurement

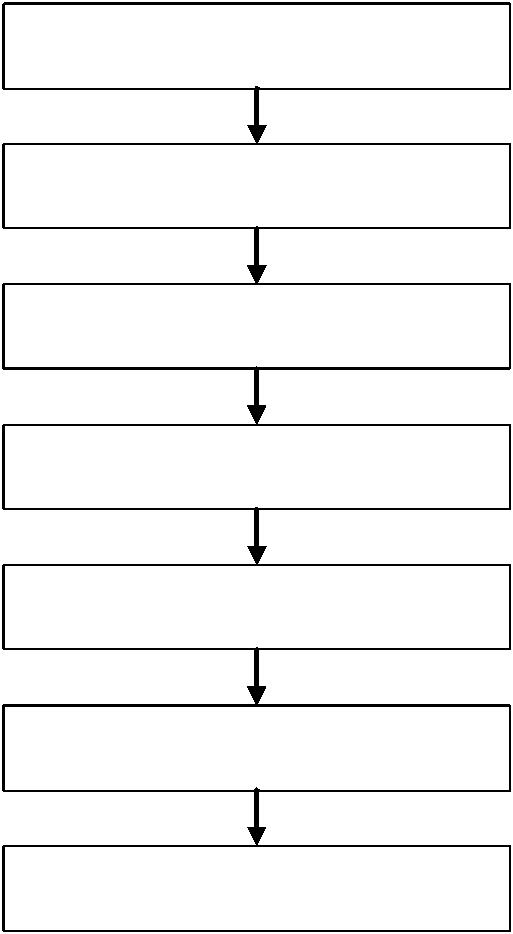
Solvent extraction

Concentration/Dilution

Filtration

GC-MS

DATA



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**ATTACHMENTS**

**HBCDD Testing Flow Chart**

1) Name of the person who made testing: Gary Xu

2) Name of the person in charge of testing: Jessy Huang

Sample cutting/preparation

Sample measurement

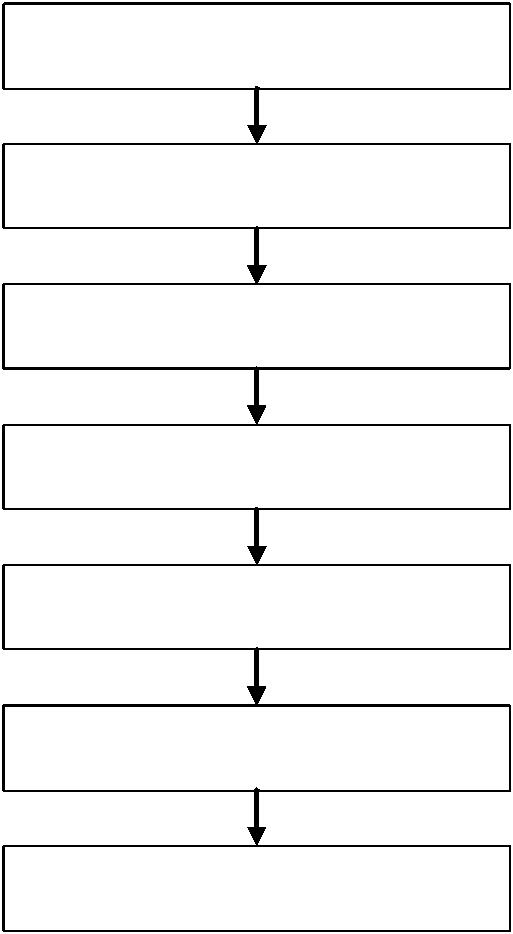
Solvent extraction

Concentration/Dilution

Filtration

GC-MS

DATA



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**ATTACHMENTS**

**PFOS/PFOA Testing Flow Chart**

1) Name of the person who made testing: Jane Yang

2) Name of the person in charge of testing: Myra Ma

Sample cutting/preparation

Sample measurement

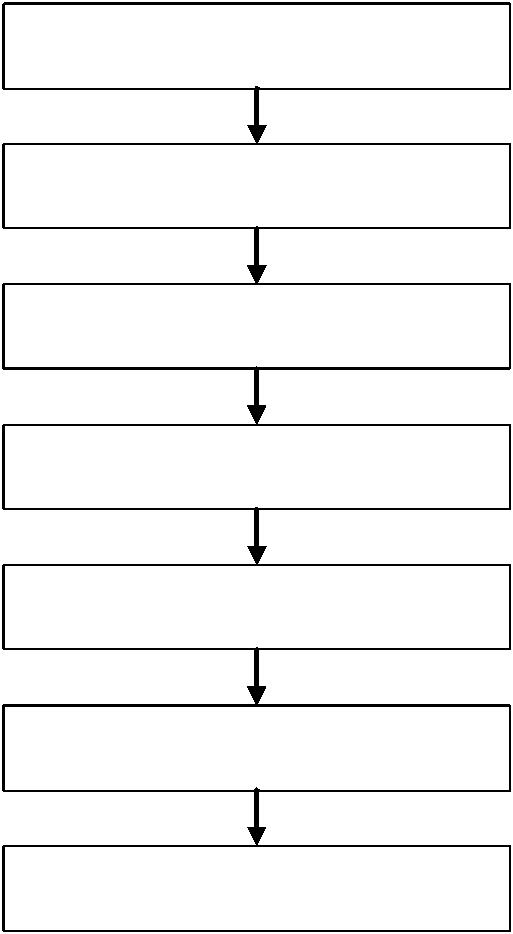
Solvent extraction

Concentration/Dilution

Filtration

LC-MS

DATA



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**ATTACHMENTS**

**BPA Testing Flow Chart**

1) Name of the person who made testing: Alfred Chen

2) Name of the person in charge of testing: Judy Li

Sample cutting/preparation

Sample measurement

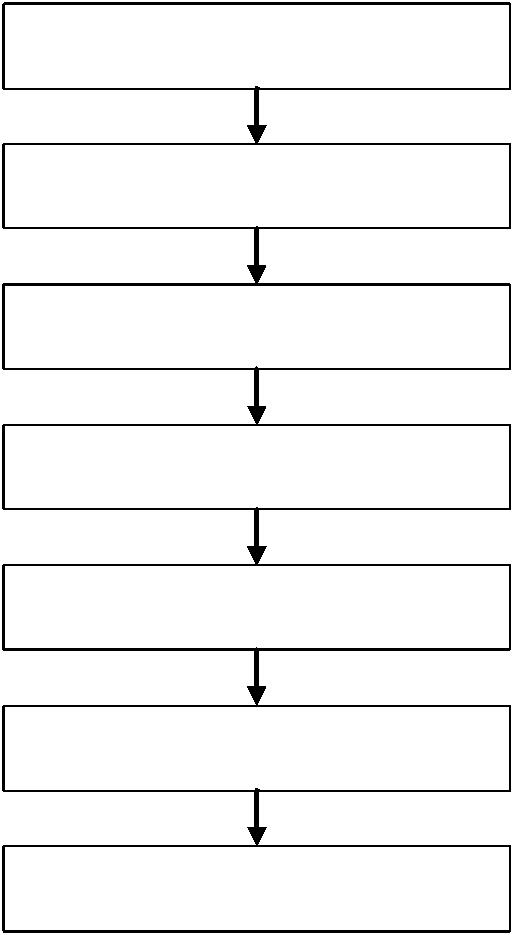
Solvent extraction

Concentration/Dilution

Filtration

HPLC-DAD-MS/LC\_MS

DATA



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**ATTACHMENTS**

**PAHs Testing Flow Chart**

1) Name of the person who made testing: Sherlock Gao

2) Name of the person in charge of testing: Jessy Huang

Sample cutting/preparation

Sample measurement

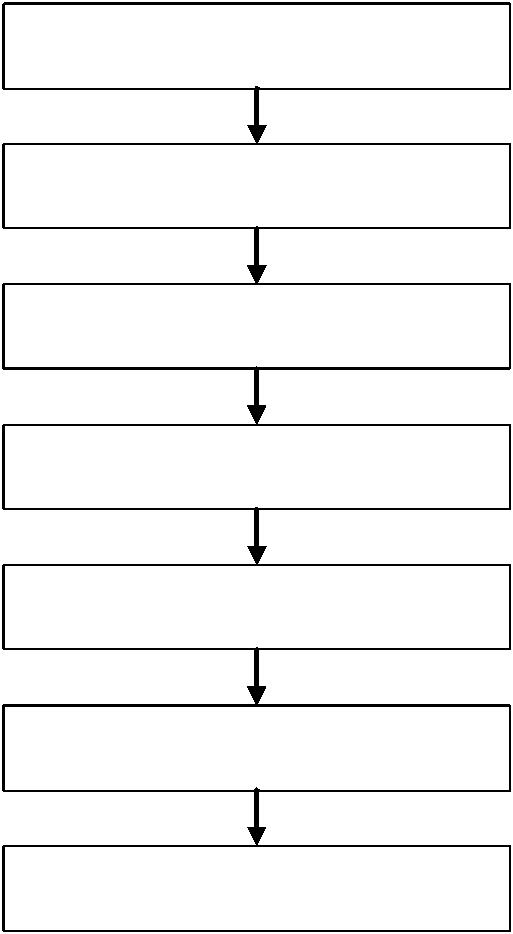
Solvent extraction

Concentration/Dilution

Filtration

GC-MS

DATA



Test Report

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**ATTACHMENTS**

**PCB/ PCT/ PCN Testing Flow Chart**

1) Name of the person who made testing: Jenny Zhang

2) Name of the person in charge of testing: Zirco Yu

Sample cutting/preparation

Sample measurement

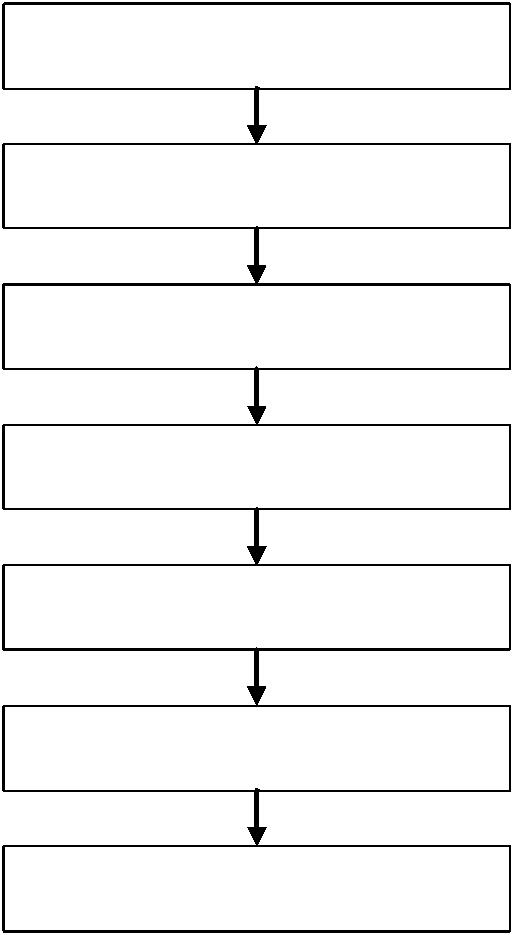
Solvent extraction

Concentration/Dilution

Filtration

GC-MS

DATA



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**ATTACHMENTS**

**Organotin Testing Flow Chart**

1) Name of the person who made testing: Alex Deng

2) Name of the person in charge of testing: Jessy Huang

Sample cutting/preparation

Sample measurement

Solvent extraction

Derivatization

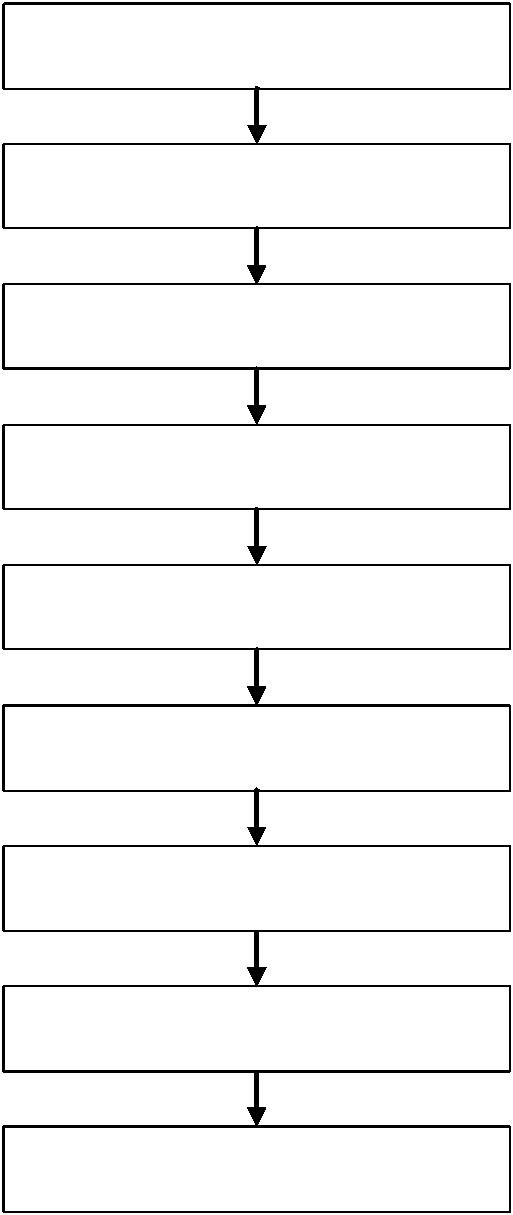
Liquid-liquid extraction

Concentration/Dilution

Filtration

GC-MS

DATA



Test Report

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**ATTACHMENTS**

**Benzotriazole Testing Flow Chart**

1) Name of the person who made testing: Sherlock Gao

2) Name of the person in charge of testing: Jessy Huang

Sample cutting/preparation

Sample measurement

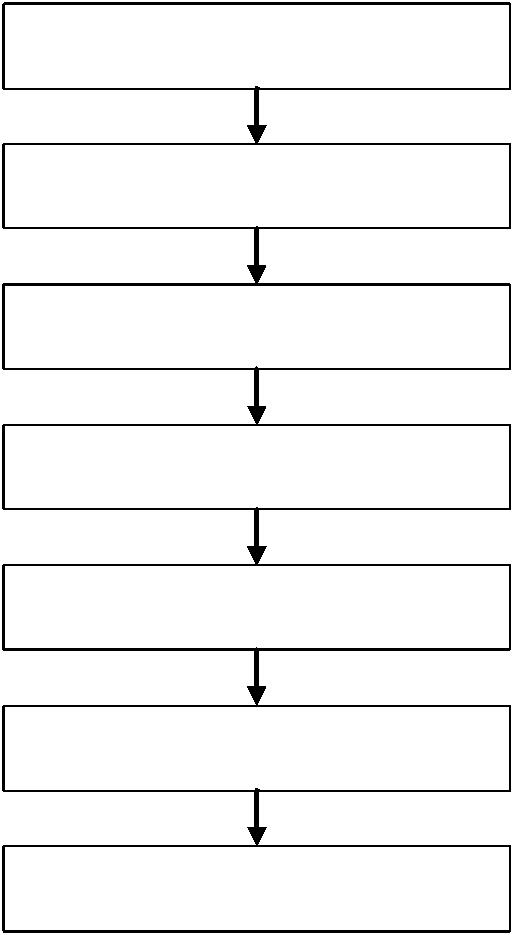
Solvent extraction

Concentration/Dilution

Filtration

GC-MS

DATA



Test Report

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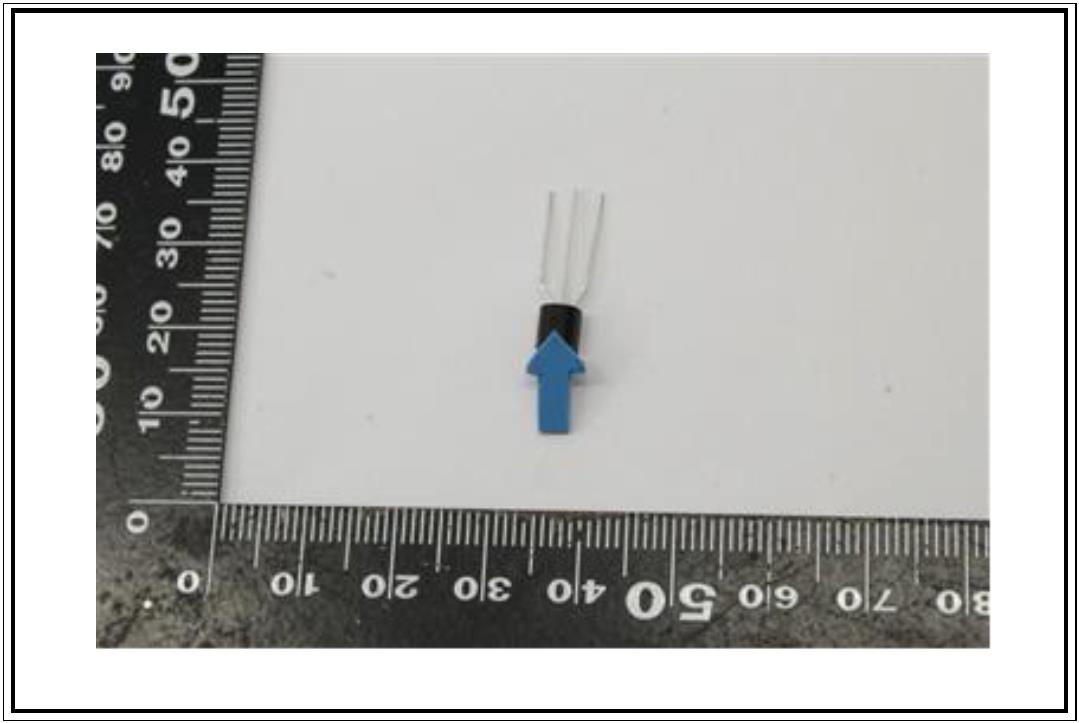
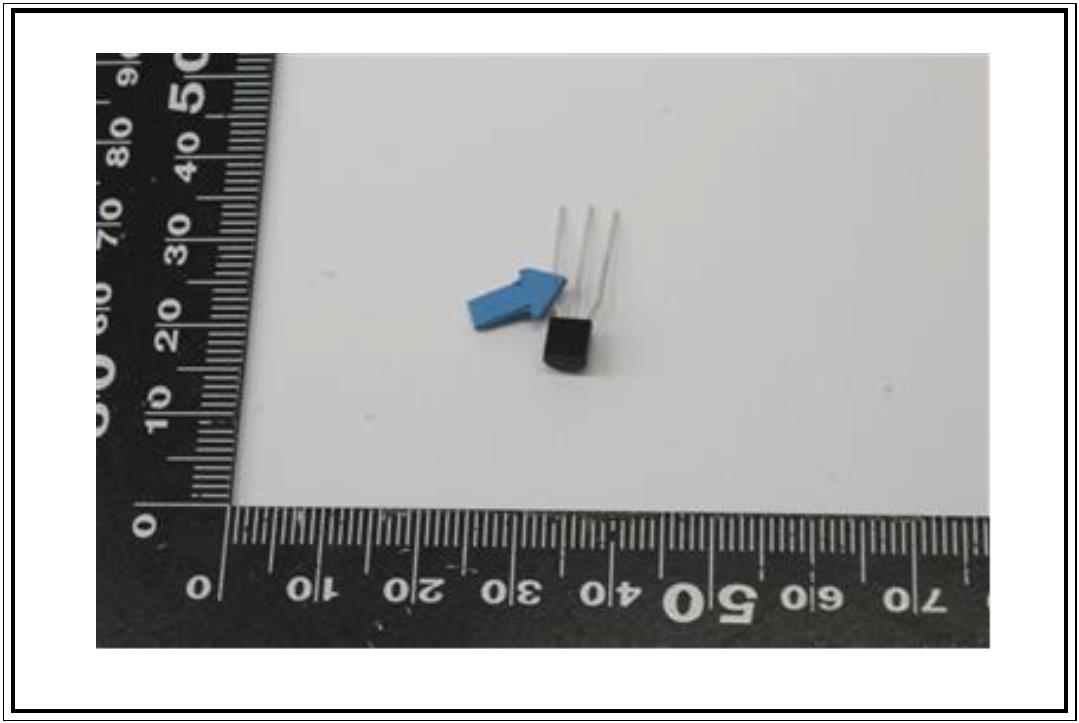
Sample photo:

SHA17-284802.001

SHA17-284802.002

SGS authenticate the photo on original report only

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



Test Report

No. SHAEC1728480201

Description

Date: 05 Jan 2018

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Test Results :

Test Part Description :

Specimen No.

SN1

SGS Sample ID

SHA17-284802.001

SHA17-284802.002

Silvery metal pin part

Black body part (mix all\*)

SN2

Remarks :

(1) 1 mg/kg = 0.0001%

(2) MDL = Method Detection Limit

(3) ND = Not Detected ( < MDL )

(4) "-" = Not Regulated

RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.

Test Method : With reference to IEC 62321-4:2013+AMD1:2017, IEC62321-5:2013, IEC62321-7-2:2017, IEC

62321-6:2015 and IEC62321-8:2017, analyzed by ICP-OES, AAS, UV-Vis and GC-MS.

Test Item(s)

Limit

Unit

MDL

2

002

4

Lead (Pb)

1000

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

Cadmium (Cd)

Mercury (Hg)

Hexavalent Chromium (Cr(VI))

Sum of PBBs

Monobromobiphenyl

Dibromobiphenyl

100

1000

1000

1000

-

-

-

-

-

-

-

-

-

-

2

2

8

-

5

5

5

5

5

5

5

5

5

5

-

5

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

Tribromobiphenyl

Tetrabromobiphenyl

Pentabromobiphenyl

Hexabromobiphenyl

Heptabromobiphenyl

Octabromobiphenyl

Nonabromobiphenyl

Decabromobiphenyl

Sum of PBDEs

Monobromodiphenyl ether

Dibromodiphenyl ether

Tribromodiphenyl ether

Tetrabromodiphenyl ether

1000

-

-

-

-

5

5

5



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Limit.

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Test Item(s).

Unit.

MDL

5

002.

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

Pentabromodiphenyl ether

Hexabromodiphenyl ether

Heptabromodiphenyl ether

Octabromodiphenyl ether

Nonabromodiphenyl ether

Decabromodiphenyl ether

Di-butyl Phthalate (DBP)

Benzyl Butyl Phthalate (BBP)

Di-2-Ethyl Hexyl Phthalate (DEHP)

Diisobutyl Phthalates (DIBP)

-

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

-

-

-

-

-

5

5

5

5

5

1000

1000

1000

1000

50

50

50

50

Notes :

(1)The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.

IEC 62321 series is equivalent to EN 62321 series

http://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101::::FSP\_ORG\_ID,FSP\_LANG

\_ID:1258637,25

(2)On 4 June 2015, Commission Directive (EU) 2015/863 was published in the Official Journal of

the European Union (OJEU) to include the phthalates BBP, DBP, DEHP and DIBP into

ANNEX II of the Rohs Recast Directive. The new law restricts each phthalate to no more than

0.1% in each homogeneous material of an electrical product.

(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.

(4)The restriction of DEHP, BBP, DBP and DIBP shall not apply to cables or spare parts for the

repair, the reuse, the updating of functionalities or upgrading of capacity of EEE placed on the

market before 22 July 2019, and of medical devices, including in vitro medical devices, and

monitoring and control instruments, including industrial monitoring and control

instruments, placed on the market before 22 July 2021.

(5)The restriction of DEHP, BBP and DBP shall not apply to toys which are already subject to

the restriction of DEHP, BBP and DBP through entry 51 of Annex XVII to Regulation (EC) No

1907/2006.

RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU

Test Method : With reference to IEC 62321-4:2013+AMD1:2017, IEC62321-5:2013 and IEC62321-7-1:2015,

analyzed by ICP-OES and UV-Vis .



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Limit.

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Test Item(s).

Unit.

MDL

2

2

001.

ND

17

Cadmium (Cd)

Lead (Pb)

Mercury (Hg)

Hexavalent Chromium (Cr(VI))▼

100

1000

1000

-

mg/kg

mg/kg

mg/kg

µg/cm²

2

0.10

ND

ND

Notes :

(1)The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.

IEC 62321 series is equivalent to EN 62321 series

http://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101::::FSP\_ORG\_ID,FSP\_LANG

\_ID:1258637,25

(2)▼ = a. The sample is positive for CrVI if the CrVI concentration is greater than 0.13 μg/cm².

The sample coating is considered to contain CrVI

b. The sample is negative for CrVI if CrVI is ND (concentration less than 0.10 μg/cm²). The

coating is considered a non-CrVI based coating

c. The result between 0.10 μg/cm² and 0.13 μg/cm² is considered to be inconclusive -

unavoidable coating variations may influence the determination

Information on storage conditions and production date of the tested sample is unavailable

and thus Cr(VI) results represent status of the sample at the time of testing.

Sulfur.

Test Method : With reference to EN 14582: 2007, analysis was performed by Ion Chromatograph (IC).

Test Item(s).

Sulfur (S)

Unit.

MDL

50

002.

ND

mg/kg

Polychlorinated Naphthalenes (PCNs).

Test Method : With reference to US EPA 8081B: 2007, analysis was performed by GC-MS

Test Item(s).

Unit.

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

MDL

002.

ND

ND

ND

ND

ND

ND

2-Chlorinated Naphthalene

1,4-Dichlorinated Naphthalene

1,5-Dichlorinated Naphthalene

1,2-Dichlorinated Naphthalene

1,8-Dichlorinated Naphthalene

1,2,3-Trichlorinated Naphthalene

5

5

5

5

5

5



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Test Item(s).

Unit.

mg/kg

mg/kg

mg/kg

mg/kg

MDL

002.

ND

ND

ND

ND

1,2,3,4-Tetrachlorinated Naphthalene

5

5

5

5

1,2,3,4,6-Pentachlorinated Naphthalene

Octa-chlorinaed Naphthalene

1-Chlorinated Naphthalene

Organic-tin compounds.

Test Method : With reference to ISO 17353: 2004 with carbamate, analysis was performed by GC-MS.

Test Item(s).

Unit.

mg/kg

mg/kg

mg/kg

MDL

0.02

0.02

0.02

002.

ND

ND

Tributyl tin (TBT)

Tripropyltin (TPT)

Dibutyl tin (DBT)

ND

Alkanes C10-C13, chloro (short-chain chlorinated paraffins) (SCCP)

Test Method : With reference to ISO 18219: 2015, analysis was performed by GC-NCl-MS

Test Item(s).

Unit.

MDL

50

002.

ND

Alkanes C10-C13, chloro (short-chain chlorinated

paraffins) (SCCP)

mg/kg

Hexabromocyclododecane (HBCDD)

Test Method : With reference to US EPA 3550C: 2007, analysis was performed by GC-MS.

Test Item(s).

CAS NO.

Unit.

MDL

10

002.

ND

Hexabromocyclododecane

(HBCDD)

25637-99-4,

3194- 55-6

mg/kg

Bisphenol-A.



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Test Method : Extraction by organic solvent, analysis by HPLC-DAD-MS.

Test Item(s)

Bisphenol-A

Unit

MDL

1

002

ND

mg/kg

Polychlorinated Terphenyls (PCTs)

Test Method : With reference to US EPA 8082A: 2007, analysis was performed by GC-MS

Test Item(s)

Aroclor 5432

Aroclor 5442

Unit

mg/kg

mg/kg

MDL

002

ND

ND

5

5

PFOS (Perfluorooctane Sulfonates) and PFOA (Perfluorooctanoic Acid)

Test Method : With reference to US EPA 3550C: 2007, analysis was performed by HPLC-MS.

Test Item(s)

Perfluorooctanesulfonate (PFOS)^

Perfluorooctanoic Acid (PFOA)

Limit

1000

Unit

mg/kg

mg/kg

MDL

10

10

002

ND

ND

-

Notes :

(1) Max. limit specified by commission regulation (EU) No. 757/2010 amending regulation (EC) No

850/2004

(2)^ PFOS refer to Perfluorooctanesulfonic acid and its derivatives including Perfluoroctanesulfonic acid,

Perfluoroctane sulfonamide, N-Methylperfluoroctane sulfonamide, N-Ethylperfluoroctane sulfonamide,

N-Methylperfluoroctane sulfonamidoethanol and N-Ethylperfluoroctane sulfonamidoethanol.

Polycyclic aromatic hydrocarbons (PAHs).

Test Method : With reference to AfPS GS 2014:01 PAK, analysis was performed by GC-MS.

Test Item(s)

Unit

mg/kg

MDL

0.1

002

ND

Benzo(a)pyrene(BaP)

Benzo(e)pyrene(BeP)

Benzo(a)anthracene(BaA)

Benzo(b)fluoranthene(BbF)

Benzo(j)fluoranthene(BjF)

Benzo(k)fluoranthene(BkF)

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

0.1

0.1

0.1

0.1

0.1

ND

ND

ND

ND

ND



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Unit.

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Test Item(s).

Chrysene(CHR)

MDL

0.1

002.

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

Dibenzo(a,h)anthracene(DBA)

Benzo(g,h,i)perylene(BPE)

Indeno(1,2,3-c,d)pyrene(IPY)

Acenaphthylene(ANY)

Acenaphthene(ANA)

Fluorene(FLU)

Phenanthrene(PHE)

Pyrene(PYR)

Anthracene(ANT)

0.1

0.1

0.1

0.1

0.1

0.1

0.1

0.1

0.1

0.1

-

Fluoranthene(FLT)

Sum of Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Pyrene,

Anthracene, Fluoranthene

Naphthalene(NAP)

Sum of 18 PAHs

mg/kg

mg/kg

0.1

-

ND

ND



Test Report

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Phthalates Content.

Test Method : With reference to EN 14372:2004, analysis was performed by GC-MS.

Test Item(s).

Dibutyl Phthalate (DBP)

Benzylbutyl Phthalate (BBP)

Bis-(2-ethylhexyl) Phthalate (DEHP)

Diisononyl Phthalate (DINP)

CAS NO.

84-74-2

85-68-7

Unit.

%

%

%

%

MDL

0.003

0.003

0.003

0.01

002.

ND

ND

ND

ND

117-81-7

28553-12-0

/68515-48-0

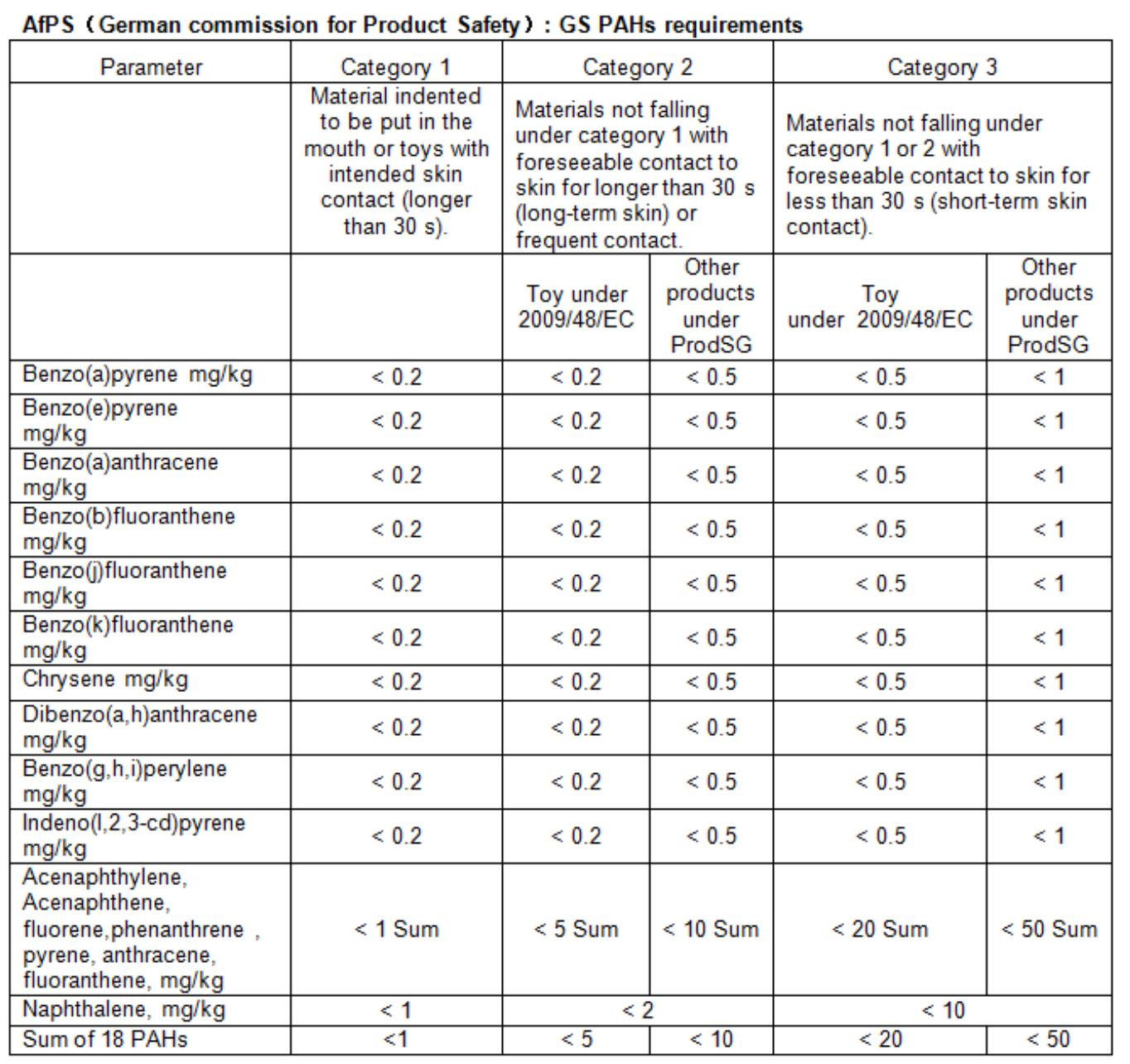
117-84-0

Di-n-octyl Phthalate (DNOP)

%

0.003

ND



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Test Item(s).

Diisodecyl Phthalate (DIDP)

CAS NO.

Unit.

%

MDL

0.01

002.

ND

26761-40-0

/68515-49-1

131-11-3

84-66-2

84-69-5

131-18-0

84-61-7

84-62-8

523-31-9

27554-26-3

131-16-8

84-76-4

Dimethyl Phthalate (DMP)

Diethyl Phthalate (DEP)

%

%

%

%

%

%

%

%

%

%

%

0.003

0.003

0.003

0.003

0.003

0.003

0.003

0.01

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

Diisobutyl Phthalate (DIBP)

Di-n-pentyl Phthalates (DnPP)

Dicyclohexyl Phthalate (DCHP)

Diphenyl Phthalate (DPhP)

Dibenzyl Phthalate (DBzP)

Diisooctyl Phthalate (DiOP)

Dipropyl Phthalate (DPrP)

Dinonyl Phthalate (DNP)

0.003

0.003

0.003

Di-n-hexyl Phthalate (DnHP)

84-75-3

Notes :

(1) DBP,BBP,DEHP Reference information: Entry 51 of Regulation (EC) No 552/2009 amending Annex

XVII of REACH Regulation (EC) No 1907/2006 (previously restricted under Directive 2005/84/EC):

i) Shall not be used as substances or in mixtures, in concentrations greater than 0.1 % by weight of

the plasticised material, in toys and childcare articles.

ii) Toys and childcare articles containing these phthalates in a concentration greater than 0.1 % by

weight of the plasticised material shall not be placed on the market.

Please refer to Regulation (EC) No 552/2009 to get more detail information

DINP, DNOP, DIDP Reference information: Entry 52 of Regulation (EC) No 552/2009 amending

Annex XVII of REACH Regulation (EC) No 1907/2006 (previously restricted under Directive

2005/84/EC).

i) Shall not be used as substances or in mixtures, in concentrations greater than 0.1 % by weight of

the plasticised material, in toys and childcare articles which can be placed in the mouth by

children.

ii) Such toys and childcare articles containing these phthalates in a concentration greater than 0.1 %

by weight of the plasticised material shall not be placed on the market.

Please refer to Regulation (EC) No 552/2009 to get more detail information

Polychlorinated Biphenyls (PCBs).

Test Method : With reference to US EPA 8082A: 2007, analysis was performed by GC-MS

Test Item(s)

2,4,4’-Trichlorobiphenyl (PCB 28)

CAS NO.

7012-37-5

Unit

mg/kg

MDL

0.5

002

ND

2,2’,5,5’-Tetrachloro-biphenyl (PCB 52)

2,2’,4,5,5’-Pentachloro-biphenyl (PCB 101)

35693-99-3

37680-73-2

mg/kg

mg/kg

0.5

0.5

ND

ND



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Test Item(s).

CAS NO.

Unit.

mg/kg

mg/kg

mg/kg

mg/kg

MDL

0.5

0.5

0.5

0.5

002.

ND

ND

ND

ND

2,3’,4,4’,5-Pentachlorobiphenyl (PCB 118)

2,2’,3,4,4’,5’-Hexachloro-biphenyl (PCB 138)

2,2’,4,4’,5,5’-Hexachloro-biphenyl (PCB 153)

2,2’,3,4,4’,5,5’-Heptachlorobiphenyl (PCB 180)

31508-00-6

35065-28-2

35065-27-1

35065-29-3

Benzotriazole UV Absorbant

Test Method : With reference to US EPA 3550C: 2007, analysis was performed by GC-MS.

Test Item(s).

Unit.

mg/kg

MDL

5

002.

ND

2-(3,5-Di-tert-butyl-2-hydroxyphenyl) benzotriazole (UV-320) (CAS No:

3846-71-7)

2-(3’,5’-Di-tert-butyl-2’-hydroxyphenyl)-5-chloro benzotriazole (UV-327) (CAS

No: 3864-99-1)

2-(2’-hydroxy-3’,5’-di-tert- amylphenyl) benzotriazole (UV-328) (CAS No:

25973-55-1)

mg/kg

mg/kg

mg/kg

5

5

5

ND

ND

ND

TinUVin 350 (UV-350) (CAS No: 36437-37-3)

\*The sample(s) was/were analyzed on behalf of the applicant as mixing sample in one testing. The

above result(s) was/were only given as the informality value and only for reference.



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**ATTACHMENTS**

**Pb/Cd/Hg/Cr6+/PBBs/PBDEs Testing Flow Chart**

1) Name of the person who made testing: Meria Jin/Gary Xu/ Xiaolong Yang/Sielina Song

2) Name of the person in charge of testing: Jan Shi/Jessy Huang/Luna Xu/Shara Wang

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

6+

(Cr and PBBs/PBDEs test method excluded)

Sample Preparation

Sample Measurement

**Cr6+**

**Pb/Cd/Hg/Cr**

Acid digestion with

**PBBs/PBDEs**

Sample solvent

Nonmetallic

material

Metallic

material

microwave /

hotplate

extraction

ABS/PC/PVC

Others

Concentration/

Dilution of

extraction solution

Boiling water

extraction

Filtration

Dissolving by

ultrasonicatio

Digesting at

150~160°C

Adding 1,5-

diphenylcarb

azide for

Solution

Residue

Filtration

GC-MS

DATA

Digesting at

60°C by

ultrasonicatio

Separating to

get aqueous

phase

color

1) Alkali Fusion /

Dry Ashing

2) Acid to

UV-Vis.

DATA

pH adjustment

ICP-OES/AAS

DATA

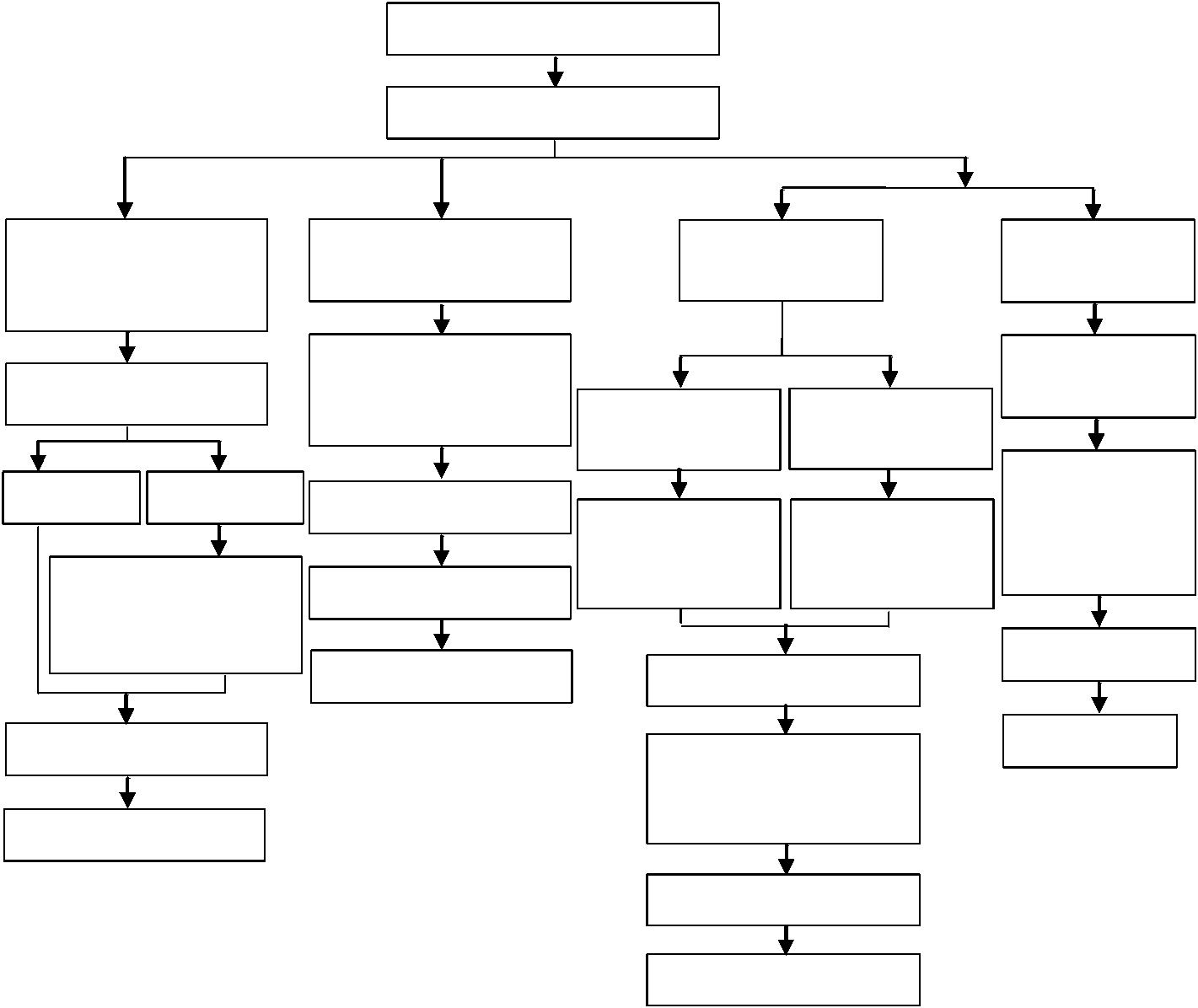
Adding 1,5-

diphenylcarbazide

for color

UV-Vis

DATA



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**ATTACHMENTS**

**Phthalates Testing Flow Chart**

1) Name of the person who made testing: Sherlock Gao

2) Name of the person in charge of testing: Jessy Huang

Sample cutting/preparation

Sample measurement

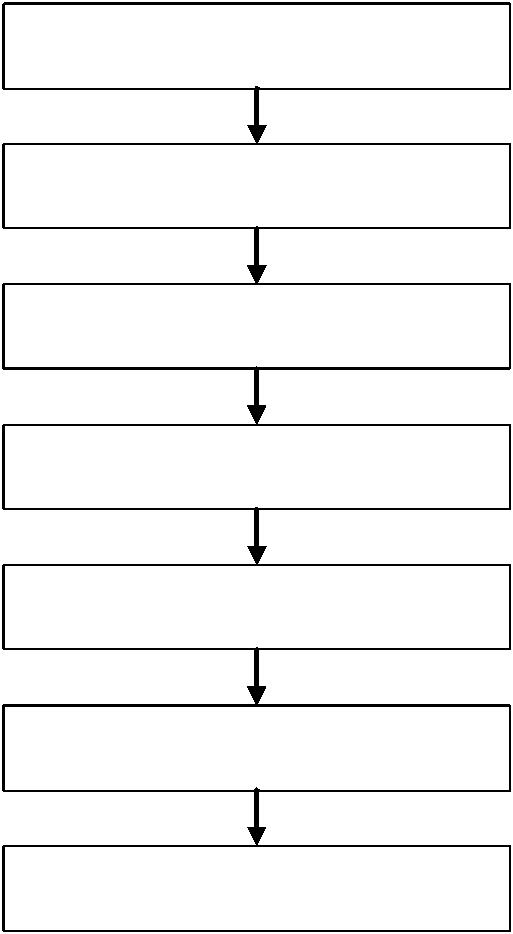
Solvent extraction

Concentration/Dilution

Filtration

GC-MS

DATA



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**ATTACHMENTS**

**HBCDD Testing Flow Chart**

1) Name of the person who made testing: Gary Xu

2) Name of the person in charge of testing: Jessy Huang

Sample cutting/preparation

Sample measurement

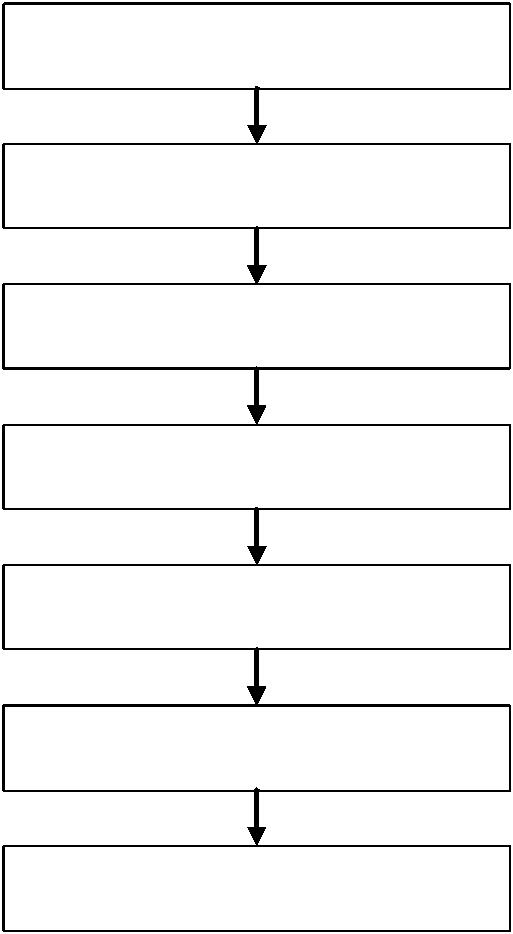
Solvent extraction

Concentration/Dilution

Filtration

GC-MS

DATA



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**ATTACHMENTS**

**PFOS/PFOA Testing Flow Chart**

1) Name of the person who made testing: Jane Yang

2) Name of the person in charge of testing: Myra Ma

Sample cutting/preparation

Sample measurement

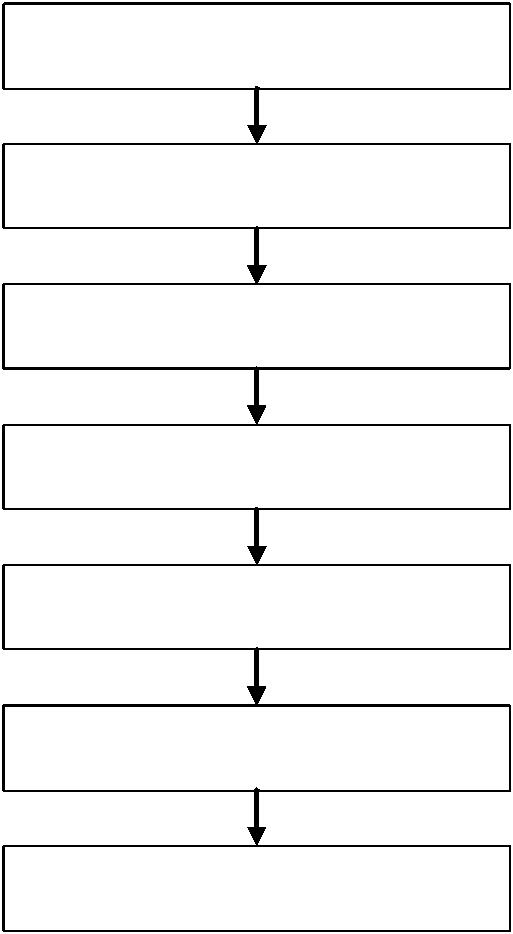
Solvent extraction

Concentration/Dilution

Filtration

LC-MS

DATA



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**ATTACHMENTS**

**BPA Testing Flow Chart**

1) Name of the person who made testing: Alfred Chen

2) Name of the person in charge of testing: Judy Li

Sample cutting/preparation

Sample measurement

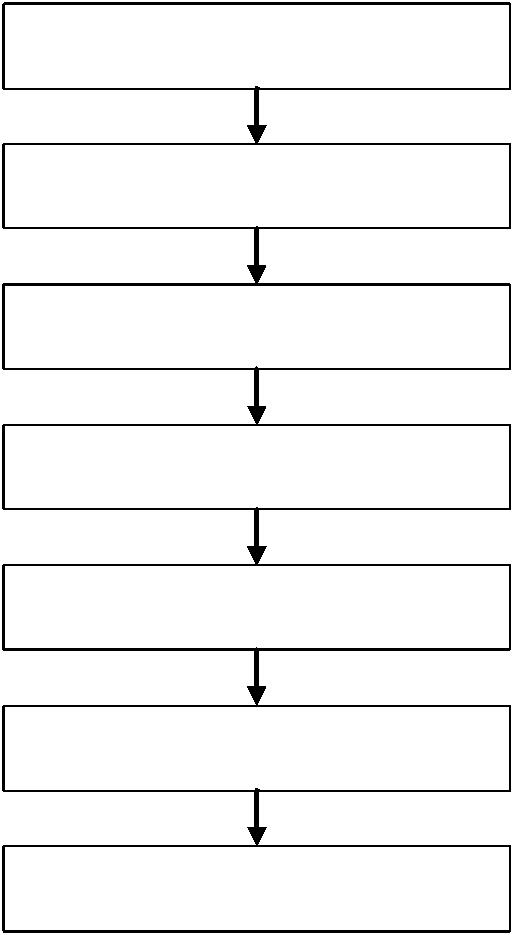
Solvent extraction

Concentration/Dilution

Filtration

HPLC-DAD-MS/LC\_MS

DATA



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**ATTACHMENTS**

**PAHs Testing Flow Chart**

1) Name of the person who made testing: Sherlock Gao

2) Name of the person in charge of testing: Jessy Huang

Sample cutting/preparation

Sample measurement

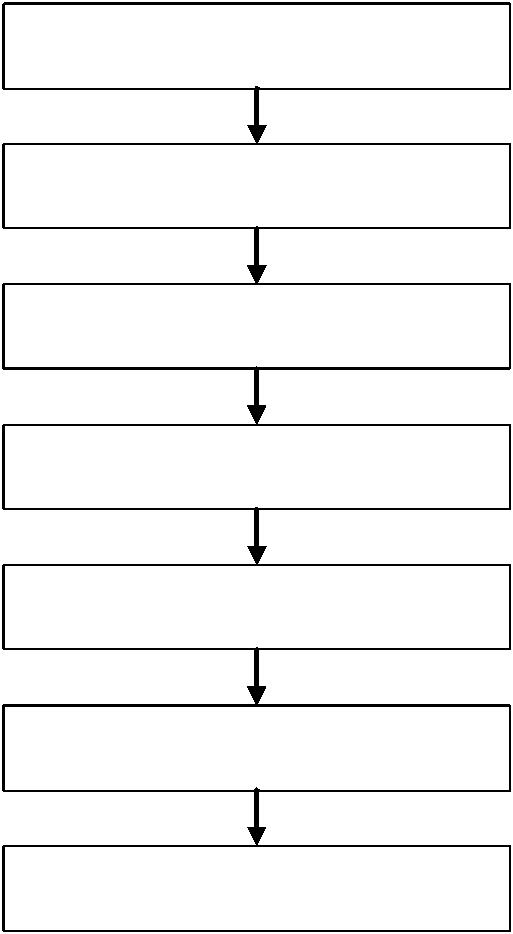
Solvent extraction

Concentration/Dilution

Filtration

GC-MS

DATA



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**ATTACHMENTS**

**PCB/ PCT/ PCN Testing Flow Chart**

1) Name of the person who made testing: Jenny Zhang

2) Name of the person in charge of testing: Zirco Yu

Sample cutting/preparation

Sample measurement

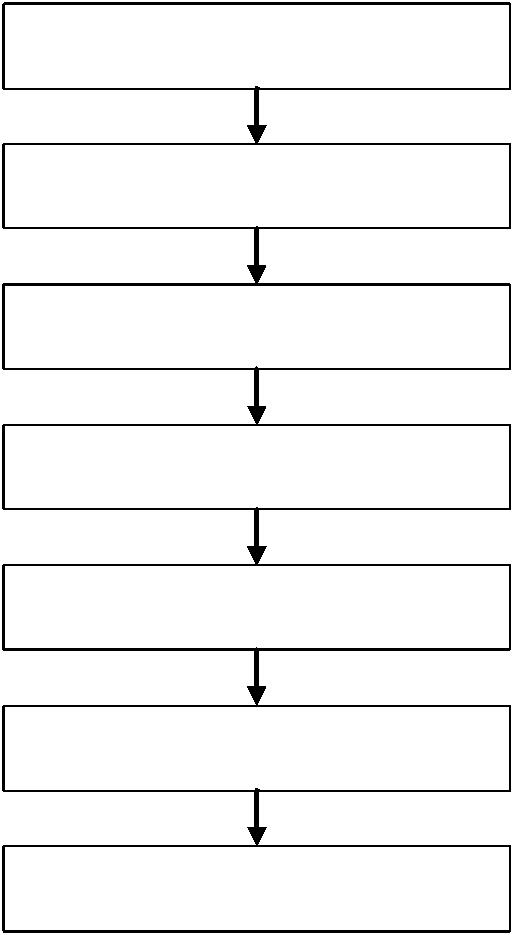
Solvent extraction

Concentration/Dilution

Filtration

GC-MS

DATA



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**ATTACHMENTS**

**Organotin Testing Flow Chart**

1) Name of the person who made testing: Alex Deng

2) Name of the person in charge of testing: Jessy Huang

Sample cutting/preparation

Sample measurement

Solvent extraction

Derivatization

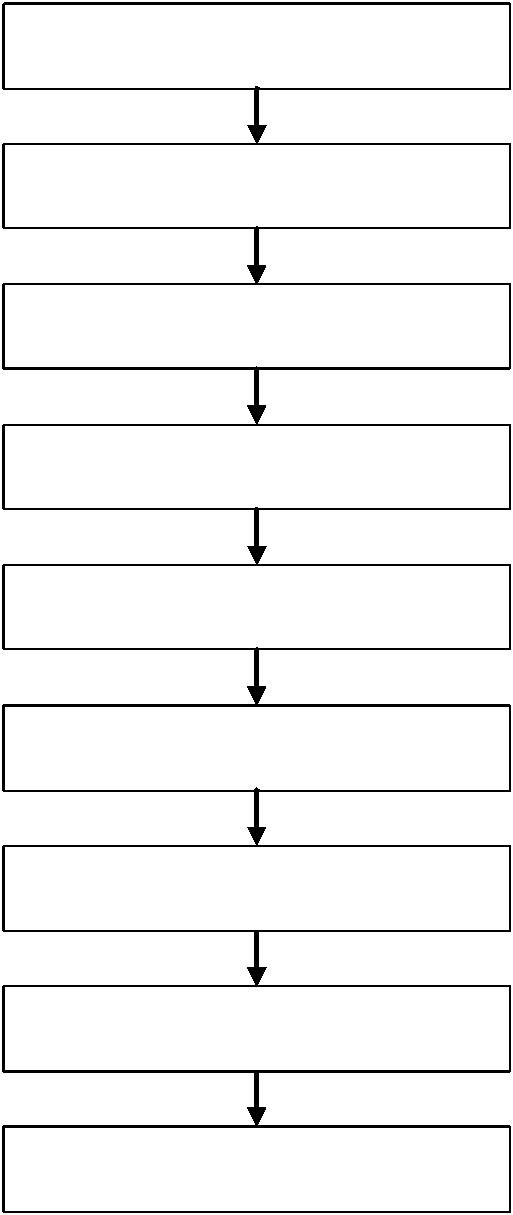
Liquid-liquid extraction

Concentration/Dilution

Filtration

GC-MS

DATA



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**ATTACHMENTS**

**Benzotriazole Testing Flow Chart**

1) Name of the person who made testing: Sherlock Gao

2) Name of the person in charge of testing: Jessy Huang

Sample cutting/preparation

Sample measurement

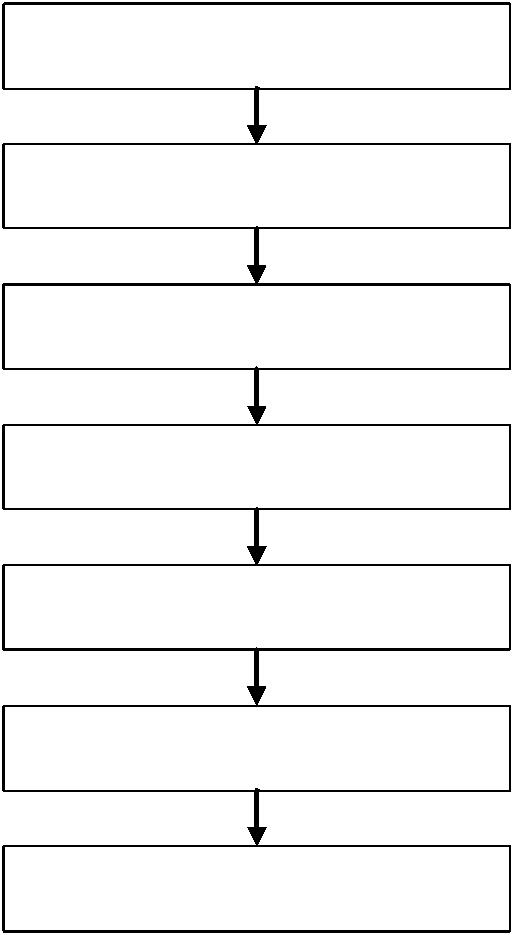
Solvent extraction

Concentration/Dilution

Filtration

GC-MS

DATA



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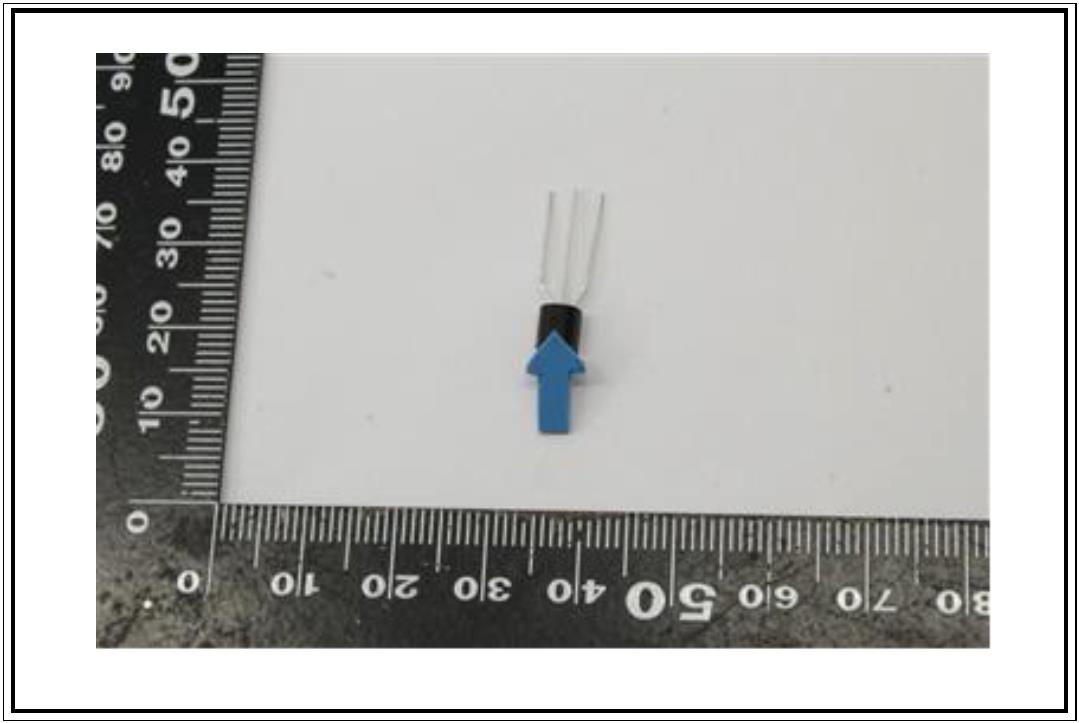
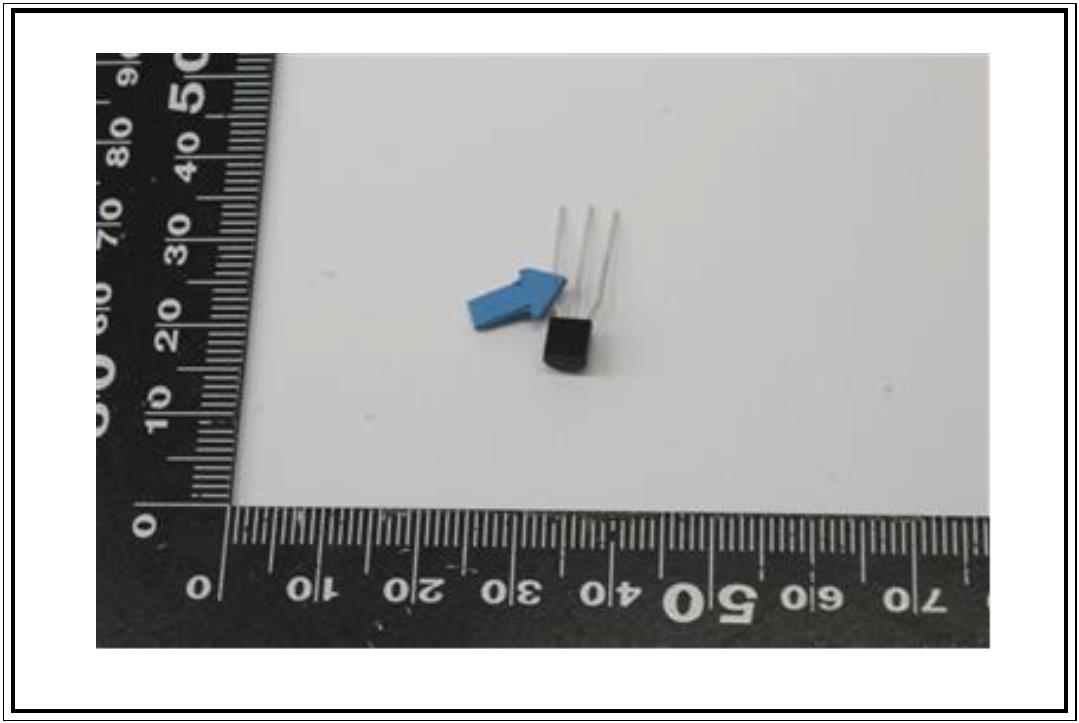
Sample photo:

SHA17-284802.001

SHA17-284802.002

SGS authenticate the photo on original report only

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



Test Report

No. SHAEC1728480201

Description

Date: 05 Jan 2018

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Test Results :

Test Part Description :

Specimen No.

SN1

SGS Sample ID

SHA17-284802.001

SHA17-284802.002

Silvery metal pin part

Black body part (mix all\*)

SN2

Remarks :

(1) 1 mg/kg = 0.0001%

(2) MDL = Method Detection Limit

(3) ND = Not Detected ( < MDL )

(4) "-" = Not Regulated

RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.

Test Method : With reference to IEC 62321-4:2013+AMD1:2017, IEC62321-5:2013, IEC62321-7-2:2017, IEC

62321-6:2015 and IEC62321-8:2017, analyzed by ICP-OES, AAS, UV-Vis and GC-MS.

Test Item(s)

Limit

Unit

MDL

2

002

4

Lead (Pb)

1000

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

Cadmium (Cd)

Mercury (Hg)

Hexavalent Chromium (Cr(VI))

Sum of PBBs

Monobromobiphenyl

Dibromobiphenyl

100

1000

1000

1000

-

-

-

-

-

-

-

-

-

-

2

2

8

-

5

5

5

5

5

5

5

5

5

5

-

5

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

Tribromobiphenyl

Tetrabromobiphenyl

Pentabromobiphenyl

Hexabromobiphenyl

Heptabromobiphenyl

Octabromobiphenyl

Nonabromobiphenyl

Decabromobiphenyl

Sum of PBDEs

Monobromodiphenyl ether

Dibromodiphenyl ether

Tribromodiphenyl ether

Tetrabromodiphenyl ether

1000

-

-

-

-

5

5

5



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Test Item(s).

Unit.

MDL

5

002.

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

Pentabromodiphenyl ether

Hexabromodiphenyl ether

Heptabromodiphenyl ether

Octabromodiphenyl ether

Nonabromodiphenyl ether

Decabromodiphenyl ether

Di-butyl Phthalate (DBP)

Benzyl Butyl Phthalate (BBP)

Di-2-Ethyl Hexyl Phthalate (DEHP)

Diisobutyl Phthalates (DIBP)

-

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

-

-

-

-

-

5

5

5

5

5

1000

1000

1000

1000

50

50

50

50

Notes :

(1)The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.

IEC 62321 series is equivalent to EN 62321 series

http://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101::::FSP\_ORG\_ID,FSP\_LANG

\_ID:1258637,25

(2)On 4 June 2015, Commission Directive (EU) 2015/863 was published in the Official Journal of

the European Union (OJEU) to include the phthalates BBP, DBP, DEHP and DIBP into

ANNEX II of the Rohs Recast Directive. The new law restricts each phthalate to no more than

0.1% in each homogeneous material of an electrical product.

(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.

(4)The restriction of DEHP, BBP, DBP and DIBP shall not apply to cables or spare parts for the

repair, the reuse, the updating of functionalities or upgrading of capacity of EEE placed on the

market before 22 July 2019, and of medical devices, including in vitro medical devices, and

monitoring and control instruments, including industrial monitoring and control

instruments, placed on the market before 22 July 2021.

(5)The restriction of DEHP, BBP and DBP shall not apply to toys which are already subject to

the restriction of DEHP, BBP and DBP through entry 51 of Annex XVII to Regulation (EC) No

1907/2006.

RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU

Test Method : With reference to IEC 62321-4:2013+AMD1:2017, IEC62321-5:2013 and IEC62321-7-1:2015,

analyzed by ICP-OES and UV-Vis .



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Test Item(s).

Unit.

MDL

2

2

001.

ND

17

Cadmium (Cd)

Lead (Pb)

Mercury (Hg)

Hexavalent Chromium (Cr(VI))▼

100

1000

1000

-

mg/kg

mg/kg

mg/kg

µg/cm²

2

0.10

ND

ND

Notes :

(1)The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.

IEC 62321 series is equivalent to EN 62321 series

http://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101::::FSP\_ORG\_ID,FSP\_LANG

\_ID:1258637,25

(2)▼ = a. The sample is positive for CrVI if the CrVI concentration is greater than 0.13 μg/cm².

The sample coating is considered to contain CrVI

b. The sample is negative for CrVI if CrVI is ND (concentration less than 0.10 μg/cm²). The

coating is considered a non-CrVI based coating

c. The result between 0.10 μg/cm² and 0.13 μg/cm² is considered to be inconclusive -

unavoidable coating variations may influence the determination

Information on storage conditions and production date of the tested sample is unavailable

and thus Cr(VI) results represent status of the sample at the time of testing.

Sulfur.

Test Method : With reference to EN 14582: 2007, analysis was performed by Ion Chromatograph (IC).

Test Item(s).

Sulfur (S)

Unit.

MDL

50

002.

ND

mg/kg

Polychlorinated Naphthalenes (PCNs).

Test Method : With reference to US EPA 8081B: 2007, analysis was performed by GC-MS

Test Item(s).

Unit.

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

MDL

002.

ND

ND

ND

ND

ND

ND

2-Chlorinated Naphthalene

1,4-Dichlorinated Naphthalene

1,5-Dichlorinated Naphthalene

1,2-Dichlorinated Naphthalene

1,8-Dichlorinated Naphthalene

1,2,3-Trichlorinated Naphthalene

5

5

5

5

5

5



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Test Item(s).

Unit.

mg/kg

mg/kg

mg/kg

mg/kg

MDL

002.

ND

ND

ND

ND

1,2,3,4-Tetrachlorinated Naphthalene

5

5

5

5

1,2,3,4,6-Pentachlorinated Naphthalene

Octa-chlorinaed Naphthalene

1-Chlorinated Naphthalene

Organic-tin compounds.

Test Method : With reference to ISO 17353: 2004 with carbamate, analysis was performed by GC-MS.

Test Item(s).

Unit.

mg/kg

mg/kg

mg/kg

MDL

0.02

0.02

0.02

002.

ND

ND

Tributyl tin (TBT)

Tripropyltin (TPT)

Dibutyl tin (DBT)

ND

Alkanes C10-C13, chloro (short-chain chlorinated paraffins) (SCCP)

Test Method : With reference to ISO 18219: 2015, analysis was performed by GC-NCl-MS

Test Item(s).

Unit.

MDL

50

002.

ND

Alkanes C10-C13, chloro (short-chain chlorinated

paraffins) (SCCP)

mg/kg

Hexabromocyclododecane (HBCDD)

Test Method : With reference to US EPA 3550C: 2007, analysis was performed by GC-MS.

Test Item(s).

CAS NO.

Unit.

MDL

10

002.

ND

Hexabromocyclododecane

(HBCDD)

25637-99-4,

3194- 55-6

mg/kg

Bisphenol-A.



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Test Method : Extraction by organic solvent, analysis by HPLC-DAD-MS.

Test Item(s)

Bisphenol-A

Unit

MDL

1

002

ND

mg/kg

Polychlorinated Terphenyls (PCTs)

Test Method : With reference to US EPA 8082A: 2007, analysis was performed by GC-MS

Test Item(s)

Aroclor 5432

Aroclor 5442

Unit

mg/kg

mg/kg

MDL

002

ND

ND

5

5

PFOS (Perfluorooctane Sulfonates) and PFOA (Perfluorooctanoic Acid)

Test Method : With reference to US EPA 3550C: 2007, analysis was performed by HPLC-MS.

Test Item(s)

Perfluorooctanesulfonate (PFOS)^

Perfluorooctanoic Acid (PFOA)

Limit

1000

Unit

mg/kg

mg/kg

MDL

10

10

002

ND

ND

-

Notes :

(1) Max. limit specified by commission regulation (EU) No. 757/2010 amending regulation (EC) No

850/2004

(2)^ PFOS refer to Perfluorooctanesulfonic acid and its derivatives including Perfluoroctanesulfonic acid,

Perfluoroctane sulfonamide, N-Methylperfluoroctane sulfonamide, N-Ethylperfluoroctane sulfonamide,

N-Methylperfluoroctane sulfonamidoethanol and N-Ethylperfluoroctane sulfonamidoethanol.

Polycyclic aromatic hydrocarbons (PAHs).

Test Method : With reference to AfPS GS 2014:01 PAK, analysis was performed by GC-MS.

Test Item(s)

Unit

mg/kg

MDL

0.1

002

ND

Benzo(a)pyrene(BaP)

Benzo(e)pyrene(BeP)

Benzo(a)anthracene(BaA)

Benzo(b)fluoranthene(BbF)

Benzo(j)fluoranthene(BjF)

Benzo(k)fluoranthene(BkF)

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

0.1

0.1

0.1

0.1

0.1

ND

ND

ND

ND

ND



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Unit.

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Test Item(s).

Chrysene(CHR)

MDL

0.1

002.

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

Dibenzo(a,h)anthracene(DBA)

Benzo(g,h,i)perylene(BPE)

Indeno(1,2,3-c,d)pyrene(IPY)

Acenaphthylene(ANY)

Acenaphthene(ANA)

Fluorene(FLU)

Phenanthrene(PHE)

Pyrene(PYR)

Anthracene(ANT)

0.1

0.1

0.1

0.1

0.1

0.1

0.1

0.1

0.1

0.1

-

Fluoranthene(FLT)

Sum of Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Pyrene,

Anthracene, Fluoranthene

Naphthalene(NAP)

Sum of 18 PAHs

mg/kg

mg/kg

0.1

-

ND

ND



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Phthalates Content.

Test Method : With reference to EN 14372:2004, analysis was performed by GC-MS.

Test Item(s).

Dibutyl Phthalate (DBP)

Benzylbutyl Phthalate (BBP)

Bis-(2-ethylhexyl) Phthalate (DEHP)

Diisononyl Phthalate (DINP)

CAS NO.

84-74-2

85-68-7

Unit.

%

%

%

%

MDL

0.003

0.003

0.003

0.01

002.

ND

ND

ND

ND

117-81-7

28553-12-0

/68515-48-0

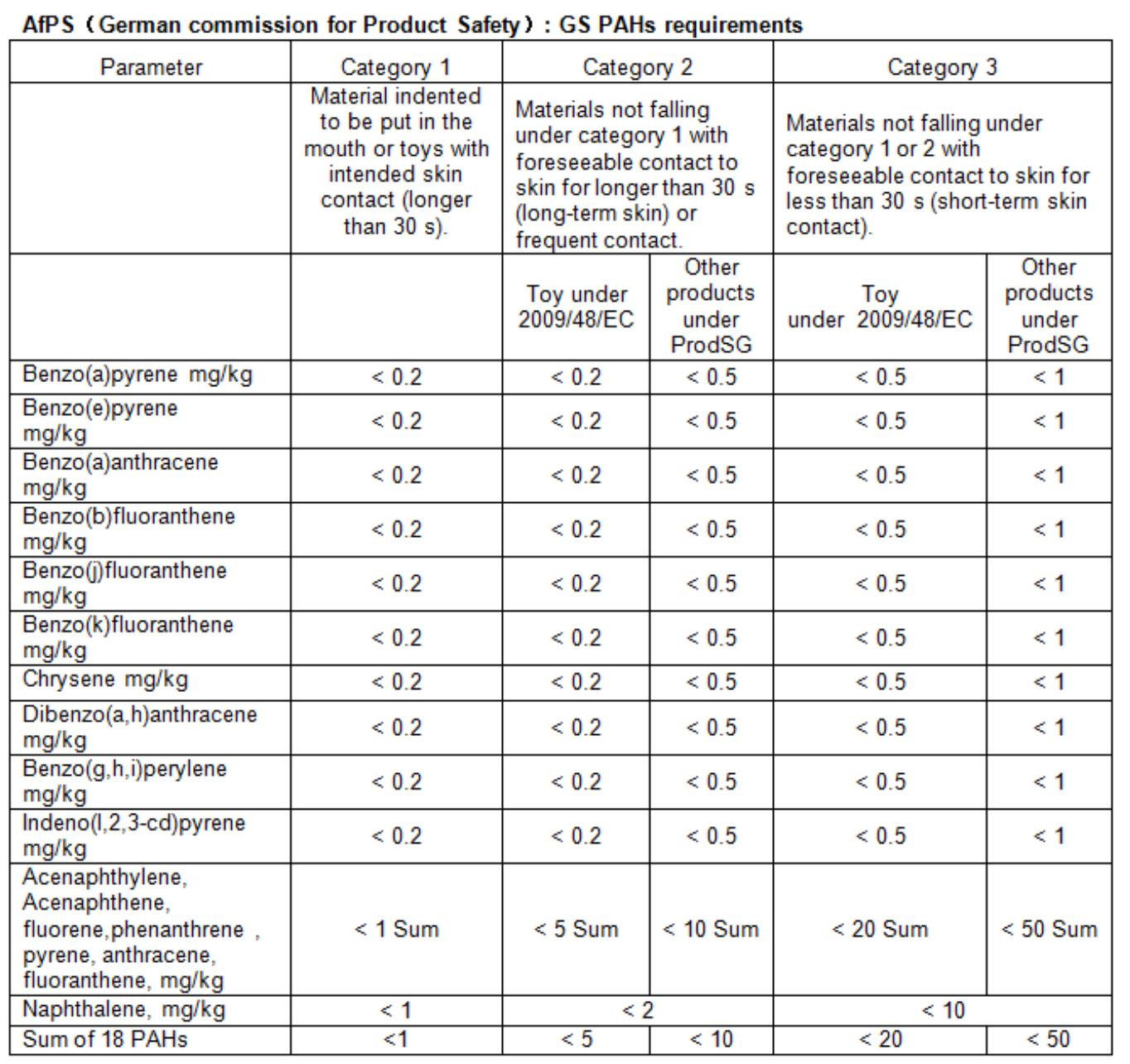
117-84-0

Di-n-octyl Phthalate (DNOP)

%

0.003

ND



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Test Item(s).

Diisodecyl Phthalate (DIDP)

CAS NO.

Unit.

%

MDL

0.01

002.

ND

26761-40-0

/68515-49-1

131-11-3

84-66-2

84-69-5

131-18-0

84-61-7

84-62-8

523-31-9

27554-26-3

131-16-8

84-76-4

Dimethyl Phthalate (DMP)

Diethyl Phthalate (DEP)

%

%

%

%

%

%

%

%

%

%

%

0.003

0.003

0.003

0.003

0.003

0.003

0.003

0.01

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

ND

Diisobutyl Phthalate (DIBP)

Di-n-pentyl Phthalates (DnPP)

Dicyclohexyl Phthalate (DCHP)

Diphenyl Phthalate (DPhP)

Dibenzyl Phthalate (DBzP)

Diisooctyl Phthalate (DiOP)

Dipropyl Phthalate (DPrP)

Dinonyl Phthalate (DNP)

0.003

0.003

0.003

Di-n-hexyl Phthalate (DnHP)

84-75-3

Notes :

(1) DBP,BBP,DEHP Reference information: Entry 51 of Regulation (EC) No 552/2009 amending Annex

XVII of REACH Regulation (EC) No 1907/2006 (previously restricted under Directive 2005/84/EC):

i) Shall not be used as substances or in mixtures, in concentrations greater than 0.1 % by weight of

the plasticised material, in toys and childcare articles.

ii) Toys and childcare articles containing these phthalates in a concentration greater than 0.1 % by

weight of the plasticised material shall not be placed on the market.

Please refer to Regulation (EC) No 552/2009 to get more detail information

DINP, DNOP, DIDP Reference information: Entry 52 of Regulation (EC) No 552/2009 amending

Annex XVII of REACH Regulation (EC) No 1907/2006 (previously restricted under Directive

2005/84/EC).

i) Shall not be used as substances or in mixtures, in concentrations greater than 0.1 % by weight of

the plasticised material, in toys and childcare articles which can be placed in the mouth by

children.

ii) Such toys and childcare articles containing these phthalates in a concentration greater than 0.1 %

by weight of the plasticised material shall not be placed on the market.

Please refer to Regulation (EC) No 552/2009 to get more detail information

Polychlorinated Biphenyls (PCBs).

Test Method : With reference to US EPA 8082A: 2007, analysis was performed by GC-MS

Test Item(s)

2,4,4’-Trichlorobiphenyl (PCB 28)

CAS NO.

7012-37-5

Unit

mg/kg

MDL

0.5

002

ND

2,2’,5,5’-Tetrachloro-biphenyl (PCB 52)

2,2’,4,5,5’-Pentachloro-biphenyl (PCB 101)

35693-99-3

37680-73-2

mg/kg

mg/kg

0.5

0.5

ND

ND



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Test Item(s).

CAS NO.

Unit.

mg/kg

mg/kg

mg/kg

mg/kg

MDL

0.5

0.5

0.5

0.5

002.

ND

ND

ND

ND

2,3’,4,4’,5-Pentachlorobiphenyl (PCB 118)

2,2’,3,4,4’,5’-Hexachloro-biphenyl (PCB 138)

2,2’,4,4’,5,5’-Hexachloro-biphenyl (PCB 153)

2,2’,3,4,4’,5,5’-Heptachlorobiphenyl (PCB 180)

31508-00-6

35065-28-2

35065-27-1

35065-29-3

Benzotriazole UV Absorbant

Test Method : With reference to US EPA 3550C: 2007, analysis was performed by GC-MS.

Test Item(s).

Unit.

mg/kg

MDL

5

002.

ND

2-(3,5-Di-tert-butyl-2-hydroxyphenyl) benzotriazole (UV-320) (CAS No:

3846-71-7)

2-(3’,5’-Di-tert-butyl-2’-hydroxyphenyl)-5-chloro benzotriazole (UV-327) (CAS

No: 3864-99-1)

2-(2’-hydroxy-3’,5’-di-tert- amylphenyl) benzotriazole (UV-328) (CAS No:

25973-55-1)

mg/kg

mg/kg

mg/kg

5

5

5

ND

ND

ND

TinUVin 350 (UV-350) (CAS No: 36437-37-3)

\*The sample(s) was/were analyzed on behalf of the applicant as mixing sample in one testing. The

above result(s) was/were only given as the informality value and only for reference.



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**ATTACHMENTS**

**Pb/Cd/Hg/Cr6+/PBBs/PBDEs Testing Flow Chart**

1) Name of the person who made testing: Meria Jin/Gary Xu/ Xiaolong Yang/Sielina Song

2) Name of the person in charge of testing: Jan Shi/Jessy Huang/Luna Xu/Shara Wang

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

6+

(Cr and PBBs/PBDEs test method excluded)

Sample Preparation

Sample Measurement

**Cr6+**

**Pb/Cd/Hg/Cr**

Acid digestion with

**PBBs/PBDEs**

Sample solvent

Nonmetallic

material

Metallic

material

microwave /

hotplate

extraction

ABS/PC/PVC

Others

Concentration/

Dilution of

extraction solution

Boiling water

extraction

Filtration

Dissolving by

ultrasonicatio

Digesting at

150~160°C

Adding 1,5-

diphenylcarb

azide for

Solution

Residue

Filtration

GC-MS

DATA

Digesting at

60°C by

ultrasonicatio

Separating to

get aqueous

phase

color

1) Alkali Fusion /

Dry Ashing

2) Acid to

UV-Vis.

DATA

pH adjustment

ICP-OES/AAS

DATA

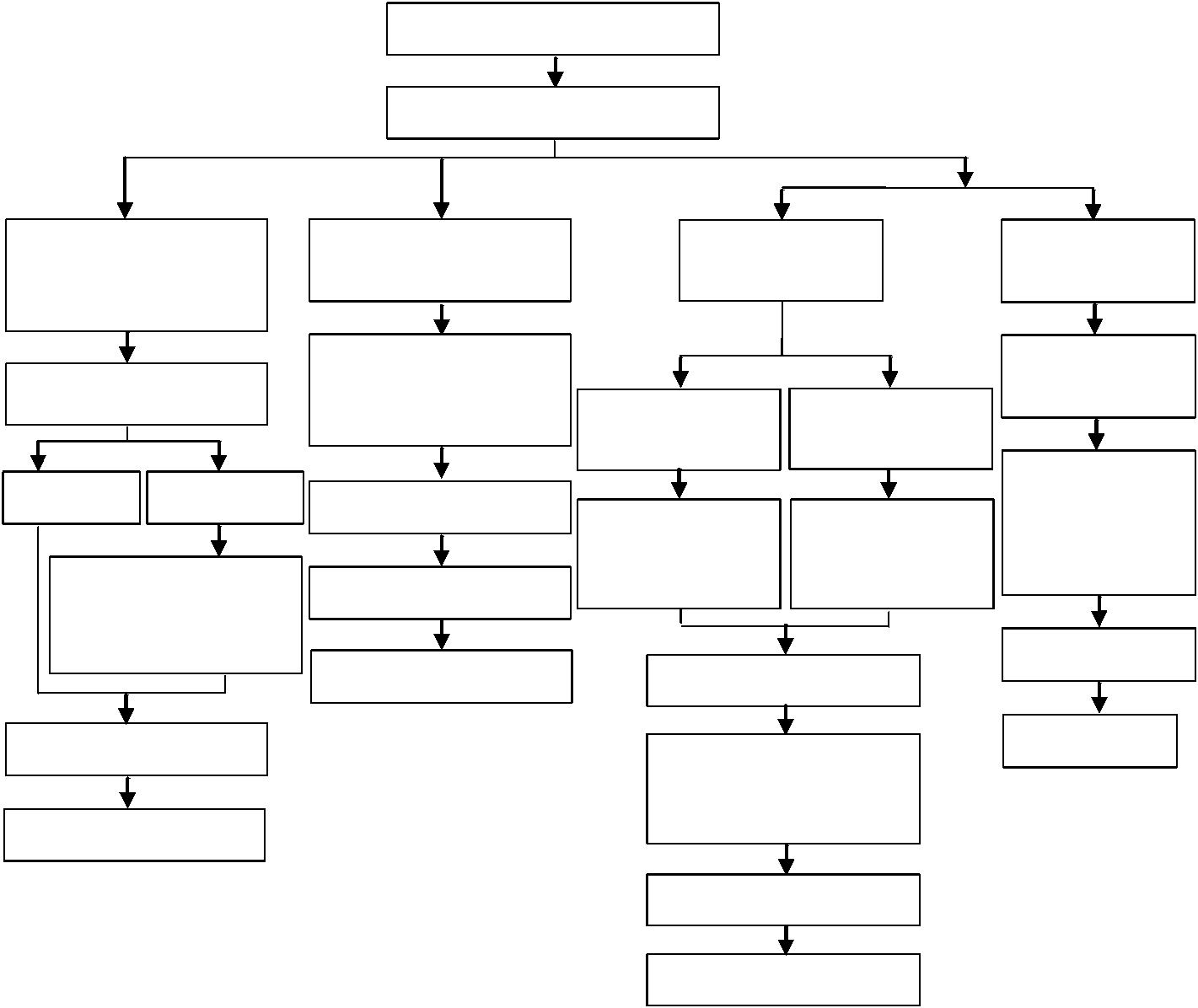
Adding 1,5-

diphenylcarbazide

for color

UV-Vis

DATA



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**ATTACHMENTS**

**Phthalates Testing Flow Chart**

1) Name of the person who made testing: Sherlock Gao

2) Name of the person in charge of testing: Jessy Huang

Sample cutting/preparation

Sample measurement

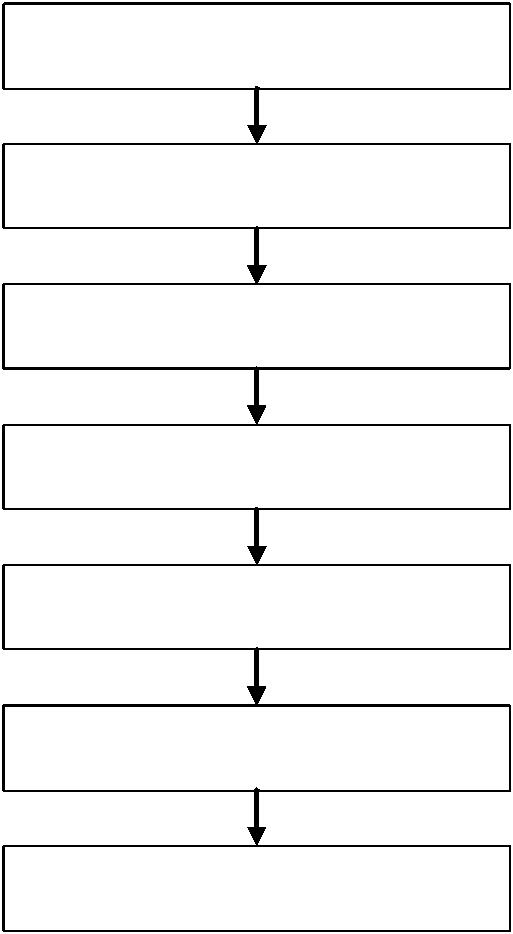
Solvent extraction

Concentration/Dilution

Filtration

GC-MS

DATA



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**ATTACHMENTS**

**HBCDD Testing Flow Chart**

1) Name of the person who made testing: Gary Xu

2) Name of the person in charge of testing: Jessy Huang

Sample cutting/preparation

Sample measurement

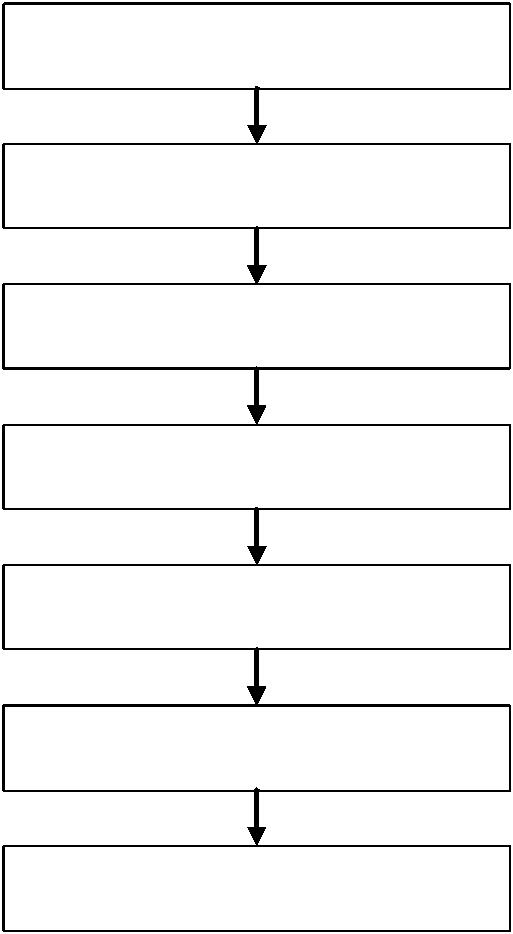
Solvent extraction

Concentration/Dilution

Filtration

GC-MS

DATA



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**ATTACHMENTS**

**PFOS/PFOA Testing Flow Chart**

1) Name of the person who made testing: Jane Yang

2) Name of the person in charge of testing: Myra Ma

Sample cutting/preparation

Sample measurement

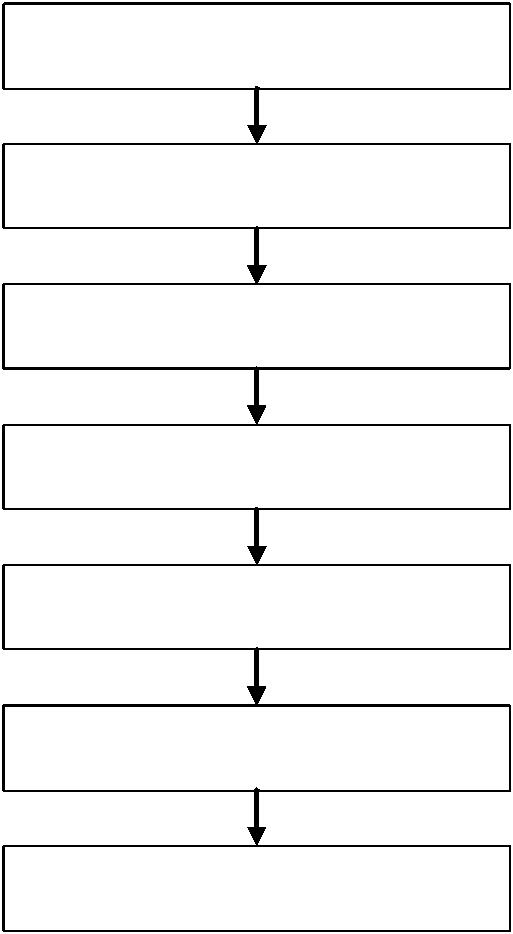
Solvent extraction

Concentration/Dilution

Filtration

LC-MS

DATA



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**ATTACHMENTS**

**BPA Testing Flow Chart**

1) Name of the person who made testing: Alfred Chen

2) Name of the person in charge of testing: Judy Li

Sample cutting/preparation

Sample measurement

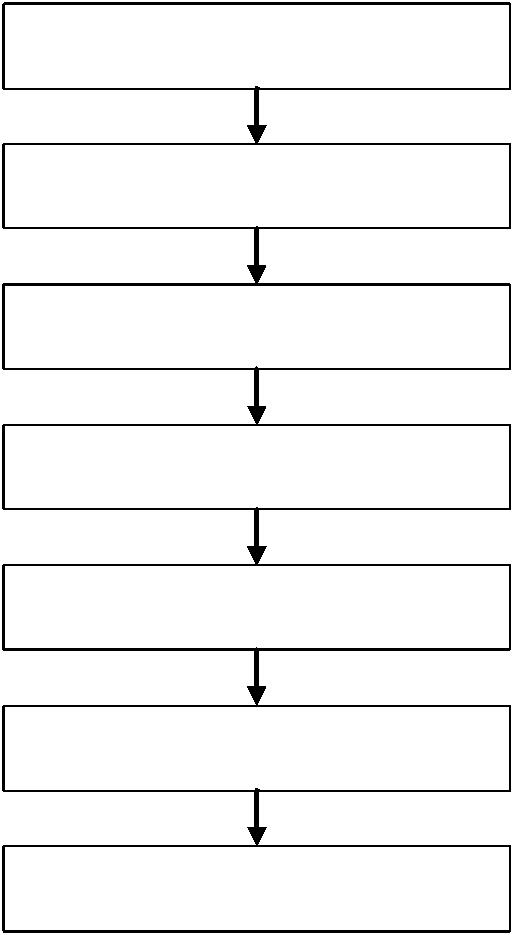
Solvent extraction

Concentration/Dilution

Filtration

HPLC-DAD-MS/LC\_MS

DATA



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**ATTACHMENTS**

**PAHs Testing Flow Chart**

1) Name of the person who made testing: Sherlock Gao

2) Name of the person in charge of testing: Jessy Huang

Sample cutting/preparation

Sample measurement

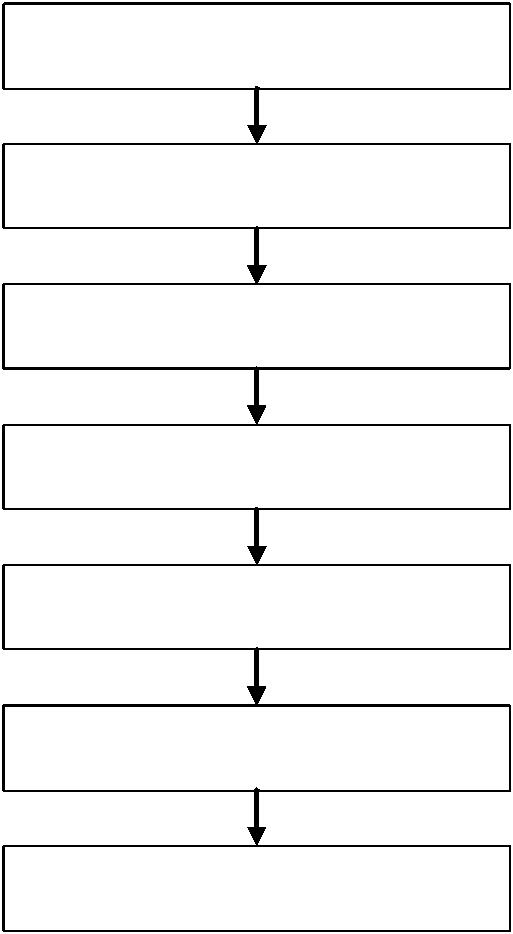
Solvent extraction

Concentration/Dilution

Filtration

GC-MS

DATA



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**ATTACHMENTS**

**PCB/ PCT/ PCN Testing Flow Chart**

1) Name of the person who made testing: Jenny Zhang

2) Name of the person in charge of testing: Zirco Yu

Sample cutting/preparation

Sample measurement

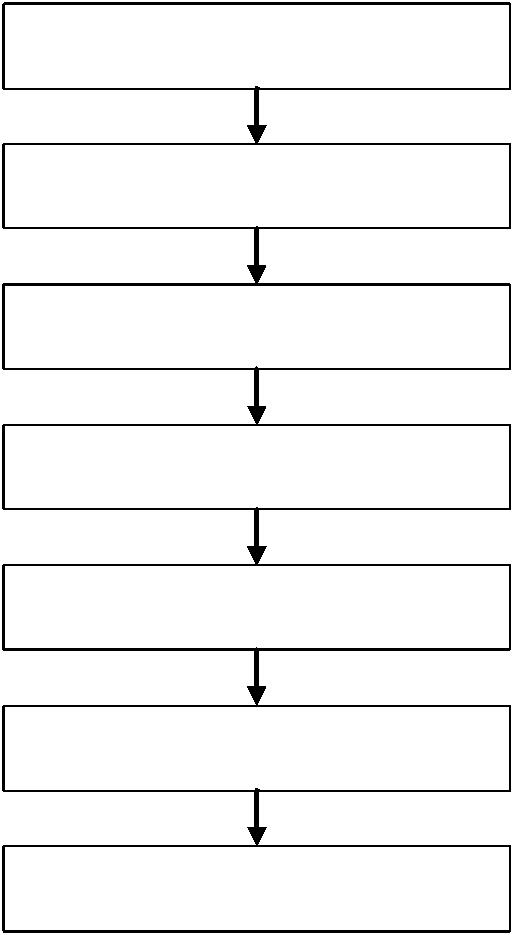
Solvent extraction

Concentration/Dilution

Filtration

GC-MS

DATA



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**ATTACHMENTS**

**Organotin Testing Flow Chart**

1) Name of the person who made testing: Alex Deng

2) Name of the person in charge of testing: Jessy Huang

Sample cutting/preparation

Sample measurement

Solvent extraction

Derivatization

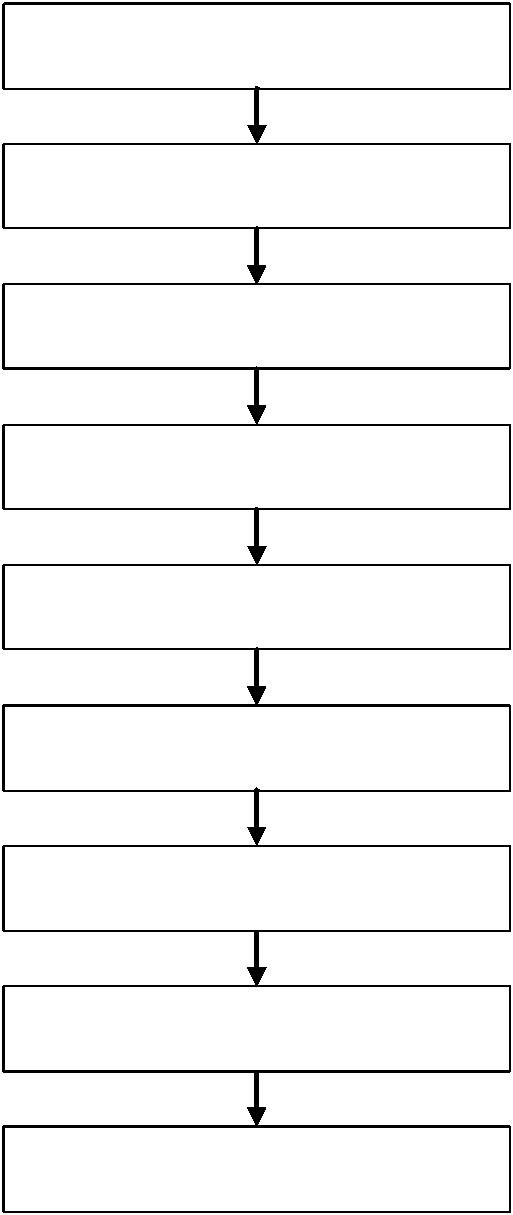
Liquid-liquid extraction

Concentration/Dilution

Filtration

GC-MS

DATA



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**ATTACHMENTS**

**Benzotriazole Testing Flow Chart**

1) Name of the person who made testing: Sherlock Gao

2) Name of the person in charge of testing: Jessy Huang

Sample cutting/preparation

Sample measurement

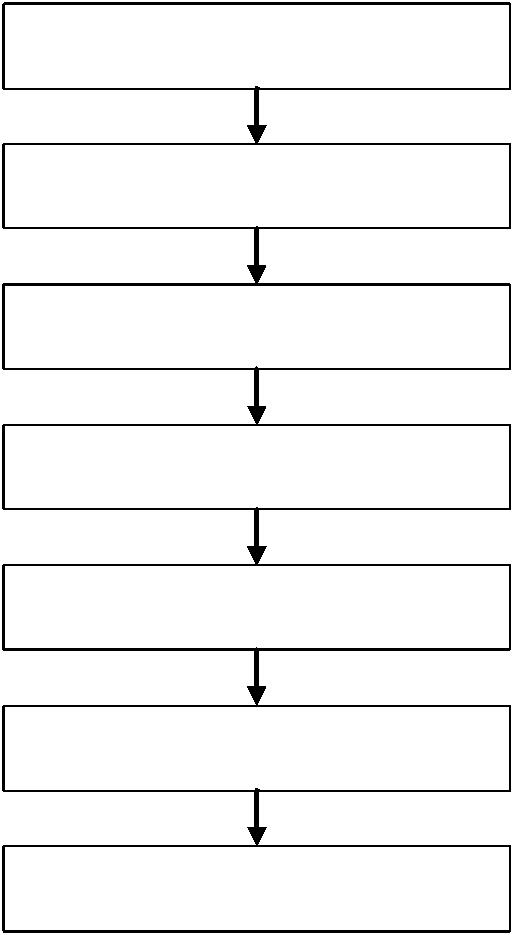
Solvent extraction

Concentration/Dilution

Filtration

GC-MS

DATA



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Sample photo:

SHA17-284802.001

SHA17-284802.002

SGS authenticate the photo on original report only

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

