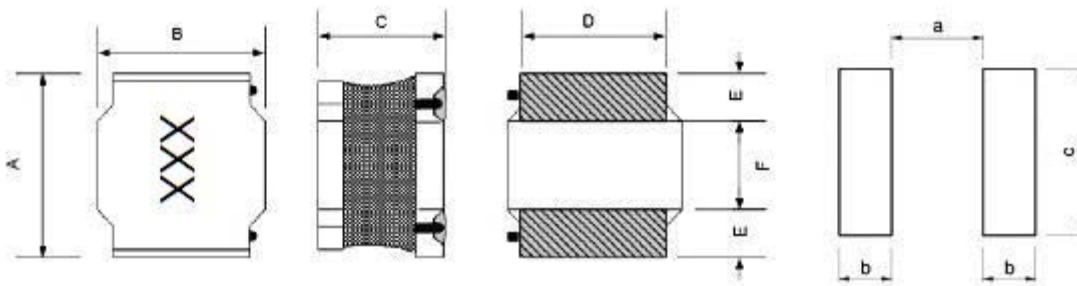


1. External Dimensions (Unit:m/m)



Type	A	B	C	D	E	F	a	b	c	Q'TY/Reel
ABG06B45	6.0±0.3	6.0±0.3	4.5Max	4.9Ref	1.85Ref	2.3Ref	2.0Ref	2.15Ref	5.2Ref	1500

2. Part Number Code

ABG 06 B 45 M 220
 A B C D E F

A: Series Name Power Inductors
 B: Dimensions(mm) 06: 6.0x6.0
 C: Materials NO use
 D: Thickness(mm) 45: 4.5 Max
 E: Tolerance M: ±20%
 F: Inductance 220=22uH

3. Electrical Characteristics

Part Number	Inductance (μH)	Test Frequency (Hz)	DC Resistance (mΩ)±20%	Heat Rating Current Irms (A)Typ.	Saturation Current Isat (A)Typ.
ABG06B45M220	22.0	1MHz/1V	93.0	2.4	3.4

Notes:

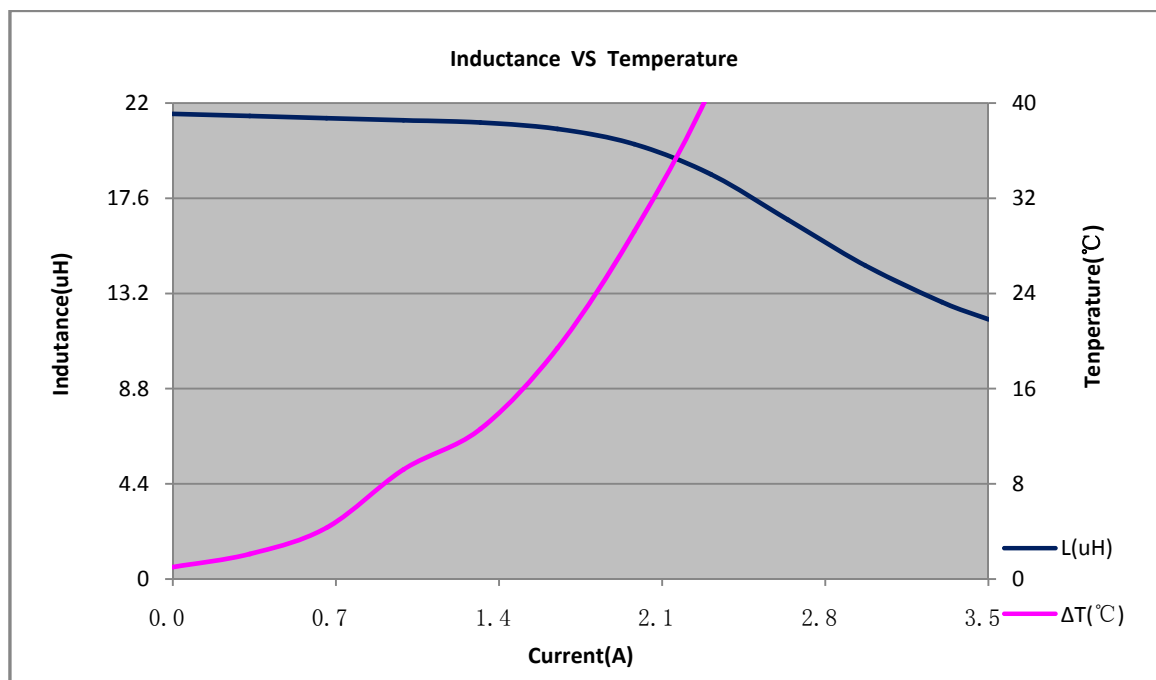
- All test data is referenced to 25°C ambient.
- Operating Temperature Range-40°C to +125°C.
- Irms: DC current(A) that will cause an approximate ΔT of 40°C.
- Isat: DC current(A) that will cause Lo to drop approximately 30%.
- The part temperature(ambient + temp rise)should not exceed 125°C under worst case operating conditions. Circuit design,component placement, PWB trace size and thickness,airflow and other cooling provisions all affect the part temperature, Part temperature should be verified in the end application.

4. Test Data

ELECTRICAL CHARACTERISTIC				MECHANICAL DIMENSIONS			
SPEC	L(uH)	DCR(mΩ)	Isat(uH)	A(mm)	B(mm)	C(mm)	D(mm)
TOL	22.0	93.0	3.4A	6.0	6.0	4.5	4.9
NO	±20%	±20%	(L0A-L3.4A) 30%Typ.	±0.3	±0.3	Max	Ref
1	20.54	102.5	12.55	6.04	6.00	4.18	OK
2	20.42	101.2	12.74	6.02	6.01	4.21	OK
3	20.25	100.1	12.47	6.04	6.01	4.21	OK
4	20.36	103.6	12.62	5.98	6.02	4.19	OK
5	21.68	104.7	13.48	6.01	5.99	4.17	OK
6	20.15	102.5	12.26	6.03	6.03	4.18	OK
7	20.21	102.8	12.63	6.05	5.91	4.20	OK
8	21.53	103.2	13.30	6.06	6.01	4.22	OK
9	20.10	104.3	12.04	6.08	6.03	4.18	OK
10	20.65	105.5	12.55	6.05	6.00	4.19	OK

Test Equipments: IM3536,VR126,VR7210,Calipers

Curve:



5. Test and Measurement Procedures

5.1 Test Conditions

5.1.1 Unless otherwise specified, the standard atmospheric conditions for measurement/test as:

- Ambient Temperature: $20 \pm 15^\circ\text{C}$
- Relative Humidity: $65\% \pm 20\%$
- Air Pressure: 86KPa to 106KPa

5.1.2 If any doubt on the results, measurements/tests should be made within the following limits:

- Ambient Temperature: $20 \pm 2^\circ\text{C}$
- Relative Humidity: $65\% \pm 5\%$
- Air Pressure: 86KPa to 106Kpa

5.2 Visual Examination

- Inspection Equipment: 10X magnifier

5.3 Electrical Test

5.3.1 Inductance (L)

- Refer to the third item.
- Test equipment: IM3536 LCR meter or equivalent.
- Test Frequency and Voltage: Refer to the third item.

5.3.2 Direct Current Resistance (DCR)

- Refer to the third item.
- Test equipment: VR126 or equivalent.

5.3.3 Saturation Current (I_{sat})

- Refer to the third item.
- Test equipment: Saturation current meter
- Definition of saturation current (I_{sat}): DC current at which the inductance drops approximate 30% from its value without current.

5.3.4 Temperature rise current (I_{rms})

- Refer to the third item.
- Test equipment (see Fig.5.3.4-1): Electric Power, Electric current meter, Thermometer.
- Measurement method (see Fig. 5.3.4-1):
 - Set test current to be 0mA.
 - Measure initial temperature of choke surface.
 - Gradually increase current and measure choke temperature for corresponding current.
 - Definition of Temperature rise current: DC current that causes the temperature rise ($\Delta T = 40^\circ\text{C}$) from 20°C ambient (see Fig. 5.3.4-2).

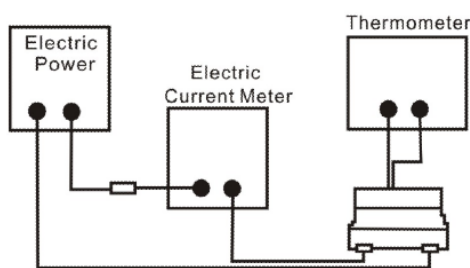


Fig.5.3.4-1

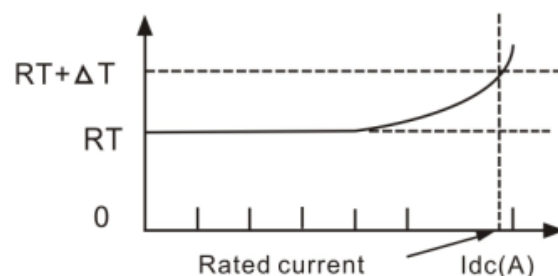
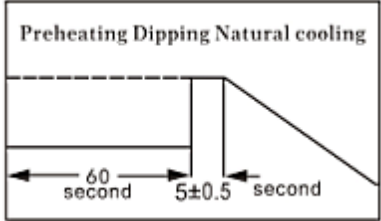
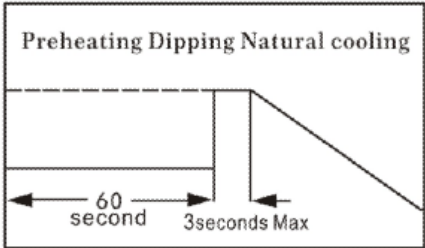
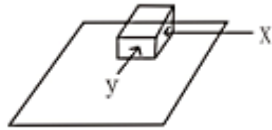
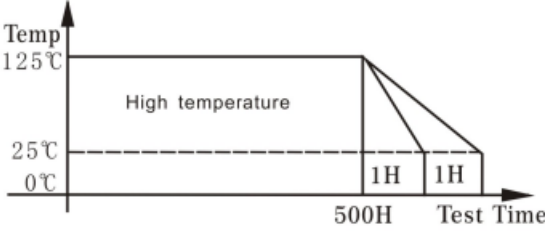
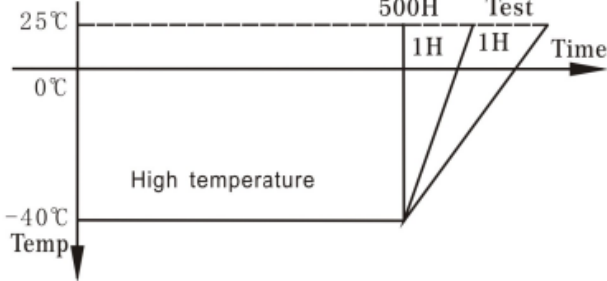
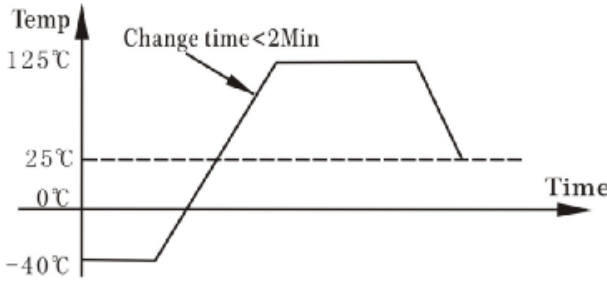


Fig.5.3.4-2

5.4 Reliability Test

Items	Required Characteristics	Test Method/Condition
<p>5.4.1 Solder Ability Test</p>	<p>① 90% or more of electrode area shall be Coated by new solder.</p>	<p>① After fluxing, component shall be dipped in a melted. ② Solder: bath at $235^{\circ}\text{C} \pm 5^{\circ}\text{C}$ for 5 ± 0.5 seconds</p> 
<p>5.4.2 Heat endurance of Soldering</p>	<p>① No visible mechanical damage. ② Inductance change: Within $\pm 10\%$ ③ Impedance change: Within $\pm 10\%$</p>	<p>① Preheat: $150 \pm 5^{\circ}\text{C}$ 60seconds. ② Solder temperature: $255 \pm 5^{\circ}\text{C}$. ③ Flux: rosin. ④ Dip time: 3seconds Max</p> 
<p>5.4.3 Electrode Strength Test</p>	<p>① After soldering of X, Y withstanding at below conditions .The terminal should not Peel off.</p>	<p>① Specimen shall be soldered on a PCB and a static force of 17.7N shall be applied on the coil from X, Y directions individually and held for $10 \pm 2\text{S}$</p> 
<p>5.4.4 Vibration Test</p>	<p>① Inductance change: Within $\pm 10\%$ ② Without mechanical damage such as Break</p>	<p>① Vibration frequency: (10 Hz to 55 Hz to 10Hz) in 60 seconds as a period ② Vibration time: Period cycled for 2 hours in each of 3 mutual perpendicular directions. ③ Amplitude: 1.5 mm max.</p>
<p>5.4.5 Drop test</p>	<p>① $\Delta L \leq \pm 10.0\%$ change from an initial value</p>	<p>① Drop specimen three times on concrete floor from a height Of 1 meter which mounted on test board.</p>

Items	Required Characteristics	Test Method/Condition
<p>5.4.6 High Temperature Storage Test</p>	<p>① No case deformation or change in appearance ② $\Delta L/L \leq 10\%$ ③ $\Delta Q/Q \leq 30\%$ ④ $\Delta DCR/DCR \leq 10\%$</p>	<p>① Temperature: $125^{\circ}\text{C} \pm 5^{\circ}\text{C}$ Time: 500 ± 2 hours. ② Tested not less than 1 hour, nor more than 2 hours at room.</p> 
<p>5.4.7 Low Temperature Storage Test</p>	<p>① No case deformation or change in appearance ② $\Delta L/L \leq 10\%$ ③ $\Delta Q/Q \leq 30\%$ ④ $\Delta DCR/DCR \leq 10\%$</p>	<p>① Temperature: $-40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ Time: 500 ± 2 hours. ② Tested not less than 1 hour, nor more than 2 hours at room.</p> 
<p>5.4.8 Humidity Resistance Test</p>	<p>① No case deformation or change in appearance ② $\Delta L/L \leq 10\%$ ③ $\Delta Q/Q \leq 30\%$ ④ $\Delta DCR/DCR \leq 10\%$</p>	<p>① Environment condition: $85 \pm 2^{\circ}\text{C}$ ② Humidity: 80–85% ③ Applied Current: Rated current ④ Duration: $500 + 4 / -0$ hours ⑤ Tested not less than 1 hour, nor more than 2 hours at room.</p>
<p>5.4.9 Thermal Shock Test</p>	<p>① No case deformation or change in appearance. ② $\Delta L/L \leq 10\%$ ③ $\Delta Q/Q \leq 30\%$ ④ $\Delta DCR/DCR \leq 10\%$</p>	<p>① Repeat 100 cycles as follow: ($-40 \pm 3^{\circ}\text{C}$; 30 ± 3 min) → (Room temp; 2 min) → ($+125 \pm 2^{\circ}\text{C}$, 30 ± 3 min) → (Room temp; 2 min) ② Recovery: 1-2 hours of recovery under the standard condition after the test.</p> 

6. Packaging, Storage

6.1 Tape and Reel Packaging Dimensions

6.1.1 Taping Dimensions (Unit: mm)

Please refer to Fig. 6.1.1-1

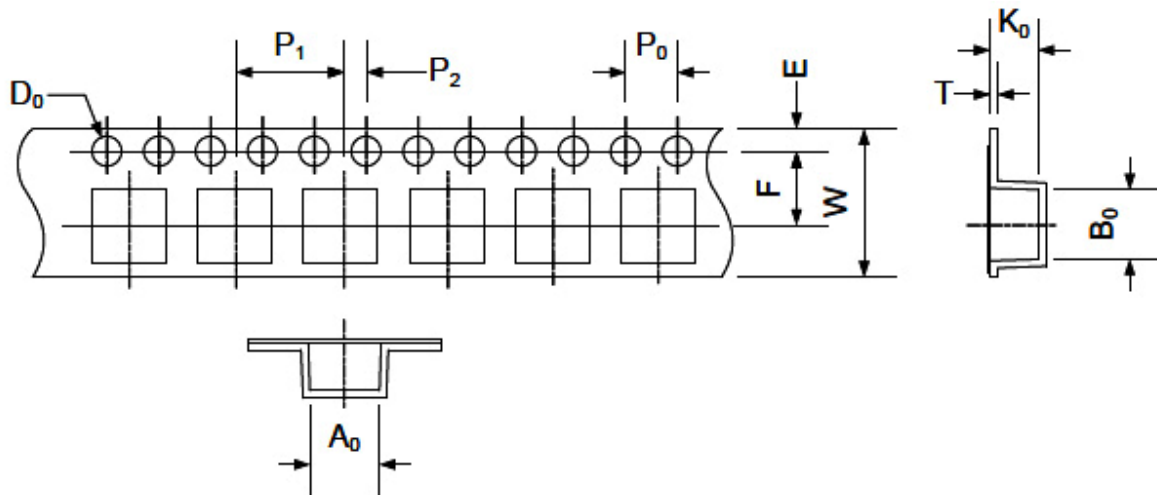


Fig. 6.1.1-1

TYPE	A0	B0	W	E	F	P0	P1	P2	D0	T	K0
ABG06B45	6.4±0.1	6.4±0.1	16.0±0.3	1.75±0.1	7.5±0.1	4.0±0.1	8.0±0.1	2.0±0.1	1.5±0.1	0.4±0.1	4.8±0.1

6.1.2 Direction of rolling

Please refer to Fig. 6.1.2-1.

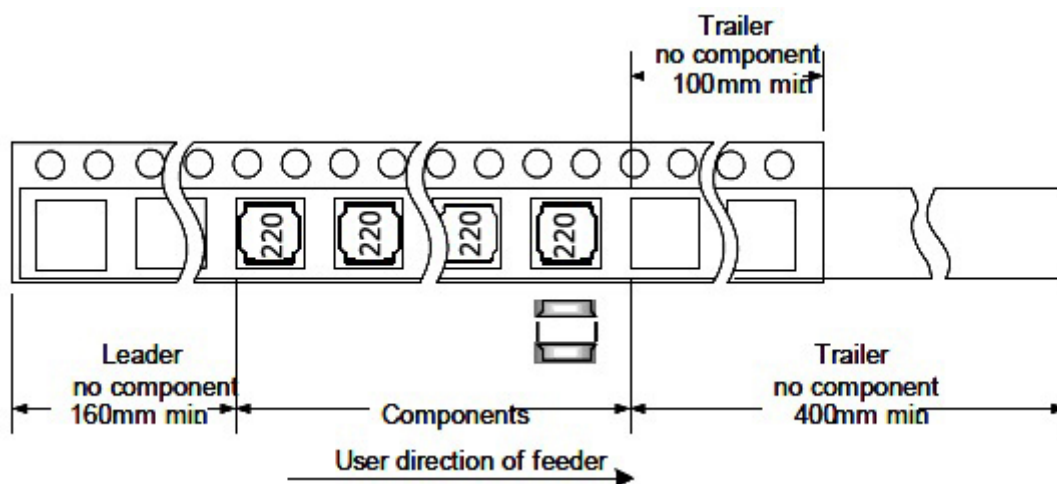


Fig. 6.1.2-1.

6.1.3 Reel Dimensions (Unit: mm)

Please refer to Fig. 6.1.3-1.

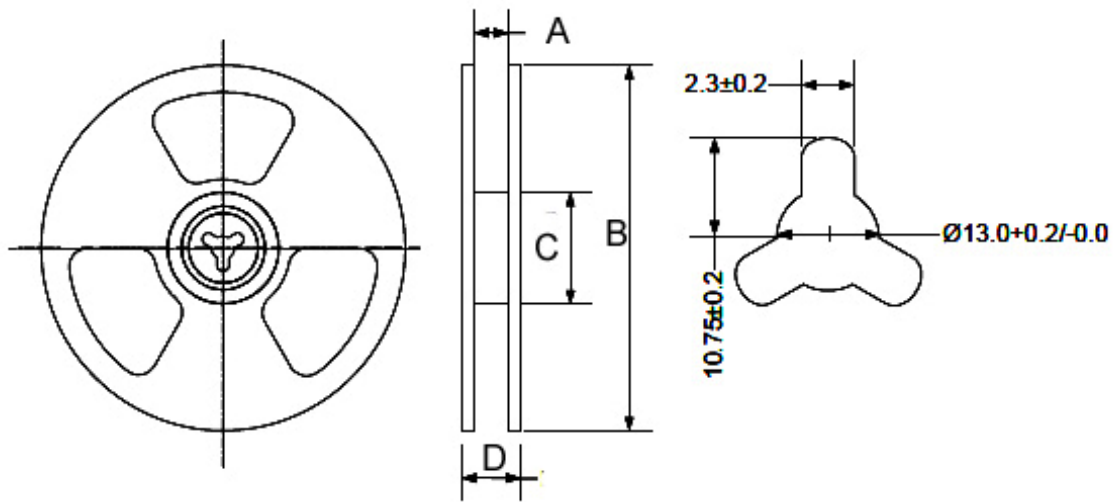


Fig. 6.1.3-1.

TYPE	A	B	C	D
ABG06B45	16.5±2.0	330.0±2.0	100.0±2.0	20.5±2.0

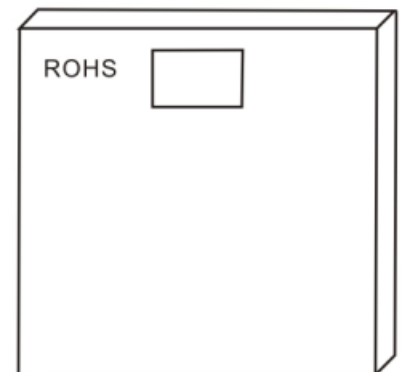
6.2 Packaging

6.2.1 The inner box specification: 350*340*40MM

Packing quantity: 3000PCS/ box

Bubble bag : 37*45CM

Job description: putting the air bubble bag products placed inside the box, sealed with scotch tape

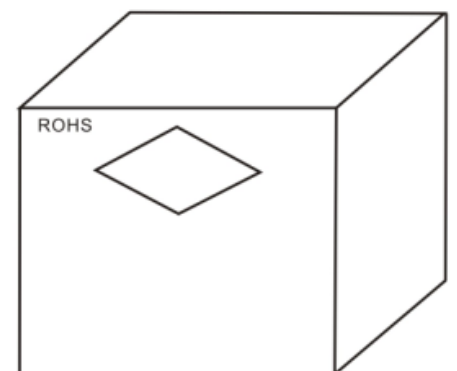


6.2.2 The outside box specification: 370*360*255MM

Packing quantity: 15000PCS/ box

Job description: will be outside the box bottom sealed, inner box into the box.

- With transparent tape sealed box at the top
- The specified location with a box labels in the outer box.
- If the mantissa box under a FCL with inner box or filling full



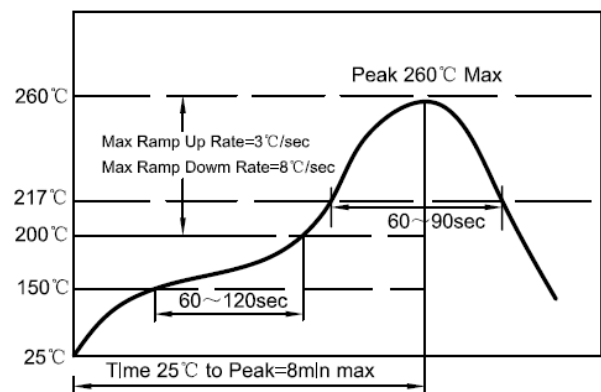
6.3 Storage

- a. To maintain the solderability of terminal electrodes and to keep the packing material in good condition, temperature and humidity in the storage area should be controlled.
- b. Recommended conditions: $-10^{\circ}\text{C}\sim 40^{\circ}\text{C}$, 70%RH (Max.)
- c. The ambient temperature must be kept below 30°C . Even under ideal storage conditions, solderability of products electrodes may decrease as time passes. For this reason, product should be used with one year from the time of delivery.
- d. In case of storage over 6 months, solderability shall be checked before actual usage.

7. Recommended Soldering Technologies

7.1 Re-flowing Profile:

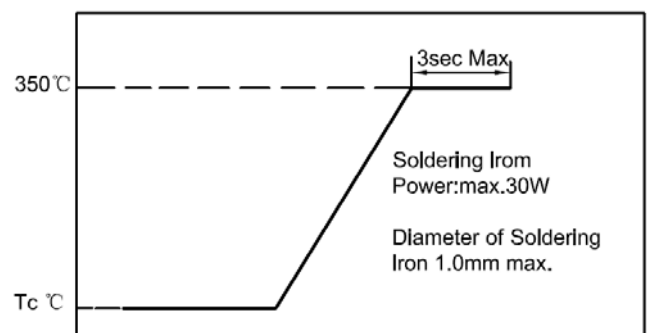
- △ 1~2 °C/sec. Ramp
- △ Pre-heating: $150\sim 190^{\circ}\text{C}/90\pm 30\text{ sec}$.
- △ Time above 240°C : 20~40sec
- △ Peak temperature: 255°C Max./5sec;
- △ Solder paste: Sn/3.0Ag/0.5Cu
- △ Max.2 times for Re-flowing



7.2 Iron Soldering Profile:

- △ Iron soldering power: Max.30W
- △ Pre-heating: $150^{\circ}\text{C}/60\text{sec}$.
- △ Soldering Tip temperature: 350°C Max.
- △ Soldering time: 3sec Max.
- △ Solder paste: Sn/3.0Ag/0.5Cu
- △ Max.1 times for iron soldering

[Note: Take care not to apply the tip of the soldering iron to the]



Test Report

No. CANEC1616984303

Date: 06 Sep 2016

Page 1 of 5

SHENZHEN COILANK TECHNOLOGY CO.,LTD

12F,CHUANGXIN BUILDING CHUANGYE GARDEN MINZHI STREET BAOAN DISTRICT SHENZHEN CITY
CHINA

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

SGS Job No. : CP16-054155 - SZ
Model No. : ABG
Client Ref. Info. : ABG,ABT,APB,APB-S,APC,APC-S,APD,APD-8,APH,APT,APV,APW,APX
Date of Sample Received : 29 Aug 2016
Testing Period : 29 Aug 2016 - 02 Sep 2016
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).

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

Echo

Echo Yeung
Approved Signatory



SGS-CSTC Standards Technical Services Co., Ltd.
Guangzhou Branch Heavy Metals Chemical Laboratory

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No. CANEC1616984303

Date: 06 Sep 2016

Page 2 of 5

Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	CAN16-169843.003	"Powder Inductors"(mixed)

Remarks :

- (1) 1 mg/kg = 1 ppm = 0.0001%
- (2) MDL = Method Detection Limit
- (3) ND = Not Detected (< MDL)
- (4) "-" = Not Regulated

Elementary Analysis & Flame Retardants

- Test Method :
- (1) With reference to IEC 62321-5:2013, determination of Cadmium by ICP-OES.
 - (2) With reference to IEC 62321-5:2013, determination of Lead by ICP-OES.
 - (3) With reference to IEC 62321-4:2013, determination of Mercury by ICP-OES.
 - (4) With reference to IEC 62321:2008, determination of Hexavalent Chromium by Colorimetric Method using UV-Vis.
 - (5) With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.

Test Item(s)	Limit	Unit	MDL	003
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 (CrVI)	1,000	mg/kg	2	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



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Test Report

No. CANEC1616984303

Date: 06 Sep 2016

Page 3 of 5

Test Item(s)	Limit	Unit	MDL	003
Dibromodiphenyl ether	-	mg/kg	5	ND
Tribromodiphenyl ether	-	mg/kg	5	ND
Tetrabromodiphenyl ether	-	mg/kg	5	ND
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

Notes :

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

Remark: 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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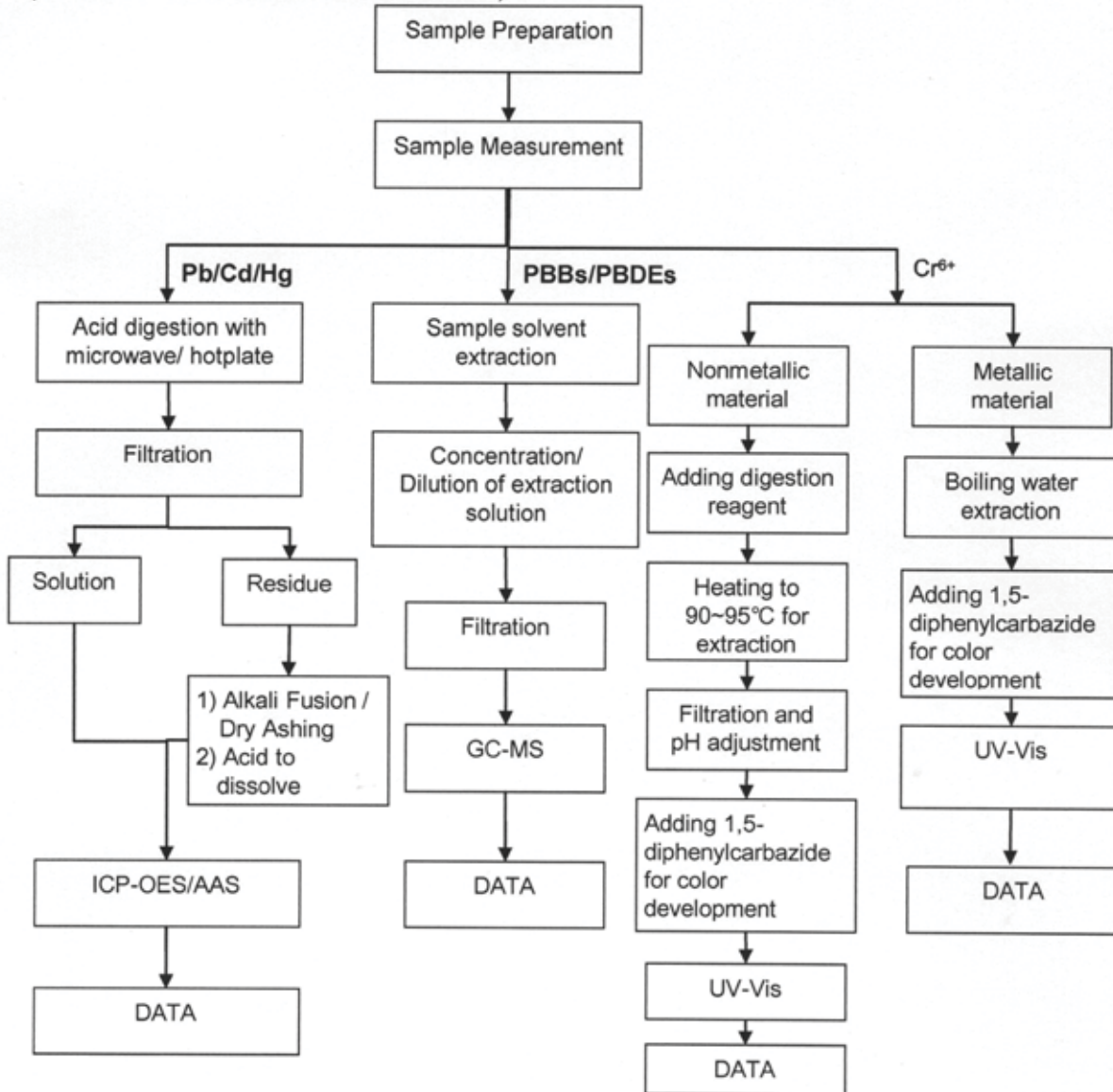
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ATTACHMENTS

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

- 1) Name of the person who made testing: Edith Zhang / Sunny Hu
- 2) Name of the person in charge of testing: Bella Wang / Qiong Liu
- 3) These samples were dissolved totally by pre-conditioning method according to below flow chart (Cr⁶⁺ and PBBs/PBDEs test method excluded).



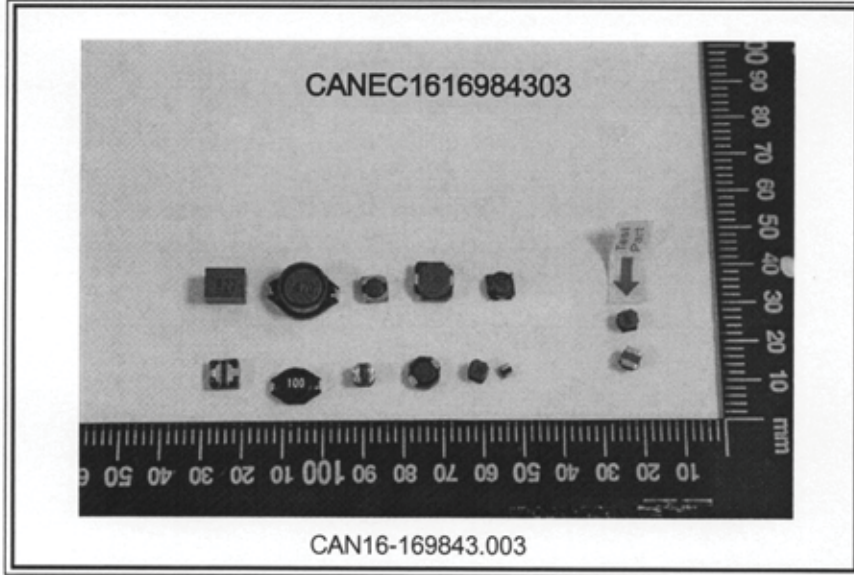
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Test Report (SVHC)

No. CANEC1616984301

Date: 06 Sep 2016

Page 1 of 15

SHENZHEN COILANK TECHNOLOGY CO.,LTD
12F,CHUANGXIN BUILDING CHUANGYE GARDEN MINZHI STREET BAOAN DISTRICT SHENZHEN CITY
CHINA

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

SGS Job No. : CP16-054155 - SZ
Model No. : ABG
Client Ref. Info. : ABG,ABT,APB,APB-S,APC,APC-S,APD,APD-8,APH,APT,APV,APW,APX
ALCF,AIHS,AIHC,AHEC,AHQC,AHSC,AWC,ACM,ANL,ANC,ANR,ACM
Date of Sample Received : 29 Aug 2016
Testing Period : 29 Aug 2016 - 02 Sep 2016
Test Requested : As requested by client, SVHC screening is performed according to:
(i) One hundred and sixty nine (169) substances in the Candidate List of Substances of Very High Concern (SVHC) for authorization published by European Chemicals Agency (ECHA) on and before Jun 20, 2016 regarding Regulation (EC) No 1907/2006 concerning the REACH.

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

Summary :

According to the specified scope and analytical techniques, concentrations of tested SVHC are $\leq 0.1\%$ (w/w) in the submitted sample.

PASS

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

Echo

Echo Yeung
Approved Signatory



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Remark :

(1) The chemical analysis of specified SVHC is performed by means of currently available analytical techniques against the following SVHC related documents published by ECHA:
<http://echa.europa.eu/web/guest/candidate-list-table>
 These lists are under evaluation by ECHA and may subject to change in the future.

(2) Concerning article(s):

In accordance with Regulation (EC) No 1907/2006, any EU producer or importer of articles shall notify ECHA, in accordance with paragraph 4 of Article 7, if a substance meets the criteria in Article 57 and is identified in accordance with Article 59(1) of the Regulation, if (a) the substance in the Candidate List is present in those articles in quantities totaling over one tonne per producer or importer per year; and (b) the substance in the Candidate List is present in those articles above a concentration of 0.1% weight by weight (w/w).

Article 33 of Regulation (EC) No 1907/2006 requires supplier of an article containing a substance meeting the criteria in Article 57 and identified in accordance with Article 59(1) in a concentration above 0.1% weight by weight (w/w) shall provide the recipient of the article with sufficient information, available to the supplier, to allow safe use of the article including, as a minimum, the name of that substance in the Candidate List.

SGS adopts the interpretation of ECHA for SVHC in article unless indicated otherwise. Detail explanation is available at the following link:
http://webstage.contribute.sgs.net/corpreach/documents/SGS-CTS_SVHC-paper-EN-11.pdf

(3) Concerning material(s):

Test results in this report are based on the tested sample. This report refers to testing result of tested sample submitted as homogenous material(s). In case such material is being used to compose an article, the results indicated in this report may not represent SVHC concentration in such article. If this report refers to testing result of composite material group by equal weight proportion, the material in each composite test group may come from more than one article.

If the sample is a substance or mixture, and it directly exports to EU, client has the obligation to comply with the supply chain communication obligation under Article 31 of Regulation (EC) No. 1907/2006 and the conditions of Authorization of substance of very high concern included in the Annex XIV of the Regulation (EC) No. 1907/2006.

(4) Concerning substance and preparation:

If a SVHC is found over 0.1% (w/w) and/or the specific concentration limit which is set in Regulation (EC) No 1272/2008 and No 790/2009, client is suggested to prepare a Safety Data Sheet (SDS) against the SVHC to comply with the supply chain communication obligation under Regulation (EC) No 1907/2006, in which:

- a substance that is classified as hazardous under the CLP Regulation (EC) No 1272/2008.
- a mixture that is classified as dangerous according Dangerous Preparations Directive



Test Report (SVHC)

No. CANEC1616984301

Date: 06 Sep 2016

Page 3 of 15

1999/45/EC or classified as hazardous under the CLP Regulation (EC) No 1272/2008, when their concentrations are equal to, or greater than, those defined in the Article 3(3) of 1999/45/EC or the lower values given in Part 3 of Annex VI of Regulation (EC) No. 1272/2008;

or

- a mixture is not classified as dangerous under Directive 1999/45/EC, but contains either:
 - (a) a substance posing human health or environmental hazards in an individual concentration of $\geq 1\%$ by weight for mixtures that are solid or liquids (i.e., non-gaseous mixtures) or $\geq 0.2\%$ by volume for gaseous mixtures; or
 - (b) a substance that is PBT, or vPvB in an individual concentration of $\geq 0.1\%$ by weight for mixtures that are solid or liquids (i.e., non-gaseous mixtures); or
 - (c) a substance on the SVHC candidate list (for reasons other than those listed above), in an individual concentration of $\geq 0.1\%$ by weight for non-gaseous mixtures; or
 - (d) a substance for which there are Europe-wide workplace exposure limits.

(5) If a SVHC is found over the reporting limit, client is suggested to identify the component which contains the SVHC and the exact concentration of the SVHC by requesting further quantitative analysis from the laboratory.

Test Sample :

Sample Description :

Specimen No.	SGS Sample ID	Description
SN1	CAN16-169843.001	"Powder Inductors"

Test Method :

SGS In-House method- GZTC CHEM-TOP-092-01, GZTC CHEM-TOP-092-02, Analyzed by ICP-OES, UV-VIS, GC-MS, HPLC-DAD/MS and Colorimetric Method.



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Test Report (SVHC)

No. CANEC1616984301

Date: 06 Sep 2016

Page 4 of 15

Test Result: (Substances in the Candidate List of SVHC)

Batch	Substance Name	CAS No.	001 Concentration (%)	RL (%)
-	All tested SVHC in candidate list	-	ND	-

Notes :

1. The table above only shows detected SVHC, and SVHC that below RL are not reported. Please refer to Appendix for the full list of tested SVHC.
2. RL = Reporting Limit. All RL are based on homogenous material. ND = Not detected (lower than RL), ND is denoted on the SVHC substance.
3. *The test result is based on the calculation of selected element(s) / marker(s) and to the worst-case scenario. For detail information, please refer to the SGS REACH website: www.reach.sgs.com/substance-of-very-high-concern-analysis-information-page.htm.
4. RL = 0.005% is evaluated for element (i.e. cobalt, arsenic, lead, chromium (VI), aluminum, zirconium, boron, strontium, zinc, antimony, cadmium, titanium and barium respectively), except molybdenum RL=0.0005%, boron RL=0.0025% (only for Lead bis(tetrafluoroborate)).
5. Calculated concentration of boric compounds are based on the water extractive boron by ICP-OES.
6. Δ CAS No. of diastereoisomers identified (α-HBCDD, β-HBCDD, γ-HBCDD): 134237-50-6, 134237-51-7, 134237-52-8.
7. ☆ CAS No. of Hexahydromethylphthalic anhydride, Hexahydro-4-methylphthalic anhydride, Hexahydro-1-methylphthalic anhydride, Hexahydro-3-methylphthalic anhydride: 25550-51-0, 19438-60-9, 48122-14-1, 57110-29-9; EC No. of those: 247-094-1, 243-072-0, 256-356-4, 260-566-1.
8. § The substance is proposed for the identification as SVHC only where it contains Michler's ketone (CAS Number: 90-94-8) or Michler's base (CAS Number: 101-61-1) ≥0.1% (w/w).



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Test Report (SVHC)

No. CANEC1616984301

Date: 06 Sep 2016

Page 5 of 15

Appendix

Full list of tested SVHC:

Batch	No.	Substance Name	CAS No.	RL (%)
I	1	4,4' -Diaminodiphenylmethane(MDA)	101-77-9	0.050
I	2	5-tert-butyl-2,4,6-trinitro-m-xylene (musk xylene)	81-15-2	0.050
I	3	Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins)	85535-84-8	0.050
I	4	Anthracene	120-12-7	0.050
I	5	Benzyl butyl phthalate (BBP)	85-68-7	0.050
I	6	Bis (2-ethylhexyl)phthalate (DEHP)	117-81-7	0.050
I	7	Bis(tributyltin)oxide (TBTO)	56-35-9	0.050
I	8	Cobalt dichloride*	7646-79-9	0.005
I	9	Diarsenic pentaoxide*	1303-28-2	0.005
I	10	Diarsenic trioxide*	1327-53-3	0.005
I	11	Dibutyl phthalate (DBP)	84-74-2	0.050
I	12	Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified (α -HBCDD, β -HBCDD, γ -HBCDD) ^Δ	25637-99-4, 3194- 55-6	0.050
I	13	Lead hydrogen arsenate*	7784-40-9	0.005
I	14	Sodium dichromate*	7789-12-0, 10588-01-9	0.005
I	15	Triethyl arsenate*	15606-95-8	0.005
II	16	2,4-Dinitrotoluene	121-14-2	0.050
II	17	Acrylamide	79-06-1	0.050
II	18	Anthracene oil*	90640-80-5	0.050
II	19	Anthracene oil, anthracene paste*	90640-81-6	0.050
II	20	Anthracene oil, anthracene paste, anthracene fraction*	91995-15-2	0.050



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Test Report (SVHC)

No. CANEC1616984301

Date: 06 Sep 2016

Page 6 of 15

Appendix

Full list of tested SVHC:

Batch	No.	Substance Name	CAS No.	RL (%)
II	21	Anthracene oil, anthracene paste, distn. lights*	91995-17-4	0.050
II	22	Anthracene oil, anthracene-low*	90640-82-7	0.050
II	23	Diisobutyl phthalate	84-69-5	0.050
II	24	Lead chromate*	7758-97-6	0.005
II	25	Lead chromate molybdate sulphate red (C.I. Pigment Red 104)*	12656-85-8	0.005
II	26	Lead sulfochromate yellow (C.I. Pigment Yellow 34)*	1344-37-2	0.005
II	27	Pitch, coal tar, high temp.*	65996-93-2	0.050
II	28	Tris(2-chloroethyl)phosphate	115-96-8	0.050
III	29	Ammonium dichromate*	7789-09-5	0.005
III	30	Boric acid*	10043-35-3, 11113-50-1	0.005
III	31	Disodium tetraborate, anhydrous*	1303-96-4, 1330-43-4, 12179-04-3	0.005
III	32	Potassium chromate*	7789-00-6	0.005
III	33	Potassium dichromate*	7778-50-9	0.005
III	34	Sodium chromate*	7775-11-3	0.005
III	35	Tetraboron disodium heptaoxide, hydrate*	12267-73-1	0.005
III	36	Trichloroethylene	79-01-6	0.050
IV	37	2-Ethoxyethanol	110-80-5	0.050
IV	38	2-Methoxyethanol	109-86-4	0.050
IV	39	Chromic acid, Oligomers of chromic acid and dichromic acid, Dichromic acid*	7738-94-5 13530-68-2	0.005



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Test Report (SVHC)

No. CANEC1616984301

Date: 06 Sep 2016

Page 7 of 15

Appendix

Full list of tested SVHC:

Batch	No.	Substance Name	CAS No.	RL (%)
IV	40	Chromium trioxide*	1333-82-0	0.005
IV	41	Cobalt(II) carbonate*	513-79-1	0.005
IV	42	Cobalt(II) diacetate*	71-48-7	0.005
IV	43	Cobalt(II) dinitrate*	10141-05-6	0.005
IV	44	Cobalt(II) sulphate*	10124-43-3	0.005
V	45	1,2,3-trichloropropane	96-18-4	0.050
V	46	1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich	71888-89-6	0.050
V	47	1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters	68515-42-4	0.050
V	48	1-methyl-2-pyrrolidone	872-50-4	0.050
V	49	2-ethoxyethyl acetate	111-15-9	0.050
V	50	Hydrazine	7803-57-8, 302-01-2	0.050
V	51	Strontium chromate*	7789-06-2	0.005
VI	52	1,2-Dichloroethane	107-06-2	0.050
VI	53	2,2'-dichloro-4,4'-methylenedianiline	101-14-4	0.050
VI	54	2-Methoxyaniline; o-Anisidine	90-04-0	0.050
VI	55	4-(1,1,3,3-tetramethylbutyl)phenol	140-66-9	0.050
VI	56	Aluminosilicate Refractory Ceramic Fibres *	650-017-00-8 (Index no.)	0.005
VI	57	Arsenic acid*	7778-39-4	0.005
VI	58	Bis(2-methoxyethyl) ether	111-96-6	0.050
VI	59	Bis(2-methoxyethyl) phthalate	117-82-8	0.050



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Test Report (SVHC)

No. CANEC1616984301

Date: 06 Sep 2016

Page 8 of 15

Appendix

Full list of tested SVHC:

Batch	No.	Substance Name	CAS No.	RL (%)
VI	60	Calcium arsenate*	7778-44-1	0.005
VI	61	Dichromium tris(chromate) *	24613-89-6	0.005
VI	62	Formaldehyde, oligomeric reaction products with aniline	25214-70-4	0.050
VI	63	Lead diazide, Lead azide*	13424-46-9	0.005
VI	64	Lead dipicrate*	6477-64-1	0.005
VI	65	Lead styphnate*	15245-44-0	0.005
VI	66	N,N-dimethylacetamide	127-19-5	0.050
VI	67	Pentazinc chromate octahydroxide*	49663-84-5	0.005
VI	68	Phenolphthalein	77-09-8	0.050
VI	69	Potassium hydroxyoctaoxodizincatedichromate*	11103-86-9	0.005
VI	70	Trilead diarsenate*	3687-31-8	0.005
VI	71	Zirconia Aluminosilicate Refractory Ceramic Fibres*	650-017-00-8 (Index no.)	0.005
VII	72	[4-[[4-anilino-1-naphthyl][4-(dimethylamino)phenyl]methylene]cyclohexa-2,5-dien-1-ylidene] dimethylammonium chloride (C.I. Basic Blue 26)§	2580-56-5	0.050
VII	73	[4-[4,4'-bis(dimethylamino)benzhydrylidene]cyclohexa-2,5-dien-1-ylidene]dimethylammonium chloride (C.I. Basic Violet 3)§	548-62-9	0.050
VII	74	1,2-bis(2-methoxyethoxy)ethane (TEGDME; triglyme)	112-49-2	0.050
VII	75	1,2-dimethoxyethane; ethylene glycol dimethyl ether (EGDME)	110-71-4	0.050
VII	76	4,4'-bis(dimethylamino) benzophenone (Michler's Ketone)	90-94-8	0.050
VII	77	4,4'-bis(dimethylamino)-4''-(methylamino)trityl alcohol§	561-41-1	0.050
VII	78	Diboron trioxide*	1303-86-2	0.005



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Test Report (SVHC)

No. CANEC1616984301

Date: 06 Sep 2016

Page 9 of 15

Appendix

Full list of tested SVHC:

Batch	No.	Substance Name	CAS No.	RL (%)
VII	79	Formamide	75-12-7	0.050
VII	80	Lead(II) bis(methanesulfonate)*	17570-76-2	0.005
VII	81	N,N,N',N'-tetramethyl-4,4'-methylenedianiline (Michler's base)	101-61-1	0.050
VII	82	TGIC (1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6-(1H,3H,5H)-trione)	2451-62-9	0.050
VII	83	α,α -Bis[4-(dimethylamino)phenyl]-4 (phenylamino)naphthalene-1-methanol (C.I. Solvent Blue 4) §	6786-83-0	0.050
VII	84	β -TGIC (1,3,5-tris[(2S and 2R)-2,3-epoxypropyl]-1,3,5-triazine-2,4,6-(1H,3H,5H)-trione)	59653-74-6	0.050
VIII	85	[Phthalato(2-)]dioxotrilead*	69011-06-9	0.005
VIII	86	1,2-Benzenedicarboxylic acid, dipentylester, branched and linear	84777-06-0	0.050
VIII	87	1,2-Diethoxyethane	629-14-1	0.050
VIII	88	1-Bromopropane	106-94-5	0.050
VIII	89	3-Ethyl-2-methyl-2-(3-methylbutyl)-1,3-oxazolidine	143860-04-2	0.050
VIII	90	4-(1,1,3,3-tetramethylbutyl)phenol, ethoxylated	-	0.050
VIII	91	4,4'-Methylenedi-o-toluidine	838-88-0	0.050
VIII	92	4,4'-Oxydianiline and its salts	101-80-4	0.050
VIII	93	4-Aminoazobenzene	60-09-3	0.050
VIII	94	4-Methyl-m-phenylenediamine	95-80-7	0.050
VIII	95	4-Nonylphenol, branched and linear	-	0.050
VIII	96	6-Methoxy-m-toluidine	120-71-8	0.050
VIII	97	Acetic acid, lead salt, basic*	51404-69-4	0.005



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Test Report (SVHC)

No. CANEC1616984301

Date: 06 Sep 2016

Page 10 of 15

Appendix

Full list of tested SVHC:

Batch	No.	Substance Name	CAS No.	RL (%)
VIII	98	Biphenyl-4-ylamine	92-67-1	0.050
VIII	99	Bis(pentabromophenyl) ether (DecaBDE)	1163-19-5	0.050
VIII	100	Cyclohexane-1,2-dicarboxylic anhydride, cis-cyclohexane-1,2-dicarboxylic anhydride, trans-cyclohexane-1,2-dicarboxylic anhydride	85-42-7, 13149-00-3, 14166-21-3	0.050
VIII	101	Diazene-1,2-dicarboxamide (C,C'-azodi(formamide))	123-77-3	0.050
VIII	102	Dibutyltin dichloride (DBTC)	683-18-1	0.050
VIII	103	Diethyl sulphate	64-67-5	0.050
VIII	104	Diisopentylphthalate	605-50-5	0.050
VIII	105	Dimethyl sulphate	77-78-1	0.050
VIII	106	Dinoseb	88-85-7	0.050
VIII	107	Dioxobis(stearato)trilead*	12578-12-0	0.005
VIII	108	Fatty acids, C16-18, lead salts*	91031-62-8	0.005
VIII	109	Furan	110-00-9	0.050
VIII	110	Henicosfluoroundecanoic acid	2058-94-8	0.050
VIII	111	Heptacosfluorotetradecanoic acid	376-06-7	0.050
VIII	112	Hexahydromethylphthalic anhydride, Hexahydro-4-methylphthalic anhydride, Hexahydro-1-methylphthalic anhydride, Hexahydro-3-methylphthalic anhydride	☆	0.050
VIII	113	Lead bis(tetrafluoroborate)*	13814-96-5	0.005
VIII	114	Lead cyanamidate*	20837-86-9	0.005
VIII	115	Lead dinitrate*	10099-74-8	0.005
VIII	116	Lead monoxide*	1317-36-8	0.005



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Test Report (SVHC)

No. CANEC1616984301

Date: 06 Sep 2016

Page 11 of 15

Appendix

Full list of tested SVHC:

Batch	No.	Substance Name	CAS No.	RL (%)
VIII	117	Lead oxide sulfate*	12036-76-9	0.005
VIII	118	Lead tetroxide (orange lead)*	1314-41-6	0.005
VIII	119	Lead titanium trioxide*	12060-00-3	0.005
VIII	120	Lead titanium zirconium oxide*	12626-81-2	0.005
VIII	121	Methoxyacetic acid	625-45-6	0.050
VIII	122	Methyloxirane (Propylene oxide)	75-56-9	0.050
VIII	123	N,N-dimethylformamide	68-12-2	0.050
VIII	124	N-Methylacetamide	79-16-3	0.050
VIII	125	N-Pentyl-isopentylphthalate	776297-69-9	0.050
VIII	126	o-Aminoazotoluene	97-56-3	0.050
VIII	127	o-Toluidine	95-53-4	0.050
VIII	128	Pentacosafuorotridecanoic acid	72629-94-8	0.050
VIII	129	Pentalead tetraoxide sulphate*	12065-90-6	0.005
VIII	130	Pyrochlore, antimony lead yellow*	8012-00-8	0.005
VIII	131	Silicic acid, barium salt, lead-doped*	68784-75-8	0.005
VIII	132	Silicic acid, lead salt*	11120-22-2	0.005
VIII	133	Sulfurous acid, lead salt, dibasic*	62229-08-7	0.005
VIII	134	Tetraethyllead*	78-00-2	0.005
VIII	135	Tetralead trioxide sulphate*	12202-17-4	0.005
VIII	136	Tricosafuorododecanoic acid	307-55-1	0.050
VIII	137	Trilead bis(carbonate)dihydroxide (basic lead carbonate)*	1319-46-6	0.005



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Test Report (SVHC)

No. CANEC1616984301

Date: 06 Sep 2016

Page 12 of 15

Appendix

Full list of tested SVHC:

Batch	No.	Substance Name	CAS No.	RL (%)
VIII	138	Trilead dioxide phosphonate*	12141-20-7	0.005
IX	139	4-Nonylphenol, branched and linear, ethoxylated	-	0.050
IX	140	Ammonium pentadecafluorooctanoate (APFO)	3825-26-1	0.050
IX	141	Cadmium oxide*	1306-19-0	0.005
IX	142	Cadmium*	7440-43-9	0.005
IX	143	Dipentyl phthalate (DPP)	131-18-0	0.050
IX	144	Pentadecafluorooctanoic acid (PFOA)	335-67-1	0.050
X	145	Cadmium sulphide*	1306-23-6	0.005
X	146	Dihexyl phthalate	84-75-3	0.050
X	147	Disodium 3,3'-[[1,1'-biphenyl]-4,4'-diylbis(azo)]bis(4-aminonaphthalene-1-sulphonate) (C.I. Direct Red 28)	573-58-0	0.050
X	148	Disodium 4-amino-3-[[4'-[(2,4-diaminophenyl)azo][1,1'-biphenyl]-4-yl]azo]-5-hydroxy-6-(phenylazo)naphthalene-2,7-disulphonate (C.I. Direct Black 38)	1937-37-7	0.050
X	149	Imidazolidine-2-thione; (2-imidazoline-2-thiol)	96-45-7	0.050
X	150	Lead di(acetate)*	301-04-2	0.005
X	151	Trixylyl phosphate	25155-23-1	0.050
XI	152	1,2-Benzenedicarboxylic acid, dihexyl ester, branched and linear	68515-50-4	0.050
XI	153	Cadmium chloride*	10108-64-2	0.005
XI	154	Sodium perborate; perboric acid, sodium salt*	-	0.005
XI	155	Sodium peroxometaborate*	7632-04-4	0.005



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Test Report (SVHC)

No. CANEC1616984301

Date: 06 Sep 2016

Page 13 of 15

Appendix

Full list of tested SVHC:

Batch	No.	Substance Name	CAS No.	RL (%)
XII	156	2-(2H-Benzotriazol-2-yl)-4,6-ditertpentylphenol (UV-328)	25973-55-1	0.050
XII	157	2-benzotriazol-2-yl-4,6-di-tert-butylphenol (UV-320)	3846-71-7	0.050
XII	158	2-Ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradeca noate; DOTE	15571-58-1	0.050
XII	159	Reaction mass of 2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradeca noate & 2-ethylhexyl 10-ethyl-4-[[2- [[2-ethylhexyl)oxy]-2-oxoethyl]thio]-4-octyl-7-oxo-8-oxa-3,5-di thia-4-stannatetradecanoate (reaction mass of DOTE & MOTE)	-	0.050
XII	160	Cadmium fluoride*	7790-79-6	0.005
XII	161	Cadmium sulphate*	10124-36-4, 31119-53-6	0.005
XIII	162	1,2-benzenedicarboxylic acid, di-C6-10-alkyl esters; 1,2-benzenedicarboxylic acid, mixed decyl and hexyl and octyl diesters with ≥ 0.3% of dihexyl phthalate	68515-51-5, 68648-93-1	0.050
XIII	163	5-sec-butyl-2- (2,4-dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane [1], 5-sec-butyl-2- (4,6-dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane [2] [covering any of the individual isomers of [1] and [2] or any combination thereof]	-	0.050
XIV	164	1,3-propanesultone	1120-71-4	0.050
XIV	165	2,4-di-tert-butyl-6-(5-chlorobenzotriazol-2-yl)phenol (UV-327)	3864-99-1	0.050
XIV	166	2-(2H-benzotriazol-2-yl)-4-(tert-butyl)-6-(sec-butyl)phenol (UV-350)	36437-37-3	0.050
XIV	167	Nitrobenzene	98-95-3	0.050
XIV	168	Perfluorononan-1-oiic-acid and its sodium and ammonium salts	375-95-1,21049-39-8, 4149-60-4	0.050
XV	169	Benzo[de]chrysene (Benzo[a]pyrene)	50-32-8	0.050



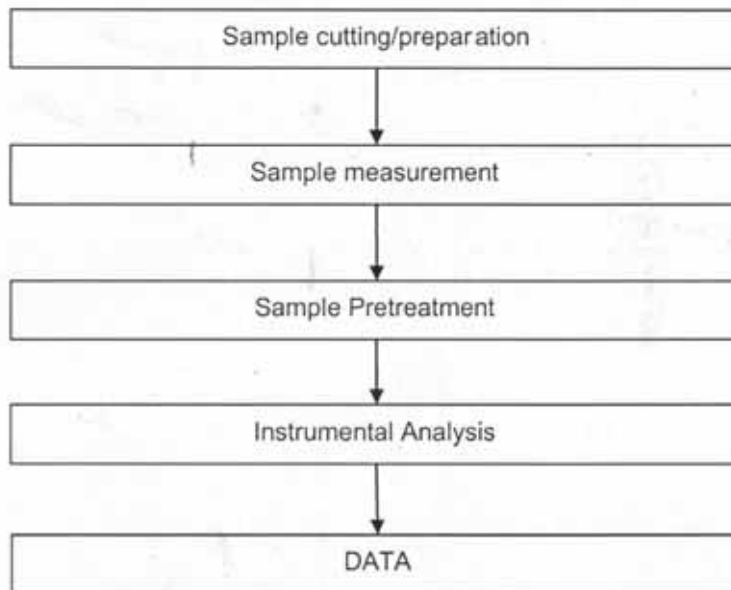
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ATTACHMENTS

SVHC Testing Flow Chart

- 1) Name of the person who made testing: Hogan Lv / Iris Zhong
- 2) Name of the person in charge of testing: Lireny Liu



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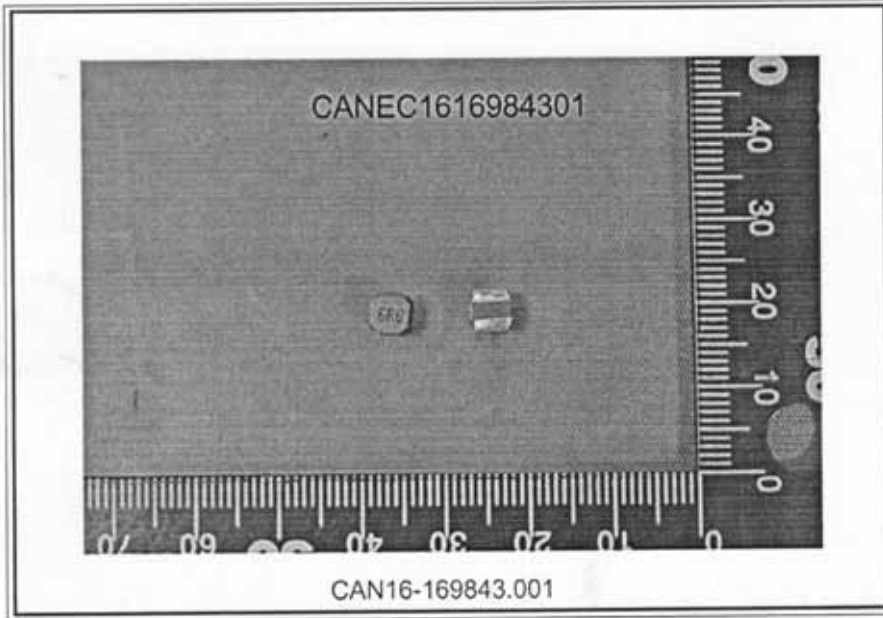
Test Report (SVHC)

No. CANEC1616984301

Date: 06 Sep 2016

Page 15 of 15

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