

# Test Report

No. SH9069480/CHEM

Date: Apr. 22, 2009

Page 1 of 11

JIANGSU CHANGJIANG ELECTRONICS TECHNOLOGY CO.,LTD.  
NO.275 BINJIANG RD., JIANGYIN, JIANGSU CHINA

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

Sample Name : TO-92 PACKAGE PART (INCLUDE TO-92/92S/92L/92MOD/94)  
SGS Ref No. : 11762521-7  
Part No. : TO-92 (INCLUDE TO-92/92S/92L/92MOD/94)  
Main substance : BLACK PLASTIC PART

Sample Receiving Date : Apr.17, 2009  
Testing Period : Apr.17 – 21, 2009

Test Requested : (1) In accordance with the RoHS Directive 2002/95/EC, and its amendment directives  
(2) As specified by client, to determination DBP, BBP,DEHP, DINP, DNOP , DIDP, DnHP contents in the submitted sample.  
(3) To determine the PFOS (Perfluorooctane Sulfonates) and PFOA (Perfluorooctanoic Acid) content of the submitted samples.  
(4) Selected test (s) as requested by client.  
(5) To determine the TBBP-A Content in the submitted sample.

Test Method/Test Results : Please refer to next pages

Conclusion : (4) Based on the results of the sample as tested and the material category information from applicant, the raw material comply with the requirements of category 3 according to ZEK 01.2-08 of German ZLS and its amendments.

Signed for and on behalf of  
SGS-CSTC Chemical Laboratory

*Sandy Hao*

Sandy Hao  
Lab Manager

This document is issued by the Company under its General Conditions of Service printed overleaf or available on request and accessible at [http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of the Company.

# Test Report

No. SH9069480/CHEM

Date: Apr. 22, 2009

Page 2 of 11

Test Method : (1-1) With reference to IEC 62321:2008 for Cadmium content.  
Analysis was performed by ICP  
(1-2) With reference to IEC 62321:2008 for Lead content.  
Analysis was performed by ICP.  
(1-3) With reference to IEC 62321:2008 for Mercury content.  
Analysis was performed by ICP.  
(1-4) With reference to IEC 62321:2008 for Hexavalent Chromium by  
Colorimetric Method.  
(1-5) With reference to IEC 62321:2008 for PBBs / PBDEs content.  
Analysis was performed by GC/MS.  
(2) With reference to EN 14372: 2004. Analysis was performed by Gas  
Chromatograph / Mass Spectrometer (GC/MS).  
(3) With reference to EPA 3550C: 2007.  
Analysis was performed by High Performance Liquid Chromatograph-Mass  
Spectrometer (HPLC-MS).  
(4) Please refer to next page(s).  
(5) With reference to EPA 3550C: 2007. Analysis was performed by Gas  
Chromatograph / Mass Spectrometer (GC/MS).

## Test results by chemical method

(1) Cadmium, Lead, Mercury, Hexavalent Chromium and PBBs/PBDEs Content(Unit: mg/kg)

Test Item(s):	Method (refer to)	1*	MDL	RoHS Limit
Cadmium(Cd)	(1-1)	ND	2	100
Lead (Pb)	(1-2)	ND	2	1000
Mercury (Hg)	(1-3)	ND	2	1000
Hexavalent Chromium (CrVI)	(1-4)	ND	2	1000
Sum of PBBs	(1-5)	ND	-	1000
Monobromobiphenyl		ND	5	-
Dibromobiphenyl		ND	5	-
Tribromobiphenyl		ND	5	-
Tetrabromobiphenyl		ND	5	-
Pentabromobiphenyl		ND	5	-
Hexabromobiphenyl		ND	5	-
Heptabromobiphenyl		ND	5	-
Octabromobiphenyl		ND	5	-
Nonabromobiphenyl		ND	5	-
Decabromobiphenyl		ND	5	-
Sum of PBDEs		ND	-	1000
Monobromodiphenyl ether		ND	5	-
Dibromodiphenyl ether		ND	5	-
Tribromodiphenyl ether		ND	5	-
Tetrabromodiphenyl ether		ND	5	-
Pentabromodiphenyl ether		ND	5	-

This document is issued by the Company under its General Conditions of Service printed overleaf or available on request and accessible at [http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.  
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of the Company.



# Test Report

No. SH9069480/CHEM

Date: Apr. 22, 2009

Page 3 of 11

Hexabromodiphenyl ether	ND	5	-
Heptabromodiphenyl ether	ND	5	-
Octabromodiphenyl ether	ND	5	-
Nonabromodiphenyl ether	ND	5	-
Decabromodiphenyl ether##	ND	5	-

## (2) Phthalates Content(Unit: %)

Test Item(s):	Method (refer to)	1*	MDL
phthalates		-	-
Dibutyl Phthalate (DBP) Content	(2)	ND	0.003
Benzylbutyl Phthalate (BBP) Content		ND	0.003
Bis-(2-ethylhexyl) Phthalate (DEHP) Content		ND	0.003
Diisononyl Phthalate (DINP) Content		ND	0.010
Di-n-octyl Phthalate (DNOP) Content		ND	0.003
Diisodecyl Phthalate (DIDP) Content		ND	0.010
Di-n-hexyl Phthalate (DnHP) Content		ND	0.003

## (3) PFOS (Perfluorooctane Sulfonates) and PFOA (Perfluorooctanoic Acid) content (Unit: mg/kg)

Test Items	Test method (refer to)	1*	MDL
Perfluorooctane Sulfonates (PFOS)	(3)	ND	10
PFOS – Acid			
PFOS – Metal Salt			
PFOS – Amide			
Perfluorooctyl Acid (PFOA)		ND	10

Remark: Reference Information: Directive 2006/122/EC

- (i) 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.
- (ii) 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.

This document is issued by the Company under its General Conditions of Service printed overleaf or available on request and accessible at [http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of the Company.

# Test Report

No. SH9069480/CHEM

Date: Apr. 22, 2009

Page 4 of 11

## (4)PAHs (Polynuclear Aromatic Hydrocarbons) content

Test Item(s)	Unit	Test Method	1*	MDL
Naphthalene	mg/kg	ZEK 01.2-08, GC-MS	ND	0.2
Acenaphthylene	mg/kg	ZEK 01.2-08, GC-MS	ND	0.2
Acenaphthene	mg/kg	ZEK 01.2-08, GC-MS	ND	0.2
Fluorene	mg/kg	ZEK 01.2-08, GC-MS	ND	0.2
Phenanthrene	mg/kg	ZEK 01.2-08, GC-MS	ND	0.2
Anthracene	mg/kg	ZEK 01.2-08, GC-MS	ND	0.2
Fluoranthene	mg/kg	ZEK 01.2-08, GC-MS	ND	0.2
Pyrene	mg/kg	ZEK 01.2-08, GC-MS	ND	0.2
Benzo(a)anthracene	mg/kg	ZEK 01.2-08, GC-MS	ND	0.2
Chrysene	mg/kg	ZEK 01.2-08, GC-MS	ND	0.2
Benzo(b)fluoranthene	mg/kg	ZEK 01.2-08, GC-MS	ND	0.2
Benzo(k)fluoranthene	mg/kg	ZEK 01.2-08, GC-MS	ND	0.2
Benzo(a)pyrene	mg/kg	ZEK 01.2-08, GC-MS	ND	0.2
Indeno(1,2,3-c,d)pyrene	mg/kg	ZEK 01.2-08, GC-MS	ND	0.2
Dibenzo(a,h)anthracene	mg/kg	ZEK 01.2-08, GC-MS	ND	0.2
Benzo(g,h,i)perylene	mg/kg	ZEK 01.2-08, GC-MS	ND	0.2
Sum of 16 PAHs (acc. US EPA)	mg/kg	-	ND	-
<b>Material Category acc. ZEK 01.2-08</b>	-	-	3	-

Note: The material category was given by the client and not assessed by SGS

## 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 is 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.

This document is issued by the Company under its General Conditions of Service printed overleaf or available on request and accessible at [http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of the Company.



# Test Report

No. SH9069480/CHEM

Date: Apr. 22, 2009

Page 5 of 11

(5)TBBP-A Content (Unit: mg/kg)

Test Item(s):	Method (refer to)	1*	MDL
TBBP-A	(5)	ND	10

## Test Part Description:

1. Black body part (mix all)

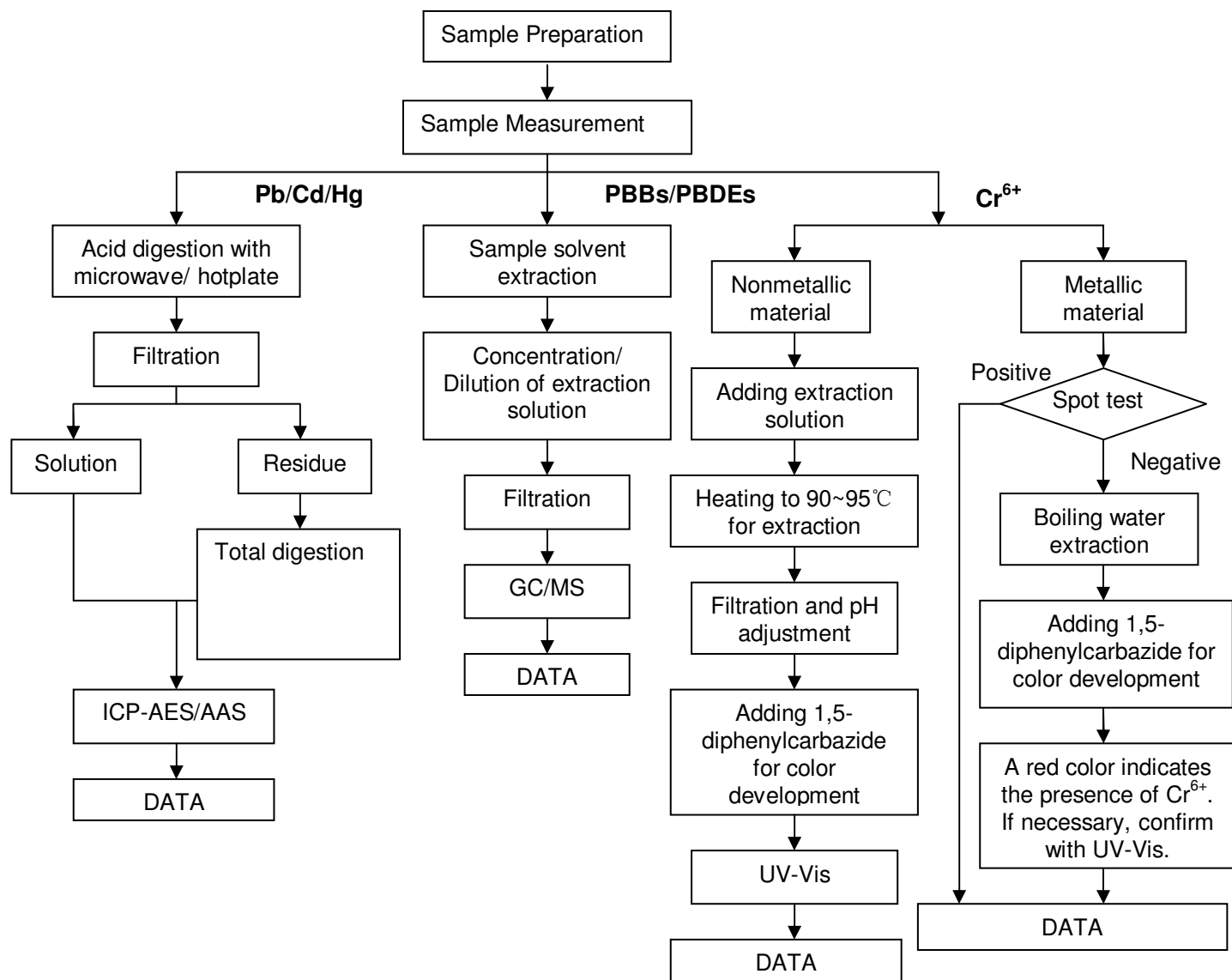
## Note:

- (1) mg/kg = ppm
- (2) ND = Not Detected
- (3) MDL = Method Detection Limit
- (4) % = percentage by weight
- (5) ##=The exemption of DecaBDE in polymeric application according 2005/717/EC was overruled by the European Court of Justice by its decision of 01.04.2008. Subsequently DecaBDE is included in the sum of PBDE after 01.07.2008.
- (6) “.” = Not Regulated
- (7) The maximum permissible limit is quoted from the document 2005/618/EC amending RoHS directive 2002/95/EC
- (8) \* 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.

This document is issued by the Company under its General Conditions of Service printed overleaf or available on request and accessible at [http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of the Company.

### ATTACHMENTS

- 1) Name of the person who made measurement: Jeff Zhang/Chaven Lian/Frank Fang/Elim Lin
- 2) Name of the person in charge of measurement: Terry Wang/Phoebe Shen
- 3) These samples were dissolved totally by pre-conditioning method according to below flow chart. ( $\text{Cr}^{6+}$  and PBBs/PBDEs test method excluded)



This document is issued by the Company under its General Conditions of Service printed overleaf or available on request and accessible at [http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of the Company.

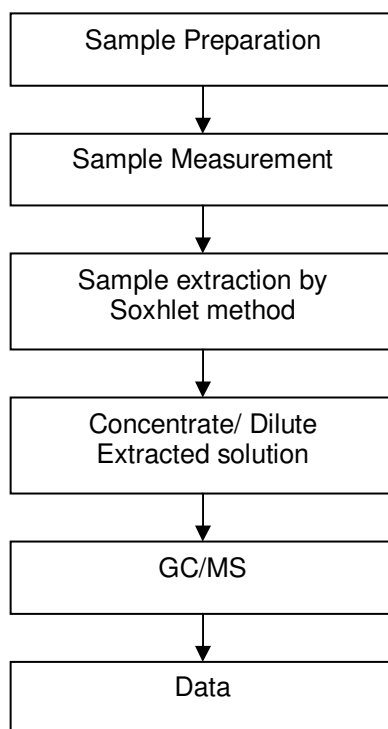
## Test Report

No. SH9069480/CHEM

Date: Apr. 22, 2009

Page 7 of 11

### Phthalates Measurement Flowchart for sample



Tested by : Steven Zhou  
 Checked by : Susan Liu

This document is issued by the Company under its General Conditions of Service printed overleaf or available on request and accessible at [http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of the Company.



SGS-CTO Standards Technical Services Co., Ltd.  
 Shanghai Branch, Chemical Laboratory

3rd Building, No. 889, Yishan Road, Shanghai, China  
 中国·上海·宜山路889号3号楼

200233  
 邮编: 200233

TEL: (86-21) 61402553 TEL: (86-21) 64953679  
 HL: (86-21) 61402594 HL: (86-21) 54500353

[www.cn.sgs.com](http://www.cn.sgs.com)  
 e [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

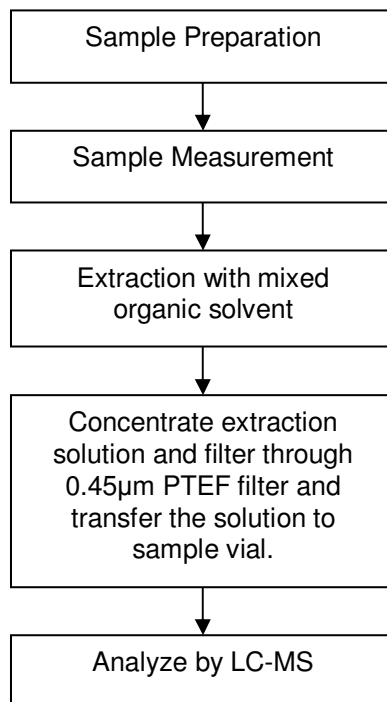
## Test Report

No. SH9069480/CHEM

Date: Apr. 22, 2009

Page 8 of 11

### PFOS/PFOA Measurement Flowchart for sample



Tested by : Judy Li  
Checked by : Jenny Liu

This document is issued by the Company under its General Conditions of Service printed overleaf or available on request and accessible at [http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of the Company.



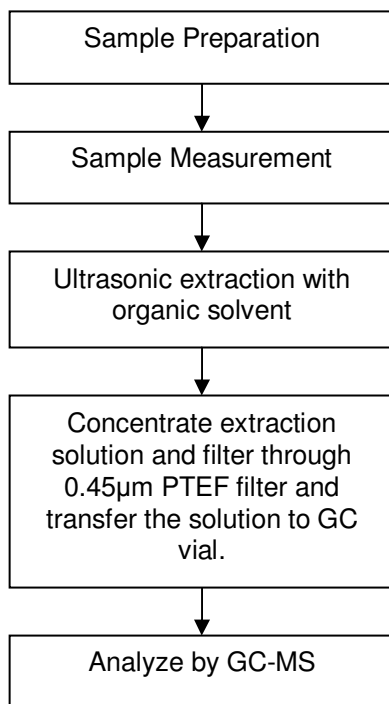
## Test Report

No. SH9069480/CHEM

Date: Apr. 22, 2009

Page 9 of 11

### PAHs Measurement Flowchart for sample



Tested by : Jessy Huang  
 Checked by : Phoebe Shen

This document is issued by the Company under its General Conditions of Service printed overleaf or available on request and accessible at [http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of the Company.

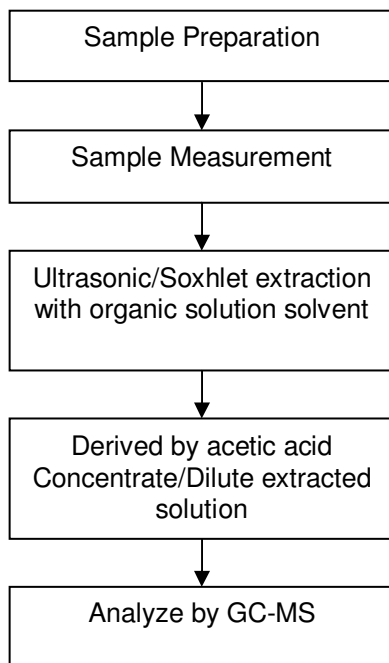
## Test Report

No. SH9069480/CHEM

Date: Apr. 22, 2009

Page 10 of 11

### TBBP-A Measurement Flowchart for sample



Tested by : Kery Shao  
Checked by : Jenny Liu

This document is issued by the Company under its General Conditions of Service printed overleaf or available on request and accessible at [http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of the Company.

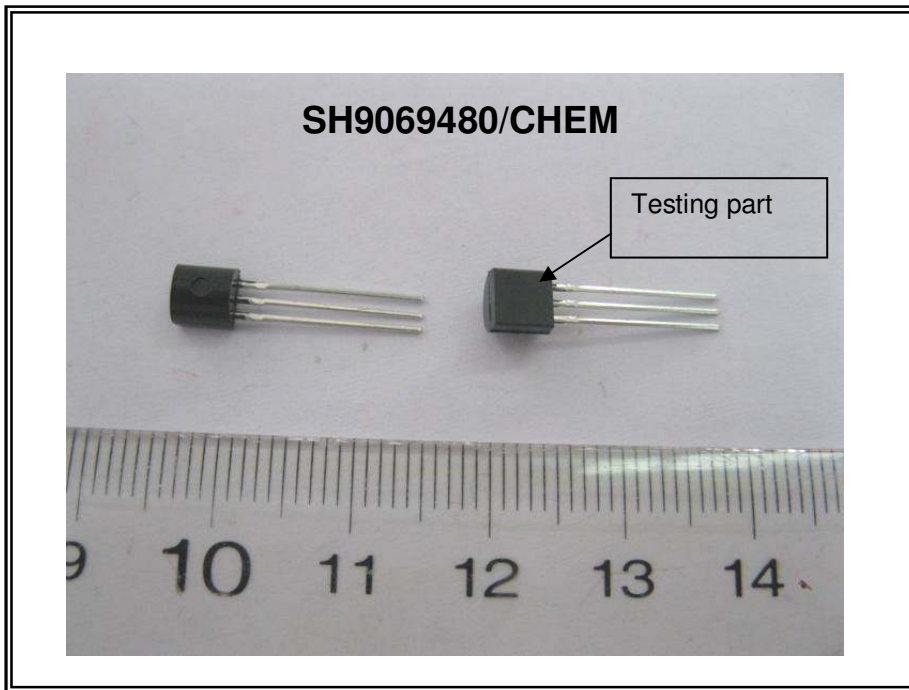
## Test Report

No. SH9069480/CHEM

Date: Apr. 22, 2009

Page 11 of 11

Sample photo:



SGS authenticate the photo on original report only

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

This document is issued by the Company under its General Conditions of Service printed overleaf or available on request and accessible at [http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of the Company.