

Test Report

Report No. SCL01G002851011

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Applicant GUANGDONG HECHUANGFU INDUSTRIAL CO.,LTD
Address 4F BLCKKA SEG SCI-TECH PARK HUAQIANG RD N FUTIAN
DISTRICT SHENZHEN

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

Sample Name TRANSISTOR
Part No. TO-220 TO -252 SOP-8/16
Client Reference Information SOT-323/SOT-523/SOT-563/SOT-25/SOT-26/SOT-89/TO-220 (F)
SOD-123/SOD-323/SOD-523/SOD-723 DO-214AA/AB/AC/SOT-23
Sample Received Date Mar.6,2017
Testing Period Mar.6,2017 to Mar.6,2017

Test Requested As specified by client, to screen the 151 substances of very high concern(SVHC) under Regulation(EC) No 1907/2006 of REACH in the submitted sample(s).

Test Method Please refer to the following page(s).

Test Result(s) Please refer to the following page(s).

Summary According to the analytical results, concentrations of 151 SVHC substances are all less than 0.1%(w/w) in the submitted sample(s).

Tested by

Rick Lin

Reviewed by

Vangar He

Approved by

Danny Liu

Date

Mar.6,2017

Danny Liu
Technical Manager

No. R1012220962

Centre Testing International (Shenzhen) Co., Ltd. Hongwei Industrial Zone, Bao'an 70 District, Shenzhen, Guangdong, China



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Test Result(s)

No.	Substance Name(s)	CAS No.	EC No.	Concentration (%)	Report Limit
1	Anthracene	120-12-7	204-371-1	N.D.	0.005%
2	4,4'- Diaminodiphenylmethane	101-77-9	202-974-4	N.D.	0.005%
3	Dibutyl phthalate(DBP)	84-74-2	201-557-4	N.D.	0.005%
4	Cobalt dichloride*	7646-79-9	231-589-4	N.D. [#]	0.01%
5	Diarsenic pentaoxide*	1303-28-2	215-116-9	N.D.	0.01%
6	Diarsenic trioxide*	1327-53-3	215-481-4	N.D.	0.01%
7	Sodium dichromate*	7789-12-0/ 10588-01-9	234-190-3	N.D.	0.01%
8	Musk xylene	81-15-2	201-329-4	N.D.	0.005%
9	Bis(2-ethyl(hexyl)phthalate)(DEHP)	117-81-7	204-211-0	N.D.	0.005%
10	Hexabromocyclododecane (HBCDD)	25637-99-4/ 3194-55-6	247-148-4/ 221-695-9	N.D.	0.005%
11	Short Chain Chlorinated Paraffins(SCCPs)	85535-84-8	287-476-5	N.D.	0.01%
12	Bis(tributyltin)oxide (TBTO)*	56-35-9	200-268-0	N.D.	0.005%
13	Lead hydrogen arsenate*	7784-40-9	232-064-2	N.D.	0.01%
14	Benzyl butyl phthalate(BBP)	85-68-7	201-622-7	N.D.	0.005%
15	Triethyl arsenate*	15606-95-8	427-700-2	N.D.	0.01%
16	^① Anthracene oil	90640-80-5	292-602-7	N.D.	0.05%
17	^① Anthracene oil, anthracene paste, distn. Lights ****	91995-17-4	295-278-5	N.D.	0.05%
18	^① Anthracene oil, anthracene paste, anthracene fraction	91995-15-2	295-275-9	N.D.	0.05%
19	^① Anthracene oil, anthracene-low	90640-82-7	292-604-8	N.D.	0.05%
20	^① Anthracene oil, anthracene paste	90640-81-6	292-603-2	N.D.	0.05%
21	^① Coal tar pitch, high temperature	65996-93-2	266-028-2	N.D.	0.05%
22	Acrylamide	79-06-1	201-173-7	N.D.	0.01%
23	2,4-Dinitrotoluene	121-14-2	204-450-0	N.D.	0.01%
24	Diisobutyl phthalate (DIBP)	84-69-5	201-553-2	N.D.	0.005%
25	^② Lead chromate	7758-97-6	231-846-0	N.D.	0.05%
26	^② Lead chromate molybdate sulphate red (C.I. Pigment Red 104)***	12656-85-8	235-759-9	N.D.	0.05%
27	^② Lead sulfochromate yellow (C.I. Pigment Yellow 34)***	1344-37-2	215-693-7	N.D.	0.05%
28	Tris(2-chloroethyl)phosphate (TCEP)	115-96-8	204-118-5	N.D.	0.01%

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No.	Substance Name(s)	CAS No.	EC No.	Concentration (%)	Report Limit
29	Trichloroethylene	79-01-6	201-167-4	N.D.	0.005%
30	[®] Boric acid	10043-35-3 11113-50-1	233-139-2 234-343-4	N.D.	0.01%
31	[®] Disodium tetraborate, anhydrous*****	1330-43-4 12179-04-3 1303-96-4	215-540-4	N.D.	0.01%
32	[®] Tetraboron disodium heptaoxide, hydrate*****	12267-73-1	235-541-3	N.D.	0.01%
33	Sodium chromate*	7775-11-3	231-889-5	N.D.	0.01%
34	Potassium chromate*	7789-00-6	232-140-5	N.D.	0.01%
35	Ammonium dichromate*	7789-09-5	232-143-1	N.D.	0.01%
36	Potassium dichromate*	7778-50-9	231-906-6	N.D.	0.01%
37	Cobalt (II) sulphate*	10124-43-3	233-334-2	N.D. #	0.01%
38	Cobalt (II) dinitrate*	10141-05-6	233-402-1	N.D. #	0.01%
39	Cobalt (II) carbonate*	513-79-1	208-169-4	N.D. #	0.01%
40	Cobalt (II) diacetate*	71-48-7	200-755-8	N.D. #	0.01%
41	2-Methoxyethanol	109-86-4	203-713-7	N.D.	0.005%
42	2-Ethoxyethanol	110-80-5	203-804-1	N.D.	0.005%
43	Chromium trioxide*	1333-82-0	215-607-8	N.D.	0.01%
44	[®] Acids generated from chromium trioxide and their oligomers: Chromic acid, Dichromic acid, Oligomers of chromic acid and dichromic acid*	7738-94-5 13530-68-2	231-801-5 236-881-5	N.D.	0.01%
45	2-ethoxyethyl acetate	111-15-9	203-839-2	N.D.	0.01%
46	Strontium chromate*	7789-06-2	232-142-6	N.D.	0.01%
47	[®] 1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters	68515-42-4	271-084-6	N.D.	0.01%
48	Hydrazine	7803-57-8 302-01-2	206-114-9	N.D.	0.01%
49	1-methyl-2-pyrrolidone	872-50-4	212-828-1	N.D.	0.01%
50	1,2,3-trichloropropane	96-18-4	202-486-1	N.D.	0.01%
51	[®] 1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich	71888-89-6	276-158-1	N.D.	0.01%
52	Dichromium tris(chromate)*	24613-89-6	246-356-2	N.D.	0.01%

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No.	Substance Name(s)	CAS No.	EC No.	Concentration (%)	Report Limit
53	Potassium hydroxyoctaoxidizincatedichromate*	11103-86-9	234-329-8	N.D.	0.01%
54	Pentazine chromate octahydroxide*	49663-84-5	256-418-0	N.D.	0.01%
55	² Aluminosilicate Refractory Ceramic Fibres (RCF) **	-	-	N.D.	0.05%
56	² Zirconia Aluminosilicate Refractory Ceramic Fibres (Zr-RCF) **	-	-	N.D.	0.05%
57	⁰ Formaldehyde, oligomeric reaction products with aniline (technical MDA)	25214-70-4	500-036-1	N.D.	0.01%
58	Bis(2-methoxyethyl) phthalate	117-82-8	204-212-6	N.D.	0.005%
59	2-Methoxyaniline (o-Anisidine)	90-04-0	201-963-1	N.D.	0.005%
60	4-(1,1,3,3-tetramethylbutyl)phenol (4-tert-Octylphenol)	140-66-9	205-426-2	N.D.	0.005%
61	1,2-Dichloroethane	107-06-2	203-458-1	N.D.	0.005%
62	Bis(2-methoxyethyl) ether	111-96-6	203-924-4	N.D.	0.005%
63	Arsenic acid*	7778-39-4	231-901-9	N.D.	0.01%
64	Calcium arsenate*	7778-44-1	231-904-5	N.D.	0.01%
65	Trilead diarsenate*	3687-31-8	222-979-5	N.D.	0.01%
66	N,N-dimethylacetamide (DMAC)	127-19-5	204-826-4	N.D.	0.005%
67	2,2'-dichloro-4,4'-methylenedianiline (MOCA)	101-14-4	202-918-9	N.D.	0.005%
68	Phenolphthalein	77-9-8	201-004-7	N.D.	0.005%
69	Lead diazide*	13424-46-9	236-542-1	N.D.	0.01%
70	Lead 2,4,6-trinitro-m-phenylene dioxide (Lead styphnate)*	15245-44-0	239-290-0	N.D.	0.01%
71	Lead dipicrate*	6477-64-1	229-335-2	N.D.	0.01%
72	1,2-bis(2-methoxyethoxy) ethane (TEGDME; triglyme)	112-49-2	203-977-3	N.D.	0.01%
73	1,2-dimethoxyethane; ethylene glycol dimethyl ether (EGDME)	110-71-4	203-794-9	N.D.	0.01%
74	³ Diboron trioxide	1303-86-2	215-125-8	N.D.	0.01%
75	Formamide	75-12-7	200-842-0	N.D.	0.01%
76	Lead(II) bis methanesulfonate*	17570-76-2	401-750-5	N.D.	0.01%

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No.	Substance Name(s)	CAS No.	EC No.	Concentration (%)	Report Limit
77	TGIC(1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione)	2451-62-9	219-514-3	N.D.	0.01%
78	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	423-400-0	N.D.	0.01%
79	4,4'-bis(dimethylamino) benzophenone (Michler's ketone)	90-94-8	202-027-5	N.D.	0.01%
80	N,N,N',N'-tetramethyl-4,4'-methylene dianiline (Michler's base)	101-61-1	202-959-2	N.D.	0.01%
81	[4-[4,4'-bis(dimethylamino) benzhydrylidene]cyclohexa-2,5-dien-1-ylidene] dimethylammonium chloride(C.I. Basic Violet 3)	548-62-9	208-953-6	N.D.	0.01%
82	[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	219-943-6	N.D.	0.01%
83	α,α -Bis[4-(dimethylamino)phenyl]-4 (phenylamino)naphthalene-1-methanol (C.I. Solvent Blue 4)	6786-83-0	229-851-8	N.D.	0.01%
84	4,4'-bis(dimethylamino)-4''-(methylamino)trityl alcohol	561-41-1	209-218-2	N.D.	0.01%
85	Bis(pentabromophenyl) ether (decabromodiphenyl ether; DecaBDE)	1163-19-5	214-604-9	N.D.	0.05%
86	⁰ 4-Nonylphenol, branched and linear [substances with a linear and/or branched alkyl chain with a carbon number of 9 covalently bound in position 4 to phenol, covering also UVCB- and well-defined substances which include any of the individual isomers or a combination thereof]	-	-	N.D.	0.05%
87	Diazene-1,2-dicarboxamide (C,C'-azodi(formamide))	123-77-3	204-650-8	N.D.	0.05%

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No.	Substance Name(s)	CAS No.	EC No.	Concentration (%)	Report Limit
88	4-(1,1,3,3-tetramethylbutyl)phenol, ethoxylated [covering well-defined substances and UVCB substances, polymers and homologues]	-	-	N.D.	0.05%
89	Henicosaflluoroundecanoic acid	2058-94-8	218-165-4	N.D.	0.05%
90	Pentacosaflluorotridecanoic acid	72629-94-8	276-745-2	N.D.	0.05%
91	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	201-604-9, 236-086-3, 238-009-9	N.D.	0.05%
92	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	247-094-1, 243-072-0, 256-356-4, 260-566-1	N.D.	0.05%
93	Heptacosaflluorotetradecanoic acid	376-06-7	206-803-4	N.D.	0.05%
94	Diisopentylphthalate(DIPP)	605-50-5	210-088-4	N.D.	0.05%
95	[Ⓜ] 1,2-Benzenedicarboxylic acid, dipentylester, branched and linear	84777-06-0	284-032-2	N.D.	0.05%
96	N-pentyl-isopentylphthalate	776297-69-9	-	N.D.	0.05%
97	Methoxyacetic acid	625-45-6	210-894-6	N.D.	0.05%
98	Tricosaflluorododecanoic acid	307-55-1	206-203-2	N.D.	0.05%
99	1,2-Diethoxyethane	629-14-1	211-076-1	N.D.	0.05%
100	3-ethyl-2-methyl-2-(3-methylbutyl)-1,3-oxazolidine	143860-04-2	421-150-7	N.D.	0.05%
101	4-methyl-m-phenylenediamine (toluene-2,4-diamine)	95-80-7	202-453-1	N.D.	0.05%
102	N-methylacetamide	79-16-3	201-182-6	N.D.	0.05%
103	Pentalead tetraoxide sulphate*	12065-90-6	235-067-7	N.D.	0.01%
104	Biphenyl-4-ylamine	92-67-1	202-177-1	N.D.	0.05%

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No.	Substance Name(s)	CAS No.	EC No.	Concentration (%)	Report Limit
105	Dinoseb (6-sec-butyl-2,4-dinitrophenol)	88-85-7	201-861-7	N.D.	0.05%
106	Dioxobis(stearato)trilead*	12578-12-0	235-702-8	N.D.	0.01%
107	Lead dinitrate*	10099-74-8	233-245-9	N.D.	0.01%
108	Tetralead trioxide sulphate*	12202-17-4	235-380-9	N.D.	0.01%
109	Lead monoxide (lead oxide)*	1317-36-8	215-267-0	N.D.	0.01%
110	Lead titanium trioxide*	12060-00-3	235-038-9	N.D.	0.01%
111	4,4'-methylenedi-o-toluidine	838-88-0	212-658-8	N.D.	0.05%
112	Acetic acid, lead salt, basic*	51404-69-4	257-175-3	N.D.	0.01%
113	Dimethyl sulphate	77-78-1	201-058-1	N.D.	0.05%
114	Furan	110-00-9	203-727-3	N.D.	0.05%
115	Pyrochlore, antimony lead yellow*	8012-00-8	232-382-1	N.D.	0.01%
116	Tetraethyllead*	78-00-2	201-075-4	N.D.	0.01%
117	[Phthalato(2-)]dioxotrilead*	69011-06-9	273-688-5	N.D.	0.01%
118	Diethyl sulphate	64-67-5	200-589-6	N.D.	0.05%
119	Lead cyanamidate*	20837-86-9	244-073-9	N.D.	0.01%
120	Silicic acid (H ₂ Si ₂ O ₅), barium salt (1:1), lead-doped*	68784-75-8	272-271-5	N.D.	0.01%
121	Trilead dioxide phosphonate*	12141-20-7	235-252-2	N.D.	0.01%
122	<i>o</i> -Toluidine	95-53-4	202-429-0	N.D.	0.05%
123	<i>o</i> -aminoazotoluene	97-56-3	202-591-2	N.D.	0.05%
124	4-aminoazobenzene	60-09-3	200-453-6	N.D.	0.05%
125	6-methoxy- <i>m</i> -toluidine (<i>p</i> -cresidine)	120-71-8	204-419-1	N.D.	0.05%
126	Dibutyltin dichloride (DBTC)	683-18-1	211-670-0	N.D.	0.05%
127	Lead titanium zirconium oxide*	12626-81-2	235-727-4	N.D.	0.01%
128	Methyloxirane (Propylene oxide)	75-56-9	200-879-2	N.D.	0.05%
129	1-bromopropane (n-propyl bromide)	106-94-5	203-445-0	N.D.	0.05%
130	Trilead bis(carbonate)dihydroxide*	1319-46-6	215-290-6	N.D.	0.01%
131	Fatty acids, C16-18, lead salts*	91031-62-8	292-966-7	N.D.	0.01%
132	Orange lead (lead tetroxide)*	1314-41-6	215-235-6	N.D.	0.01%
133	Sulfurous acid, lead salt, dibasic*	62229-08-7	263-467-1	N.D.	0.01%
134	4,4'-oxydianiline and its salts	101-80-4	202-977-0	N.D.	0.05%
135	Lead oxide sulfate*	12036-76-9	234-853-7	N.D.	0.01%
136	Lead bis(tetrafluoroborate)*	13814-96-5	237-486-0	N.D.	0.01%
137	Silicic acid, lead salt*	11120-22-2	234-363-3	N.D.	0.01%
138	N,N-dimethylformamide	68-12-2	200-679-5	N.D.	0.05%

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No.	Substance Name(s)	CAS No.	EC No.	Concentration (%)	Report Limit
139	Cadmium	7440-43-9	231-152-8	N.D.	0.01%
140	Cadmium oxide*	1306-19-0	215-146-2	N.D.	0.01%
141	Dipentyl phthalate (DPP)	131-18-0	205-017-9	N.D.	0.01%
142	^① 4-Nonylphenol, branched and linear, ethoxylated[<i>substances with a linear and/or branched alkyl chain with a carbon number of 9 covalently bound in position 4 to phenol, ethoxylated covering UVCB- and well-defined substances, polymers and homologues, which include any of the individual isomers and/or combinations thereof</i>]	-	-	N.D.	0.05%
143	Ammonium pentadecafluorooctanoate (APFO)	3825-26-1	223-320-4	N.D.	0.01%
144	Pentadecafluorooctanoic acid (PFOA)	335-67-1	206-397-9	N.D.	0.01%
145	^① Trixylyl phosphate	25155-23-1	246-677-8	N.D.	0.01%
146	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	217-710-3	N.D.	0.01%
147	Dihexyl phthalate	84-75-3	201-559-5	N.D.	0.01%
148	Cadmium sulphide*	1306-23-6	215-147-8	N.D.	0.01%
149	Disodium 3,3'-[[1,1'-biphenyl]-4,4'-diylbis(azo)]bis(4-aminonaphthalene-1-sulphonate) (C.I. Direct Red 28)	573-58-0	209-358-4	N.D.	0.01%
150	Lead di(acetate)*	301-04-2	206-104-4	N.D.	0.01%
151	Imidazolidine-2-thione; 2-imidazoline-2-thiol	96-45-7	202-506-9	N.D.	0.01%

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Refer to US EPA3052:1996, US EPA 3050B:1996, US EPA3060A:1996, US EPA 3550C:2007, US EPA 3540C:1996, ISO 17353:2004(E), BS EN 14582:2007 for sample pretreatment.

Analyzed by ICP-OES, SEM-EDS, UV-Vis, IC, HPLC, GC-MS, Headspace-GCMS and LC-MS-MS.

Tested Sample/Part Description Black solid with silvery metal(Tested as a whole)**Note:**

1. w/w = weight by weight; 0.1% = 1000 mg/kg = 1000 ppm
2. N.D. = Not Detected (<report limit)
3. *: Concentration value of the substance by the conversion from the test results of certain elements. Concentration value of Bis(tributyltin)oxide by the conversion from the test results of Tributyl Tins.
4. **: All refractory ceramic fibres are covered by index number 650-017-00-8 in Annex VI of the Regulation on Classification, Labeling and Packaging of chemical substances and mixtures, the so called CLP Regulation (Regulation (EC) No 1272/2008).
5. ***: C.I.: Colour Index
6. ****: Light fractions from distillation
7. *****: Concentration value of Disodium tetraborate, anhydrous and Tetraboron disodium heptaoxide, hydrate is evaluated by Disodium tetraborate, with no consider of the hydrate.
8. ^①: In view of the substances are established as UVCB substances (substances of unknown or variable composition, complex reaction products or biological materials) consisting of different and variable constituents, the test results are calculated based on the main constituents of the representative compounds for substances.
9. ^②: In view of the substance contain variable substances, the test results are calculated based on main constituents of the representative compounds for the substances, and the test results of the representative compounds are calculated based on the result of specified heavy metal elements.
10. ^③: Concentration value of Boric acid; Disodium tetraborate, anhydrous; Tetraboron disodium heptaoxide, hydrate; Diboron trioxide are calculated by the conversion from the test results of certain elements and confirmed by appropriate solvent extraction, meanwhile the book of materials is suggested to be checked for further confirmation.
11. [#]: The sample contains Cobalt. According to the declaration of the client, it is present as the form Element cobalt.

Remark:

The sample(s) was tested as a whole, because it's impossible to disassemble or separate it by current equipment and technology. The result(s) shown on this report may be different from the content of any homogeneous material.

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Appendix:

1. Any supplier of an article containing a substance that is included in the Candidate List in a concentration above 0.1 % weight by weight (w/w) has the duty to communicate information in accordance with Article 33 of European Union regulation concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH).
 - 1) Any supplier shall provide the recipient of the article with sufficient information to allow safe use of the article including, as a minimum, the name of that substance.
 - 2) On request by a consumer any supplier shall provide the consumer with sufficient information to allow safe use of the article including, as a minimum, the name of that substance within 45 days of receipt of the request, free of charge.
2. The supplier of a substance that is included in the Candidate List on their own shall provide the recipient of the substance with a safety data sheet for free compiled in accordance with Article 3 and Annex II of REACH.
3. The supplier of a mixture that containing a substance that is included in the Candidate List shall exchange information in accordance with Article 31, Article 32, and Annex II of REACH.
 - 1) Any supplier shall provide the recipient of the mixture with a safety data sheet for free where a preparation meets the criteria for classification as dangerous in accordance with Directives 1999/45/EC.
 - 2) Any supplier shall provide the recipient of the mixture with a safety data sheet for free where a preparation does not meet the criteria for classification as dangerous in accordance with Directive 1999/45/EC, but contains any substance that is included in the Candidate List in an individual concentration of ≥ 0.1 % by weight for non-gaseous mixtures or ≥ 0.2 % by volume for gaseous mixtures.

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Photo(s) of the sample(s)



*** End of Report ***

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