

## Test Report (SVHC)

No.: CANEC23009892101

Date: Sep 28, 2023

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Client Name: GUANGZHOU TIANXIN PHOTOELECTRIC CO.,LTD

Client Address: #15-1 JINGU ROAD SOUTH,XIUTANG,HUADONG TOWN,HUADU DISTRICT,GUANGZHOU

Sample Name: High power & integrated LED with copper substrate

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



Violet Shi  
Approved Signatory

scan to see the report



**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. REACH obligation:

- 2.1 Concerning article(s):

- Communication:

- 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.

- Notification:

- 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).

Companies supplying articles containing substances of very high concern (SVHCs) on the Candidate List in a concentration above 0.1% weight by weight (w/w) on the EU market must comply with the Waste Framework Directive 2008/98/EC requirement and submit SCIP notifications on these articles to ECHA, as from 5 January 2021.

- 2.2 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.

- 2.3 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 its amendments, 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 hazardous under the CLP Regulation (EC) No 1272/2008, when it contains a substance with concentration equal to, or greater than the classification limit as set in Regulation (EC) No. 1272/2008; or
    - a mixture is not classified as hazardous under the CLP Regulation (EC) No 1272/2008, but contains either:

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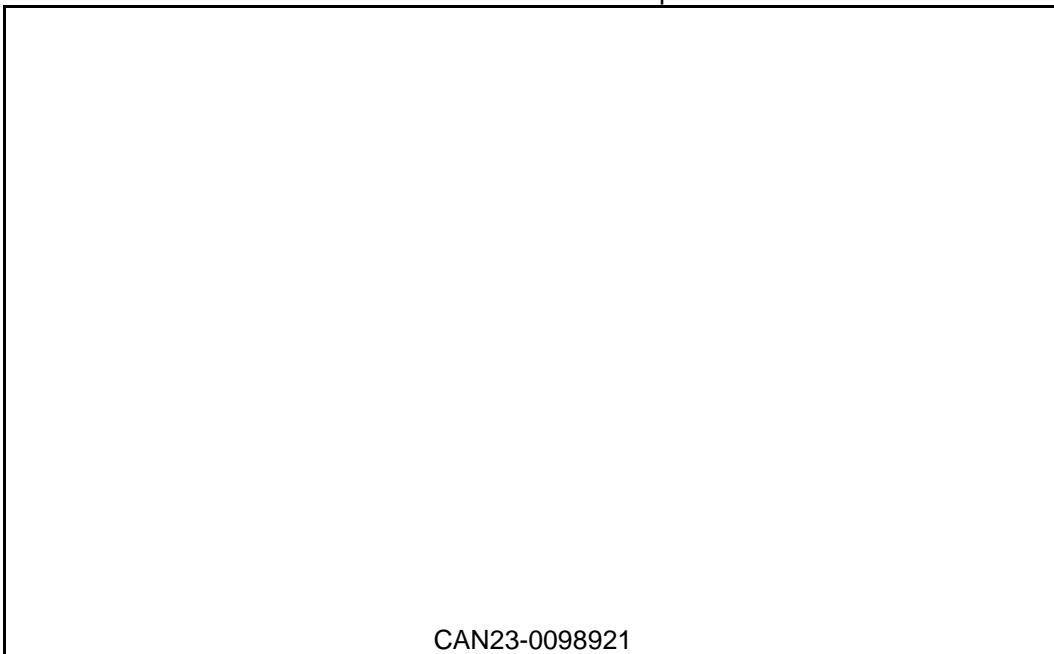
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- (a) a substance posing human health or environmental hazards in an individual concentration of 1 % by weight for mixtures that are solid or liquids (i.e., non-gaseous mixtures) or 0.2 % by volume for gaseous mixtures; or
- (b) a substance that is PBT, or vPvB in an individual concentration of 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 0.1 % by weight for non-gaseous mixtures; or
- (d) a substance for which there are Europe-wide workplace exposure limits

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

### Test Sample:

Photo of Submitted Sample



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SGS authenticate the photo on original report only

### Sample Description:

| Test Part ID | Material Description | Test Part ID | Material Description |
|--------------|----------------------|--------------|----------------------|
|--------------|----------------------|--------------|----------------------|

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| Test Result ID | Description       | Test Part ID | SGS Sample ID           |
|----------------|-------------------|--------------|-------------------------|
| 001            | Nonmetal group    | A1+A3+A4+A5  | CAN23-0098921-0002      |
| 002            | Silvery metal pin | A2           | CAN23-0098921-0001.C002 |

**Test Method:**

With reference to SGS In-House method, analysis was performed by ICP-OES, UV-VIS, GC-MS, HPLC-DAD/MS and Colorimetric Method.

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**Test Results: (Substances in the Candidate List of SVHC)**

| Batch | Substance Name                    | CAS No. | 001<br>Concentration (%) | RL (%) |
|-------|-----------------------------------|---------|--------------------------|--------|
| -     | All tested SVHC in Candidate list | -       | ND                       | -      |

**Test Results: (Potential SVHC)**

| Batch | Substance Name            | CAS No. | 001<br>Concentration (%) | RL (%) |
|-------|---------------------------|---------|--------------------------|--------|
| /     | All tested Potential SVHC | -       | ND                       | -      |

**Test Results: (Substances in the Candidate List of SVHC)**

| Batch | Substance Name                      | CAS No.   | 002<br>Concentration (%) | RL (%) |
|-------|-------------------------------------|-----------|--------------------------|--------|
| XIX   | Lead                                | 7439-92-1 | 0.018                    | 0.005  |
| -     | Other 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 (Test data will be shown if it RL. RL is not regulatory limit.)  
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) and to the worst-case scenario.  
\*\* The test result is based on the calculation of selected marker(s) and to the worst-case scenario.  
Calculated concentration of boric compounds are based on water extractive boron detected by ICP-OES.  
Calculated concentration of Barium diboron tetraoxide is based on water extractive boron and barium detected by ICP-OES.  
RL = 0.005% is evaluated for element (i.e. cobalt, arsenic, lead, chromium (VI), aluminum, zirconium, boron, strontium, zinc, antimony, titanium, barium and cadmium respectively), except molybdenum  
RL=0.0005%, boron RL=0.0025% (only for Lead bis(tetrafluoroborate), fluorine RL=0.050%.
- (4) § 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).
- (5) Composite test has been performed in equal proportion for the components/material per client requested. And the result is calculated using the minimum sample weight.
- (6) In consideration of the analysis requirement and the limit of sample volume, the screening test for the article is based on components / material enough to test.
- (7) / = Potential SVHC

Unless otherwise stated, the decision rule for conformity reporting is based on Binary Statement for Simple Acceptance Rule (w=0) stated in ILAC-G8:09/2019.



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**Appendix**

**Full list of tested SVHC:**

| Batch | No. | Substance Name | CAS No. | RL (%) |
|-------|-----|----------------|---------|--------|
|-------|-----|----------------|---------|--------|



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| Batch | No. | Substance Name   | CAS No.     | RL (%) |
|-------|-----|--|-------------|--------|
| 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  |
| 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  | , -Bis[4-(dimethylamino)phenyl]-4 (phenylamino)naphthalene-1-methanol (C.I. Solvent Blue 4) §                                    | 6786-83-0   | 0.050  |
| VII   | 84  | -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  |
| VIII  | 98  | Biphenyl-4-ylamine   | 92-67-1     | 0.050  |
| VIII  | 99  | Decabromodiphenyl 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 | -           | 0.050  |
| VIII  | 101 | Diazene-1,2-dicarboxamide (C,C'-azodi(formamide))  | 123-77-3    | 0.050  |





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| Batch | No. | Substance Name   | CAS No.                   | RL (%) |
|-------|-----|--|---------------------------|--------|
| 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  |
| 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-stannatetradecanoate (DOTE)   | 15571-58-1                | 0.050  |
| XII   | 159 | Cadmium fluoride*  | 7790-79-6                 | 0.005  |
| XII   | 160 | Cadmium sulphate*  | 10124-36-4<br>/31119-53-6 | 0.005  |
| XII   | 161 | Reaction mass of 2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate & 2-ethylhexyl 10-ethyl-4-[[2-[(2-ethylhexyl)oxy]-2-oxoethyl]thio]-4-octyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (reaction mass of DOTE & MOTE) | -                         | 0.050  |
| 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   | -                         | 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)  |                           |        |

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| Batch | No. | Substance Name  | CAS No.    | RL (%) |
|-------|-----|---|------------|--------|
| XIV   | 167 | Nitrobenzene  | 98-95-3    | 0.050  |
| XIV   | 168 | Perfluorononan-1-oic-acid and its sodium and ammonium salts   | -          | 0.050  |
| XV    | 169 | Benzo[def]chrysene (Benzo[a]pyrene)   | 50-32-8    | 0.050  |
| XVI   | 170 | 4,4'-isopropylidenediphenol (bisphenol A)   | 80-05-7    | 0.050  |
| XVI   | 171 | 4-Heptylphenol, branched and linear   | -          | 0.050  |
| XVI   | 172 | Nonadecafluorodecanoic acid (PFDA) and its sodium and ammonium salts  | -          | 0.050  |
| XVI   | 173 | p-(1,1-dimethylpropyl)phenol  | 80-46-6    | 0.050  |
| XVII  | 174 | Perfluorohexane-1-sulphonic acid and its salts  | -          | 0.050  |
| XVIII | 175 | 1,6,7,8,9,14,15,16,17,17,18,18-Dodecachloropentacyclo[12.2.1.16,9.0.2,13.05,10]octadeca-7,15-diene ("Dechlorane Plus" <sup>TM</sup> ) [covering any of its individual anti- and syn-isomers or any combination thereof] | -          | 0.050  |
| XVIII | 176 | Benz[a]anthracene   | 56-55-3    | 0.050  |
| XVIII | 177 | Cadmium nitrate*  | 10325-94-7 | 0.005  |
| XVIII | 178 | Cadmium carbonate*  | 513-78-0   | 0.005  |
| XVIII | 179 | Cadmium hydroxide*  | 21041-95-2 | 0.005  |
| XVIII | 180 | Chrysene  | 218-01-9   | 0.050  |
| XVIII | 181 | Reaction products of 1,3,4-thiadiazolidine-2,5-dithione, formaldehyde and 4-heptylphenol, branched and linear (RP-HP) [with 0.1% w/w 4-heptylphenol, branched and linear]   | -          | 0.050  |
| XIX   | 182 | Benzene-1,2,4-tricarboxylic acid 1,2 anhydride (trimellitic anhydride) (TMA)  | 552-30-7   | 0.050  |
| XIX   | 183 | Benzo[ghi]perylene  | 191-24-2   | 0.050  |
| XIX   | 184 | Decamethylcyclotetrasiloxane (D5)   | 541-02-6   | 0.050  |
| XIX   | 185 | Dicyclohexyl phthalate (DCHP)   | 84-61-7    | 0.050  |
| XIX   | 186 | Disodium octaborate*  | 12008-41-2 | 0.005  |
| XIX   | 187 | Dodecamethylcyclotetrasiloxane (D6)   | 540-97-6   | 0.050  |
| XIX   | 188 | Ethylenediamine (EDA)   | 107-15-3   | 0.050  |
| XIX   | 189 | Lead  | 7439-92-1  | 0.005  |
| XIX   | 190 | Octamethylcyclotetrasiloxane (D4)   | 556-67-2   | 0.050  |
| XIX   | 191 | Terphenyl, hydrogenated   | 61788-32-7 | 0.050  |
| XX    | 192 | 1,7,7-trimethyl-3-(phenylmethylene)bicyclo[2.2.1]heptan-2-one (3-benzylidene camphor)   | 15087-24-8 | 0.050  |
| XX    | 193 | 2,2-bis(4'-hydroxyphenyl)-4-methylpentane   | 6807-17-6  | 0.050  |
| XX    | 194 | Benzo[k]fluoranthene  | 207-08-9   | 0.050  |
| XX    | 195 | Fluoranthene  | 206-44-0   | 0.050  |
| XX    | 196 | Phenanthrene  | 85-01-8    | 0.050  |
| XX    | 197 | Pyrene  | 129-00-0   | 0.050  |
| XXI   | 198 | 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propionic acid, its salts and its acyl halides (covering any of their individual isomers and combinations thereof)  | -          | 0.050  |
| XXI   | 199 | 2-methoxyethyl acetate  | 110-49-6   | 0.050  |

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| Batch | No. | Substance Name   | CAS No.     | RL (%) |
|-------|-----|--|-------------|--------|
| XXI   | 200 | 4-tert-butylphenol (PTBP)  | 98-54-4     | 0.050  |
| XXI   | 201 | Tris(4-nonylphenyl, branched and linear) phosphite (TNPP) with 0.1% w/w of 4-nonylphenol, branched and linear (4-NP)   | -           | 0.050  |
| XXII  | 202 | 2-benzyl-2-dimethylamino-4'-morpholinobutyrophenone  | 119313-12-1 | 0.050  |
| XXII  | 203 | 2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one   | 71868-10-5  | 0.050  |
| XXII  | 204 | Diisohexyl phthalate   | 71850-09-4  | 0.050  |
| XXII  | 205 | Perfluorobutane sulfonic acid (PFBS) and its salts   | -           | 0.050  |
| XXIII | 206 | 1-vinylimidazole   | 1072-63-5   | 0.050  |
| XXIII | 207 | 2-methylimidazole  | 693-98-1    | 0.050  |
| XXIII | 208 | Butyl 4-hydroxybenzoate  | 94-26-8     | 0.050  |
| XXIII | 209 | Dibutylbis(pentane-2,4-dionato-O,O')tin**  | 22673-19-4  | 0.050  |
| XXIV  | 210 | bis(2-(2-methoxyethoxy)ethyl) ether  | 143-24-8    | 0.050  |
| XXIV  | 211 | Diocetyl tin dilaurate, stannane, dioctyl-, bis(coco acyloxy) derivs., and any other stannane, dioctyl-, bis(fatty acyloxy) derivs. wherein C12 is the predominant carbon number of the fatty acyloxy moiety** | -           | 0.050  |
| XXV   | 212 | 1,4-Dioxane  | 123-91-1    | 0.050  |
| XXV   | 213 | 2,2-   |             |        |

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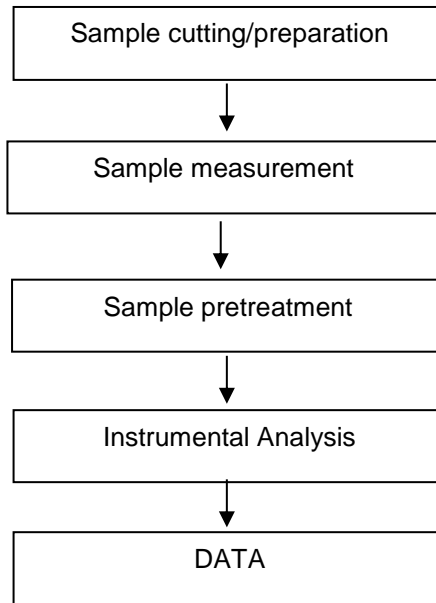
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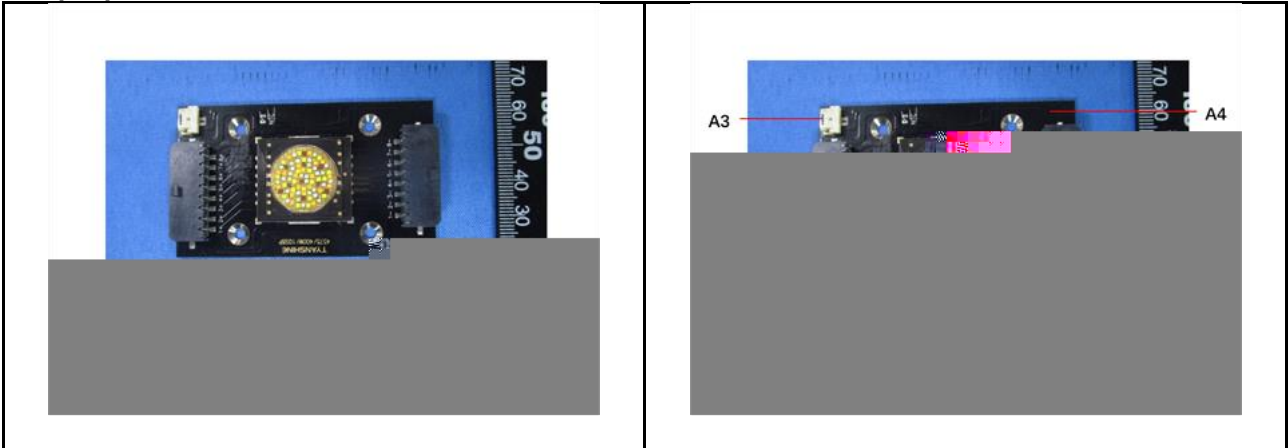
| Batch | No. | Substance Name   | CAS No.     | RL (%) |
|-------|-----|--|-------------|--------|
| XXVI  | 222 | S-(tricyclo[5.2.1.0'2,6]deca-3-en-8(or 9)-yl) O-(isopropyl or isobutyl or 2-ethylhexyl) O-(isopropyl or isobutyl or 2-ethylhexyl) phosphorodithioate | 255881-94-8 | 0.050  |
| XXVI  | 223 | Tris(2-methoxyethoxy)vinylsilane   | 1067-53-4   | 0.050  |
| XXVII | 224 | N-(hydroxymethyl)acrylamide  | 924         |        |

**ATTACHMENTS**

**Testing Flow Chart**



**Sample photos:**



SGS authenticate the photo on original report only  
\*\*\* End of Report \*\*\*

