



**Test Report
(SVHC)**

No.: GZ0903016534/CHEM

Date: MAR 18, 2009

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KAIHUI OPTOELECTRONICS CO.,LTD
NO.1 NANSHAN INDUSTRIAL ZONE, JIANGMEN CITY, GUANGDONG, CHINA

The following sample(s) was/were submitted and identified on behalf of the applicant as LIGHT EMITTING DIODE 发光二极管

SGS Job No. : GZ11662342EC
Date of Sample Received : MAR 09, 2009
Testing Period : MAR 09, 2009 TO MAR 18, 2009

Test Requested : Fifteen (15) Substances of Very High Concern (SVHC) screening
Based on the SVHC candidate list published by European Chemicals Agency (ECHA) on 2008
October 28, regarding Regulation (EC) No 1907/2006 concerning REACH.

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

Summary : According to the specified scope and analytical technique, concentrations of all 15 SVHC are
<0.1% in the submitted sample(s).

Signed for and on behalf of
SGS-CSTC Ltd.

Huang Fang, Sunny
Sr. Engineer

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

138 Kazhu Road, Sientech Park, Guangzhou Economic & Technology Development District, Guangzhou, China 510863 | (86-20) 82155555 | (86-20) 82075125 | www.cn.sgs.com
中国·广州·经济技术开发区科学城科珠路198号 邮编: 510863 | (86-20) 82155555 | (86-20) 82075125 | e: sgs.china@sgs.com

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Test Sample:

Sample Description: "LIGHT EMITTING DIODE"

Sample as received are classified as below categories :

Description
Polymers : (i.e. PVC, PET, ABS, Rubber)
Metals : (i.e. Alloy, Stainless, Aluminium)
PCBA / Composite : (i.e. PCB, IC)
Non-Metal and Non-Polymers : (i.e. Textile, Paper, Leather, Wood)
Glass / Ceramic
Others : (i.e. Chemical Substance or Preparation, Desiccant, Carbon/Ink in Cartridge)

Remark:

1. Definition of classification is listed in **Appendix A** of this report in accordance with 67/548/EEC and Regulation (EC) No 1907/2006.
2. The Sample as received is tested as composite mixture.

Test Method:

SGS In-house method :

- Acid digestion and analyzed by ICP-OES ;
- Solvent extraction and analyzed by GC/MS and GC/ECD

Remarks:

1. The chemical analysis of SVHC is performed by means of currently available analytical techniques against the SVHC candidate list published by ECHA on 2008 October 28, and shall refer to http://echa.europa.eu/chem_data/candidate_list_table_en.asp. This list is under evaluation by ECHA and may subject to change in the future.
2. In accordance with Regulation (EC) No 1907/2006, any 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 is present in those articles in quantities totaling over one tonne per producer or importer per year; and (b) the substance is present in those articles above a concentration of **0.1%** weight by weight (w/w).
3. 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.
4. 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.

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SGS Testing Services (China) Co., Ltd.
Guangzhou Testing Services (Chemical) Laboratory

138 Kazhu Road, Science Park, Guangzhou Economic & Technology Development District, Guangzhou, China 510863 | (86-20) 82155555 | (86-20) 82075125 | www.cn.sgs.com
中国·广州·经济技术开发区科学城科珠路138号 邮编: 510863 | (86-20) 82155555 | (86-20) 82075125 | sgs.china@sgs.com

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Test Result:

Substance Name	CAS number	Concentration (%)	Reporting Limit (%)	Classification
Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins)	85535-84-8	ND	0.01	PBT
Anthracene	120-12-7	ND	0.005	PBT
5-tert-butyl-2,4,6-trinitro-m-xylene (musk xylene)	81-15-2	ND	0.005	vPvB
Dibutyl phthalate (DBP)	84-74-2	ND	0.005	Toxic to Reproduction Category 2
4,4-Diaminodiphenylmethane	101-77-9	ND	0.005	Carcinogen Category 2
Benzyl butyl phthalate (BBP)	85-68-7	ND	0.005	Toxic to Reproduction Category 2
Bis (2-ethylhexylphthalate) (DEHP)	117-81-7	ND	0.005	Toxic to Reproduction Category 2
Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified (α -HBCDD, β -HBCDD, γ -HBCDD)	25637-99-4 and 3194-55-6 (134237-51-7, 134237-50-6, 134237-52-8)	ND	0.005	PBT
Bis(tributyltin)oxide*	56-35-9	ND	0.005	PBT
Cobalt dichloride*	7646-79-9	ND	0.005	Carcinogen Category 2
Diarsenic pentaoxide*	1303-28-2	0.028	0.005	Carcinogen Category 1
Diarsenic trioxide*	1327-53-3	0.024	0.005	Carcinogen Category 1
Triethyl arsenate*	15606-95-8	0.055	0.005	Carcinogen Category 1
Lead hydrogen arsenate*	7784-40-9	ND	0.005	Carcinogen Category 1; Toxic to Reproduction Category 1
Sodium dichromate*	10588-01-9	ND	0.005	Carcinogen Category 2; Mutagen Category 2; Toxic to Reproduction Category 2

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Guangzhou Environmental Chemical Laboratory

198 Kazhu Road, Science Park, Guangzhou Economic & Technology Development District, Guangzhou, China 510663 | (86-20) 82155555 | (86-20) 82075125 | www.cn.sgs.com
中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 | (86-20) 82155555 | (86-20) 82075125 | sgs.china@sgs.com

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Remark:

- 1*. Calculated concentration of cobalt dichloride is based on the identified cobalt by ICP-OES and the identified chloride by IC method.

Calculated concentration of diarsenic pentaoxide, diarsenic trioxide, lead hydrogen arsenate and triethyl arsenate are based on the identified heavy metal result (i.e. Arsenic, Lead)

Calculated concentrations of sodium dichromate are based on the identified sodium by ICP-OES and the identified chromium(VI) by spectroscopic method. The test result is reported as sodium dichromate (CAS number 10588-01-9). Please note that sodium dichromate dihydrate (CAS number 7789-12-0) is no longer classified as SVHC according to the latest amendment of 67/548/EEC (31th Adaption to Technical progress).

Calculated concentration of bis(tributyltin)oxide TBTO is based on the identified tin by ICP-OES and confirmed by TLC.

Identity of above metal substances present in the article has to be further confirmed.

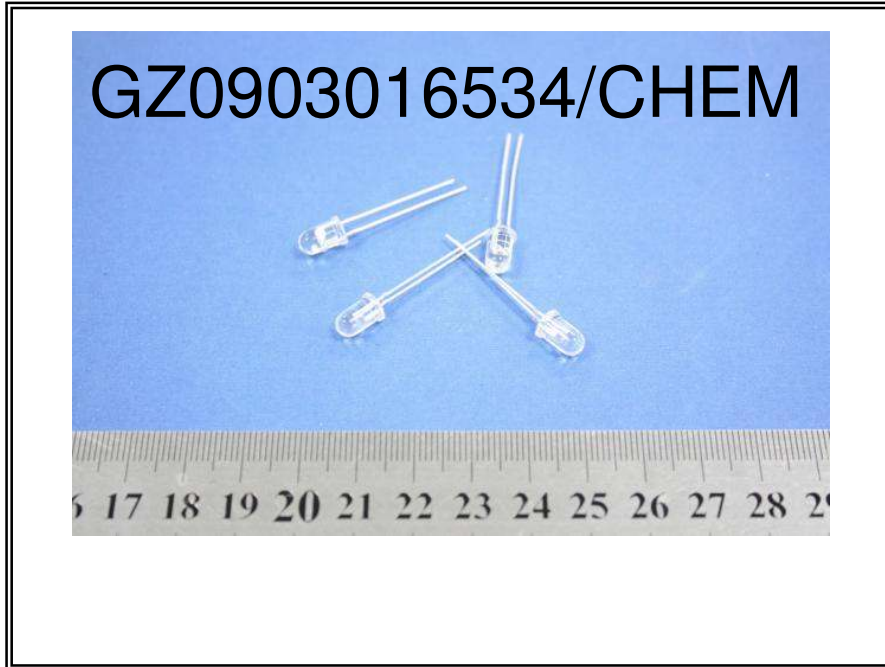
RL is evaluated for element (i.e. tin, cobalt, chloride, arsenic, lead, sodium, chromium (VI) respectively)

2. ND = Not detected (lower than Reporting Limit)
3. RL = Reporting Limit
4. All RL is based on homogenous material
For any parameters involving confirmation test, the RL will be 0.05 %
5. In case SVHC <0,1% for articles "No further obligations regarding communication along the supply chain or notification emerge from the analytical findings in the tested sample"
In case SVHC >0,1% for articles "Further obligations regarding communication along the supply chain or notification may emerge from the analytical findings in the tested sample"

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Appendix A

Classification

Definition under 67/548/EEC and Regulation (EC) No 1907/2006

- Carcinogen Category 1: Substances known to be carcinogenic to man. There is sufficient evidence to establish a causal association between human exposure to a substance and the development of cancer.
- Carcinogen Category 2: Substances which should be regarded as if they are carcinogenic to man. There is sufficient evidence to provide a strong presumption that human exposure to a substance may result in the development of cancer.
Generally on the basis of:
- appropriate long-term animal studies
- other relevant information.
- Mutagen Category 1: Substances known to be mutagenic to man. There is sufficient evidence to establish a causal association between human exposure to a substance and heritable genetic damage.
- Mutagen Category 2: Substances which should be regarded as if they are mutagenic to man. There is sufficient evidence to provide a strong presumption that human exposure to the substance may result in the development of heritable genetic damage, generally on the basis of:
- appropriate animal studies,
- other relevant information.
- Toxic to Reproduction Category 1: Substances known to impair fertility in humans. There is sufficient evidence to establish a causal relationship between human exposure to the substance and impaired fertility.
Substances known to cause developmental toxicity in humans. There is sufficient evidence to establish a causal relationship between human exposure to the substance and subsequent developmental toxic effects in the progeny.
- Toxic to Reproduction Category 2: Substances which should be regarded as if they impair fertility in humans. There is sufficient evidence to provide a strong presumption that human exposure to the substance may result in impaired fertility on the basis of:
- clear evidence in animal studies of impaired fertility in the absence of toxic effects, or, evidence of impaired fertility occurring at around the same dose levels as other toxic effects but which is not a secondary nonspecific consequence of the other toxic effects,
- other relevant information.
Substances which should be regarded as if they cause developmental toxicity to humans. There is sufficient evidence to provide a strong presumption that human exposure to the substance may result in developmental toxicity, generally on the basis of:
- clear results in appropriate animal studies where effects have been observed in the absence of signs of marked maternal toxicity, or at around the same dose levels as other toxic effects but which are not a secondary non-specific consequence of the other toxic effects,
- other relevant information.
- PBT & vPvB: Substances which are persistent, bioaccumulative and toxic (PBT) or very persistent and very bioaccumulative (vPvB) pose a particular challenge to the chemicals safety management. For these substances a "safe" concentration in the environment cannot be established with sufficient reliability.

*** End of Report ***

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