

Test Report

No. CANEC1914820007

Date: 02 Aug 2019

Page 1 of 12

HANPIN(KUNSHAN)ELECTRONIC CO.,LTD

No. 2008 SHUIXIU ROAD,KUNSHAN CITY,JIANGSU PROVINCE

The following sample(s) was/were submitted and identified on behalf of the clients as : Pure copper

SGS Job No. : CP19-041256 - GZ

Date of Sample Received : 29 Jul 2019

Testing Period : 29 Jul 2019 - 02 Aug 2019

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

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

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

Conclusion : Based on the performed tests on submitted sample(s), the results of Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs) and Phthalates such as Bis(2-ethylhexyl) phthalate (DEHP) , Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) , and Diisobutyl phthalate (DIBP) comply with the limits as set by RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.

Signed for and on behalf of
SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch

Zmguan

Zm guan
Approved Signatory



SGS-CSTC Standards Technical Services Co., Ltd.
Guangzhou Branch Testing Center Chemical Laboratory.

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. 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. This document cannot be reproduced except in full, without prior written approval of the Company. 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.

Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

198 Kezhu Road, Sciencetech Park Guangzhou Economic & Technology Development District, Guangzhou, China 510663 t (86-20) 82155555 f (86-20) 82075113 www.sgs.com.cn
中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075113 e sgs.china@sgs.com

Test Report

No. CANEC1914820007

Date: 02 Aug 2019

Page 2 of 12

Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	CAN19-148200.002	Copper-colored metal foil
SN2	CAN19-148200.004	Copper-colored metal foil

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+A1:2017, IEC 62321-5:2013, IEC 62321-7-1:2015 , IEC 62321-6:2015 and IEC 62321-8:2017, analyzed by ICP-OES , UV-Vis and GC-MS .

Test Item(s)	Limit	Unit	MDL	002
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	ND
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))▼	-	µg/cm ²	0.10	ND
Sum of PBBs	1,000	mg/kg	-	ND
Monobromobiphenyl	-	mg/kg	5	ND
Dibromobiphenyl	-	mg/kg	5	ND
Tribromobiphenyl	-	mg/kg	5	ND
Tetrabromobiphenyl	-	mg/kg	5	ND
Pentabromobiphenyl	-	mg/kg	5	ND
Hexabromobiphenyl	-	mg/kg	5	ND
Heptabromobiphenyl	-	mg/kg	5	ND
Octabromobiphenyl	-	mg/kg	5	ND
Nonabromobiphenyl	-	mg/kg	5	ND
Decabromobiphenyl	-	mg/kg	5	ND
Sum of PBDEs	1,000	mg/kg	-	ND
Monobromodiphenyl ether	-	mg/kg	5	ND
Dibromodiphenyl ether	-	mg/kg	5	ND
Tribromodiphenyl ether	-	mg/kg	5	ND
Tetrabromodiphenyl ether	-	mg/kg	5	ND



SGS-CSTC Scientific Services Co., Ltd.
Guangzhou Branch Testing Center Chemical Laboratory

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. 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. This document cannot be reproduced except in full, without prior written approval of the Company. 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.

Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

198 Kexu Road, Science Park Guangzhou Economic & Technology Development District, Guangzhou, China 510663 t (86-20) 82155555 f (86-20) 82075113 www.sgs.com.cn
中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075113 e sgs.china@sgs.com

Test Report

No. CANEC1914820007

Date: 02 Aug 2019

Page 3 of 12

Test Item(s)	Limit	Unit	MDL	002
Pentabromodiphenyl ether	-	mg/kg	5	ND
Hexabromodiphenyl ether	-	mg/kg	5	ND
Heptabromodiphenyl ether	-	mg/kg	5	ND
Octabromodiphenyl ether	-	mg/kg	5	ND
Nonabromodiphenyl ether	-	mg/kg	5	ND
Decabromodiphenyl ether	-	mg/kg	5	ND
Dibutyl phthalate (DBP)	1000	mg/kg	50	ND
Butyl benzyl phthalate (BBP)	1000	mg/kg	50	ND
Bis (2-ethylhexyl) phthalate (DEHP)	1000	mg/kg	50	ND
Diisobutyl Phthalates (DIBP)	1000	mg/kg	50	ND

Notes :

(1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.IEC 62321 series is equivalent to EN 62321 series

https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP_ORG_ID,FSP_LANG_ID:1258637,25

(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.

(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 toys which are already subject to the restriction of DEHP, BBP, DBP and DIBP through entry 51 of Annex XVII to Regulation (EC) No 1907/2006.

Elementary Analysis

Test Method : SGS In-house method (GZTC CHEM-TOP-009-01, with reference to US EPA Method 3050B:1996), analysis was performed by ICP-OES.

Test Item(s)	Unit	MDL	002
Antimony (Sb)	mg/kg	10	ND
Beryllium (Be)	mg/kg	5	ND
Arsenic (As)	mg/kg	10	ND



SGS-CSTC Shanghai Technical Services Co., Ltd.
Guangzhou Branch Testing Center Chemical Laboratory

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. 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. This document cannot be reproduced except in full, without prior written approval of the Company. 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.

Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

198 Kazhu Road, Sciotech Park Guangzhou Economic & Technology Development District, Guangzhou, China 510663 t (86-20) 82155555 f (86-20) 82075113 www.sgs.com.cn
中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075113 e sgs.china@sgs.com

Test Report

No. CANEC1914820007

Date: 02 Aug 2019

Page 4 of 12

Halogen

Test Method : With reference to EN 14582:2016, analysis was performed by IC.

<u>Test Item(s)</u>	<u>Unit</u>	<u>MDL</u>	<u>004</u>
Fluorine (F)	mg/kg	50	ND
Chlorine (Cl)	mg/kg	50	ND
Bromine (Br)	mg/kg	50	ND
Iodine (I)	mg/kg	50	ND

PVC (Polyvinyl chloride)

Test Method : SGS in house method(GZTC CHEM-TOP-066), analysis was performed by FTIR.

<u>Test Item(s)</u>	<u>CAS NO.</u>	<u>Unit</u>	<u>MDL</u>	<u>004</u>
PVC	9002-86-2	-	-	Negative

Notes :

(1) Negative=Undetectable,Positive=Detectable

Hexabromocyclododecane (HBCDD)

Test Method : With reference to IEC 62321:2008, analysis was performed by GC-MS.

<u>Test Item(s)</u>	<u>Unit</u>	<u>MDL</u>	<u>004</u>
Hexabromocyclododecane (HBCDD)	mg/kg	10	ND

Remark: Results & photo(s) of 004 in this report refer to test report CANEC1825593355.



SGS-CSTC Shenzhen Technical Services Co., Ltd.
Guangzhou Branch Testing Center Chemical Laboratory

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. 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. This document cannot be reproduced except in full, without prior written approval of the Company. 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.

Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

198 Kazhu Road, Sciotech Park Guangzhou Economic & Technology Development District, Guangzhou, China 510663 t (86-20) 82155555 f (86-20) 82075113 www.sgs.com.cn
中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075113 e sgs.china@sgs.com

Test Report

No. CANEC1914820007

Date: 02 Aug 2019

Page 5 of 12

REMARK:

XPH0E091, XPH0E091**, XPH0E121, XPH0E121**, XPH0E181, XPH0E181**, XPH0E351, XPH0E351**, XPH0E501, XPH0E501**, XPH0E751, XPH0E751**, XPH0EA01, XPH0EA01**, XPH0E**1, XPH0E**1**, XPH01001, XPH01001**, XPH0MA21, XPH0MA21**, XPH0EC01, XPH0EC01**, XPH0ECR1, XPH0ECR1**, XPH0C0A1, XPH0C0A1**, XPH0E121K01, XPH0E121K01**, XPH01201, XPH01201**, XPH01001F, XPH01001F**, XPH0***1F, XPH0***1F**, XPH00751, XPH00751**, XPH0M751, XPH0M751**, XPH0MA51, XPH0MA51**, XPH0Y251, XPH0Y251**, XPH0Y301, XPH0Y301**, XPH0Y501, XPH0Y501**, XPH0Y751, XPH0Y751**, XPH0YA01, XPH0YA01**, XPH0Y**1, XPH0Y**1**, XPH0TW01, XPH0TW01**, XPH0M501, XPH0M501**, XPH0TDN1, XPH0TDN1**, XPH0MB01, XPH0MB01**, XPH00151, XPH00151**, XPH00181, XPH00181**, XPH00251, XPH00251**, XPH00301, XPH00301**, XPH00351, XPH00351**, XPH00401, XPH00401**, XPH00501, XPH00501**, XPH00851, XPH00851**, XPH01251, XPH01251**, XPH0MB51, XPH0MB51**, XPH0M101, XPH0M101**, XPH0M151, XPH0M151**, XPH0M181, XPH0M181**, XPH0M251, XPH0M251**, XPH0M301, XPH0M301**, XPH0M351, XPH0M351**, XPH0M401, XPH0M401**, XPH0M651, XPH0M651**, XPH0MA01, XPH0MA01**, XPH0MC01, XPH0MC01**, XPH00508, XPH00508**, XPH00578, XPH00578**, XPH00598, XPH00598**, XPH0G701, XPH0G701**, XPH0G**1, XPH0G**1**, XPH0L001, XPH0L001**, XPH0N598, XPH0N598**, XPH0AR1, XPH0AR1**, XPH01501, XPH01501**, XPH0MD01, XPH0MD01**, XPH0T351, XPH0T351**, XPH0T501, XPH0T501**, XPH0T701, XPH0T701**, XPH0TA01, XPH0TA01**, XPH0T**1, XPH0T**1**, XPH0TS01, XPH0TS01**, XPH0TD01, XPH0TD01**, XPH0AG21, XPH0AG21**, XPH02001, XPH02001**, XPH01, XPH01**, XPH0MS01, XPH0MS01**, XPH0MS11, XPH0MS11**, XPH0E1, XPH0E1**, XPH0C1, XPH0C1**, XPH0CU01, XPH0CU01**, XPH0EY01, XPH0EY01**, XPH0T**1, XPH0T**1**, XPH0YG21, XPH0YG21**, XPH02501, XPH02501**, XPH0M**1, XPH0M**1**, XPH0A01, XPH0A01**, XPH0B01, XPH0B01**, XPH0BB1, XPH0BB1**, XPH0A*1, XPH0A*1**, XPH0B*1, XPH0B*1**, XPH0**1, XPH0**1**, XPH0V01, XPH0V01**, XPH0M01, XPH0M01**, XPH03001, XPH03001**, XPH0Y*1, XPH0Y*1**, XPH0Y01, XPH0Y01**, XPH0M01, XPH0M01**, XPH0H01, XPH0H01**, XPH0S01, XPH0S01**, XPH0*01, XPH0*01**, XPH00G21, XPH00G21**, XPH0EG21, XPH0EG21**, XPH0AN21, XPH0AN21**, XPH04001, XPH04001**, XPH0YG1, XPH0YG1**, XPH0Y001, XPH0Y001**, XPH0M001, XPH0M001**, XPH0H001, XPH0H001**, XPH0S001, XPH0S001**, XPH0*001, XPH0*001**, XPH0EG21, XPH0EG21**, XPH0E*21, XPH0E*21**, XPH0Y*21, XPH0Y*21**, XPH05001, XPH05001**, XPH0AN01, XPH0AN01**, XPHPT0**, XPHLTO**, XPHAY0**, XPHPT0**, XPHLTO**, XPHAY0**, XPH0A*01, XPH0A*01**, XPH0AN21, XPH0AN21**, XPH00N01, XPH00N01**, XPH00N21, XPH00N21**, XPH0YN21, XPH0YN21**, XPH0***1, XPH0***1**

Note:

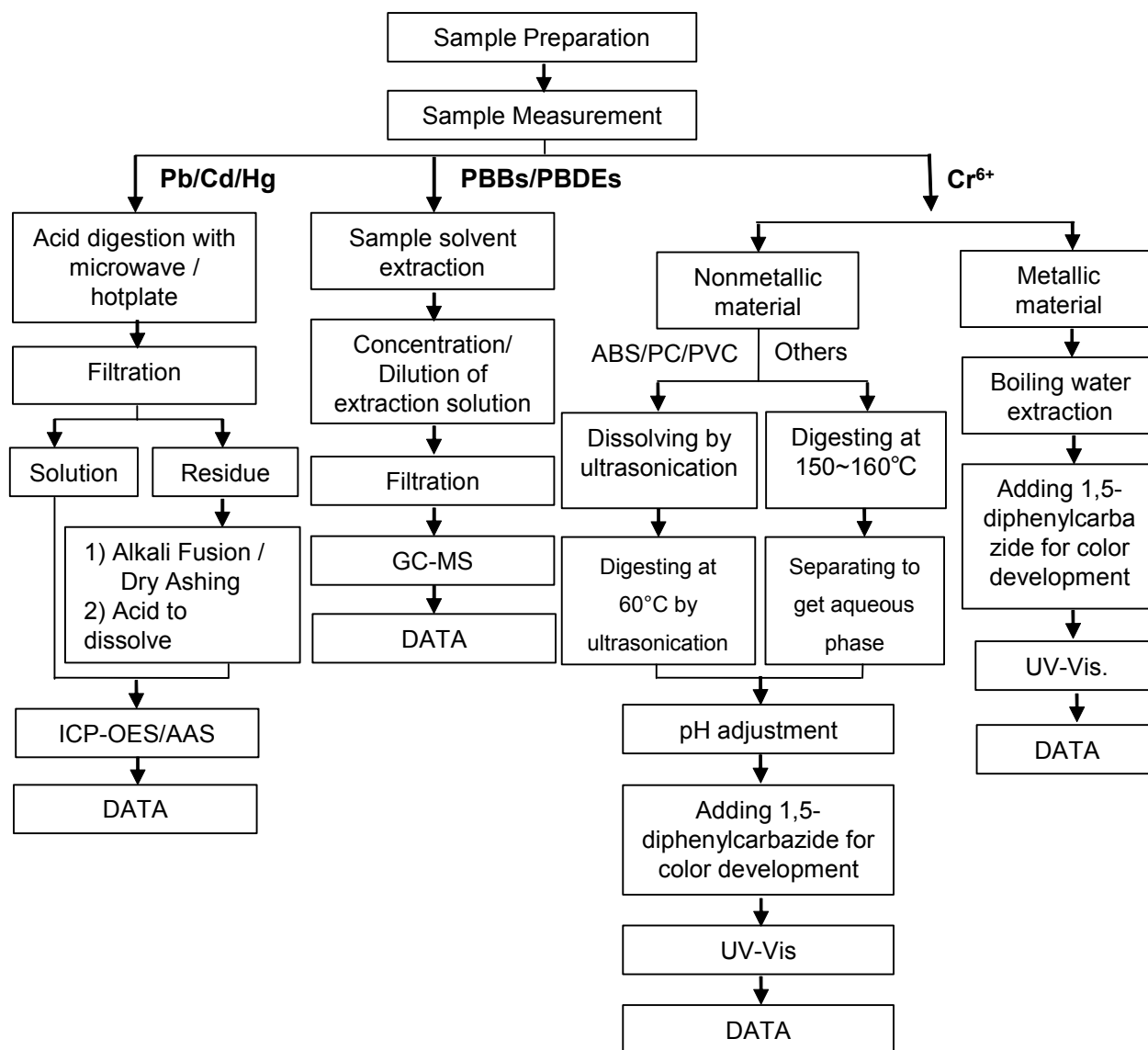
“*”express any one of 0 to 9 or A to Z



ATTACHMENTS

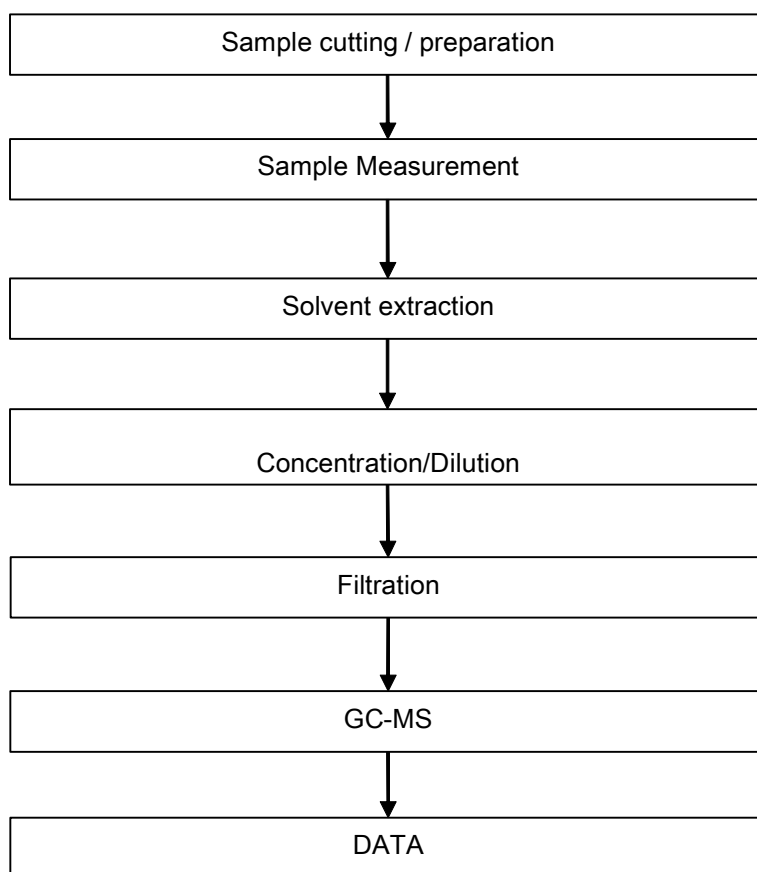
Pb/Cd/Hg/Cr⁶⁺/PBBs/PBDEs Testing Flow Chart

- 1) These samples were dissolved totally by pre-conditioning method according to below flow chart.
(Cr⁶⁺ and PBBs/PBDEs test method excluded).



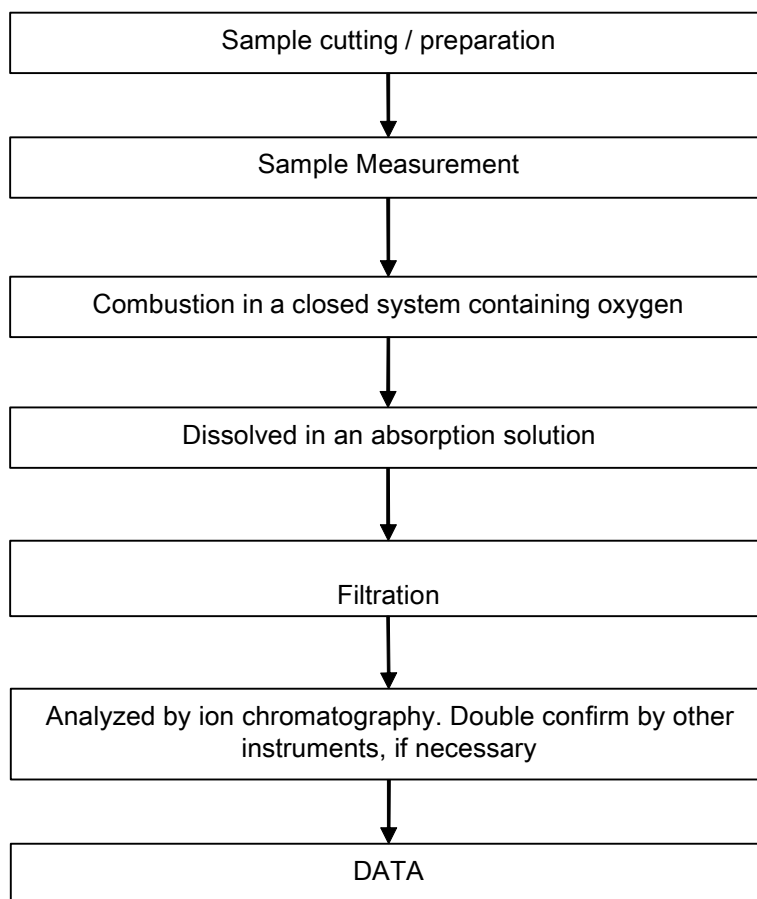
ATTACHMENTS

Phthalates Testing Flow Chart



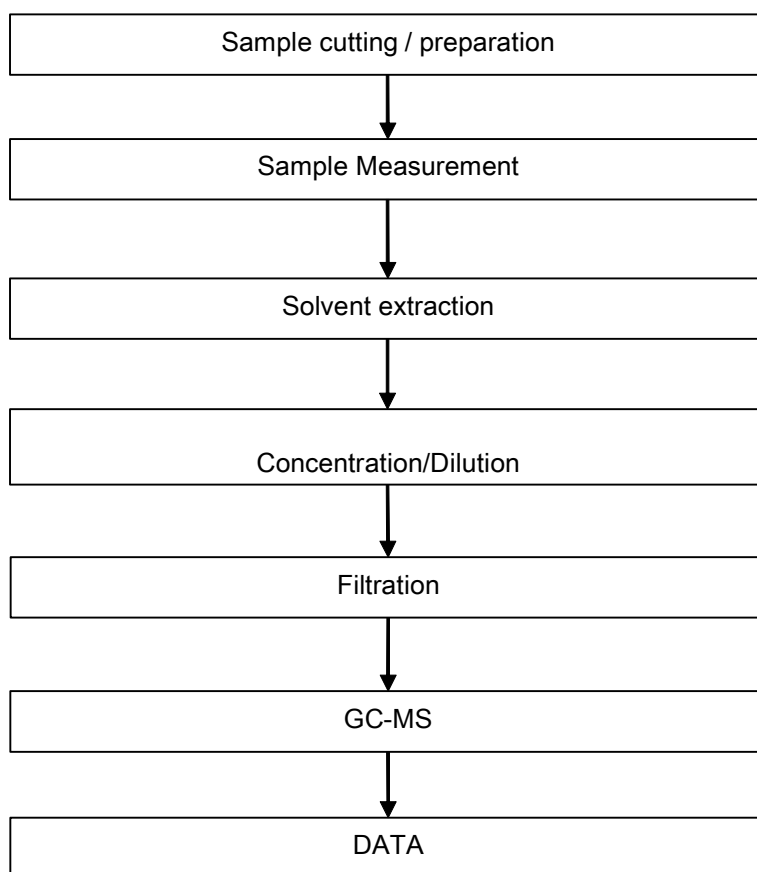
ATTACHMENTS

Halogen Testing Flow Chart



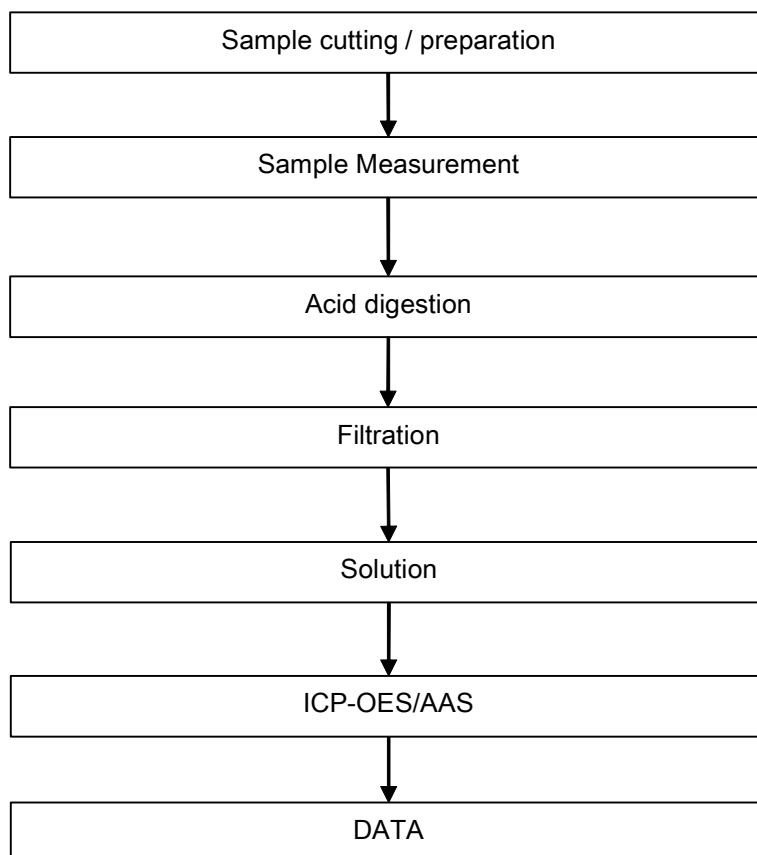
ATTACHMENTS

HBCDD Testing Flow Chart



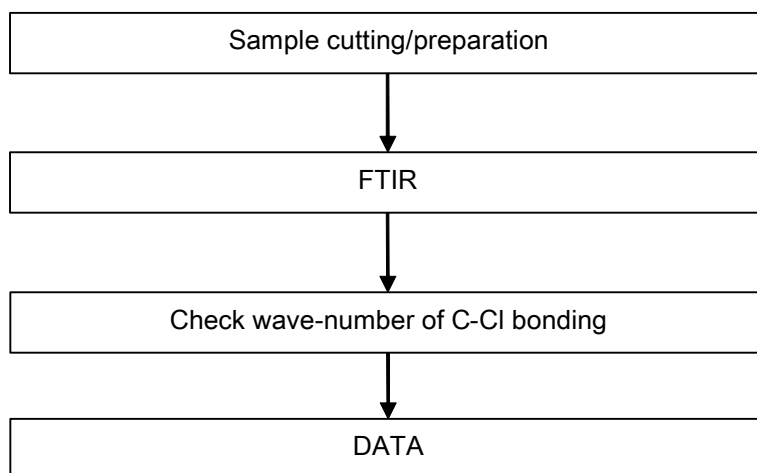
ATTACHMENTS

Elementary Testing Flow Chart



ATTACHMENTS

PVC Testing Flow Chart



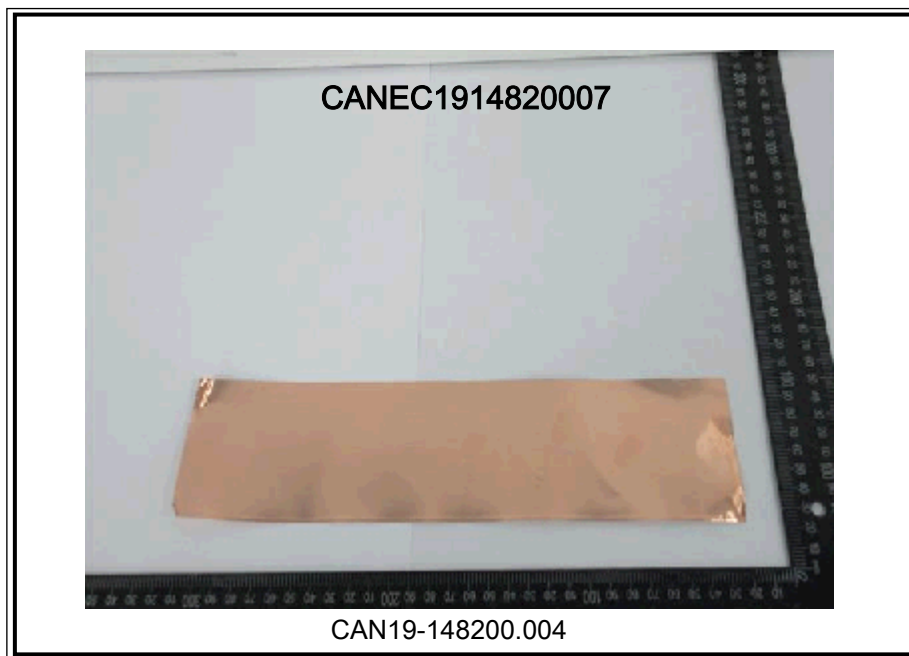
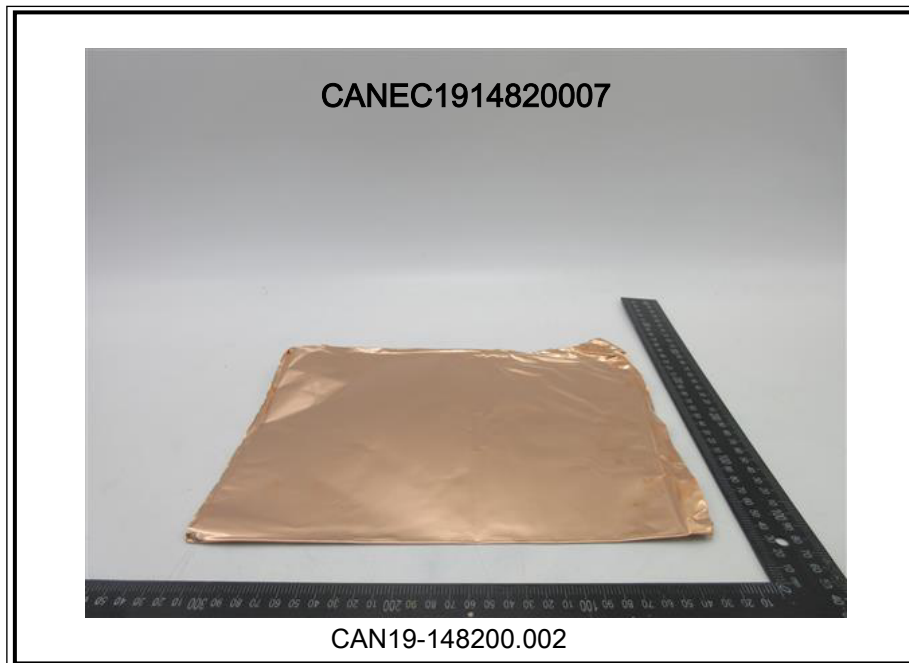
Test Report

No. CANEC1914820007

Date: 02 Aug 2019

Page 12 of 12

Sample photo:



SGS authenticate the photo on original report only

*** End of Report ***



SGS-CSTC Standards Technical Services Co., Ltd.
Guangzhou Branch Testing Center Chemical Laboratory

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. 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. This document cannot be reproduced except in full, without prior written approval of the Company. 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.

Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

198 Kezhu Road, Sciotech Park Guangzhou Economic & Technology Development District, Guangzhou, China 510663 t (86-20) 82155555 f (86-20) 82075113 www.sgs.com.cn
中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075113 e sgs.china@sgs.com