

## Test Report

No. : CC/2016/10041B

Date : 2017/01/05

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TOWERJAZZ SEMICONDUCTOR  
RAMAT GAVRIEL INDUSTRIAL AREA MIGDAL HAEMEK ISRAEL 23105



**The following sample(s) was/were submitted and identified by/on behalf of the applicant as :**

Sample Submitted By : TOWERJAZZ SEMICONDUCTOR  
Sample Description : SILICON WAFERS  
Style/Item No. : 0.18μ 8INCH TOWERJAZZ MH FAB2  
Sample Receiving Date : 2016/01/05  
Testing Period : 2016/01/05 TO 2016/01/12 AND 2016/06/20 TO 2016/07/04 AND  
2016/12/19 TO 2017/01/05

**Test Requested** : 173 Substances of Very High Concern (SVHC) screening. SVHC candidate list based on the publication by European Chemicals Agency (ECHA) on 2016 December 19, regarding Regulation (EC) No 1907/2006 concerning the REACH.

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

**Summary** : According to the ruling of the Court of Justice of the European Union on the definition of an article under REACH, and the specified scope as well as analytical technique, the test results of the selected component article are  $\leq 0.1\%$  (w/w) in the submitted sample.

\* This report is added testing by CC/2016/10041 and combined with CC/2016/10041A \*

  
Troy Chang, Manager, Tech  
Signed for and on behalf of  
SGS TAIWAN LTD.  
Chemical Laboratory - Taipei



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**Test Sample :** SILICON WAFERS

**Test Method :** SGS In-House method-RSTS-EE-SVHC-007. Analyzed by ICP-AES, UV-VIS, GC/MS, LC/MS, GC/FPD, LC/MS/DAD.

## Test Result(s)

No.	Substance Name	RL (%)	Concentration (%)
1.	4,4' - Diaminodiphenylmethane (MDA) (CAS No.: 101-77-9)	0.05	n.d.
2.	5-tert-butyl-2,4,6-trinitro- m-xylene (Musk Xylene) (CAS No.: 81-15-2)	0.05	n.d.
3.	Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins) (CAS No.: 85535-84-8)	0.05	n.d.
4.	Anthracene (CAS No.: 120-12-7)	0.05	n.d.
5.	BBP (Butyl Benzyl phthalate) (CAS No.: 85-68-7)	0.05	n.d.
6.	Bis(tributyltin)oxide (TBTO)*** (CAS No.: 56-35-9)	-	n.d.
7.	Diarsenic pentaoxide*** (CAS No.: 1303-28-2)	-	n.d.
8.	Diarsenic trioxide*** (CAS No.: 1327-53-3)	-	n.d.
9.	DBP (Dibutyl phthalate) (CAS No.: 84-74-2)	0.05	n.d.
10.	Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified ( $\alpha$ -HBCDD, $\beta$ -HBCDD, $\gamma$ -HBCDD) (CAS No.: 25637-99-4 and 3194-55-6 (134237-51-7, 134237-50-6, 134237-52-8))	0.05	n.d.
11.	Lead hydrogen arsenate*** (CAS No.: 7784-40-9) (※1)	-	n.d.
12.	Sodium dichromate*** (CAS No.: 7789-12-0; 10588-01-9(**))	-	n.d.
13.	Triethyl arsenate*** (CAS No.: 15606-95-8)	-	n.d.
14.	DEHP (Bis (2-ethyl(hexyl) phthalate)) (CAS No.: 117-81-7)	0.05	n.d.
15.	2,4-Dinitrotoluene (CAS No.: 121-14-2)	0.05	n.d.
16.	Anthracene oil (CAS No.: 90640-80-5) (**)	0.05	n.d.
17.	Anthracene oil, anthracene paste (CAS No.: 90640-81-6) (**)	0.05	n.d.
18.	Anthracene oil, anthracene paste, anthracene fraction (CAS No.: 91995-15-2) (**)	0.05	n.d.
19.	Anthracene oil, anthracene paste, distn. Lights (CAS No.: 91995-17-4) (**)	0.05	n.d.
20.	Anthracene oil, anthracene-low (CAS No.: 90640-82-7) (**)	0.05	n.d.
21.	DIBP (Di-isobutyl phthalate) (CAS No.: 84-69-5)	0.05	n.d.
22.	Lead chromate*** (CAS No.: 7758-97-6) (※5)	-	n.d.
23.	Lead chromate molybdate sulphate red (C.I. Pigment Red 104)*** (CAS No.: 12656-85-8) (※5)	-	n.d.
24.	Lead sulfochromate yellow (C.I. Pigment Yellow 34)*** (CAS No.: 1344-37-2) (※5)	-	n.d.

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No.	Substance Name	RL (%)	Concentration (%)
25.	Pitch, coal tar, high-temp. (CAS No.: 65996-93-2) (**)	0.05	n.d.
26.	Tris(2-chloroethyl) phosphate (TCEP) (CAS No.: 115-96-8)	0.05	n.d.
27.	Acrylamide (CAS No.: 79-06-1)	0.05	n.d.
28.	Ammonium dichromate*** (CAS No.: 7789-09-5)	-	n.d.
29.	Boric acid*** (CAS No.: 10043-35-3; 11113-50-1)	-	n.d.
30.	Disodium tetraborate, anhydrous*** (CAS No.: 1303-96-4, 1330-43-4, 12179-04-3)	-	n.d.
31.	Potassium chromate*** (CAS No.: 7789-00-6)	-	n.d.
32.	Potassium dichromate*** (CAS No.: 7778-50-9)	-	n.d.
33.	Sodium chromate*** (CAS No.: 7775-11-3)	-	n.d.
34.	Tetraboron disodium heptaoxide, hydrate (CAS No.: 12267-73-1) ( * 2)	-	n.d.
35.	Trichloroethylene (CAS No.: 79-01-6)	0.05	n.d.
36.	2-Ethoxyethanol (CAS No.: 110-80-5)	0.05	n.d.
37.	2-Methoxyethanol (CAS No.: 109-86-4)	0.05	n.d.
38.	Acids generated from chromium trioxide and their oligomers: Chromic acid*** (CAS No.: 7738-94-5)	-	n.d.
	Acids generated from chromium trioxide and their oligomers: Dichromic acid*** (CAS No.: 13530-68-2)	-	n.d.
	Acids generated from chromium trioxide and their oligomers: Oligomers of chromic acid and dichromic acid ( * 1)	-	n.d.
39.	Chromium trioxide*** (CAS No.: 1333-82-0)	-	n.d.
40.	Cobalt(II) carbonate*** (CAS No.: 513-79-1)	-	n.d.
41.	Cobalt(II) diacetate*** (CAS No.: 71-48-7)	-	n.d.
42.	Cobalt(II) dinitrate*** (CAS No.: 10141-05-6)	-	n.d.
43.	Cobalt(II) sulphate*** (CAS No.: 10124-43-3)	-	n.d.
44.	1,2,3-trichloropropane (CAS No.: 96-18-4)	0.05	n.d.
45.	1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich (DIHP) (CAS No.: 71888-89-6)	0.05	n.d.
46.	1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters (DHNUP) (CAS No.: 68515-42-4)	0.05	n.d.
47.	1-methyl-2-pyrrolidone (CAS No.: 872-50-4)	0.05	n.d.
48.	2-ethoxyethyl acetate (CAS No.: 111-15-9)	0.05	n.d.
49.	Hydrazine (CAS No.: 7803-57-8; 302-01-2)	0.05	n.d.
50.	Strontium chromate*** (CAS No.: 7789-06-2)	-	n.d.

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No.	Substance Name	RL (%)	Concentration (%)
51.	Cobalt dichloride (CAS No.: 7646-79-9)	0.005	n.d.
52.	1,2-Dichloroethane (CAS No.: 107-06-2)	0.05	n.d.
53.	2,2'-dichloro- 4,4'-methylenedianiline (MOCA) (CAS No.: 101-14-4)	0.05	n.d.
54.	2-Methoxyaniline; o-Anisidine (CAS No.: 90-04-0)	0.05	n.d.
55.	4-(1,1,3,3-tetramethylbutyl) phenol, (4-tert-Octylphenol) (CAS No.: 140-66-9)	0.05	n.d.
56.	Aluminosilicate, Refractory Ceramic Fibres 【oxides of aluminium and silicon are the main components present (in the fibres) within variable concentration ranges】	0.05	n.d.
57.	Arsenic acid*** (CAS No.: 7778-39-4)	-	n.d.
58.	Bis(2-methoxyethyl) ether (CAS No.: 111-96-6)	0.05	n.d.
59.	Bis(2-methoxyethyl) phthalate (CAS No.: 117-82-8)	0.05	n.d.
60.	Calcium arsenate*** (CAS No.: 7778-44-1)	-	n.d.
61.	Dichromium tris (chromate)*** (CAS No.: 24613-89-6)	-	n.d.
62.	Formaldehyde, oligomeric reaction products with aniline (technical MDA) (CAS No.: 25214-70-4)	0.05	n.d.
63.	Lead diazide, Lead azide*** (CAS No.: 13424-46-9)	-	n.d.
64.	Lead dipicrate*** (CAS No.: 6477-64-1)	-	n.d.
65.	Lead styphnate*** (CAS No.: 15245-44-0)	-	n.d.
66.	N,N-dimethylacetamide (DMAC) (CAS No.: 127-19-5)	0.05	n.d.
67.	Pentazinc chromate octahydroxide*** (CAS No.: 49663-84-5)	-	n.d.
68.	Phenolphthalein (CAS No.: 77-09-8)	0.05	n.d.
69.	Potassium hydroxyoctaoxidizincatedi- chromate*** (CAS No.: 11103-86-9)	-	n.d.
70.	Trilead diarsenate*** (CAS No.: 3687-31-8) (※1)	-	n.d.
71.	Zirconia Aluminosilicate, Refractory Ceramic Fibres 【oxides of aluminium, silicon and zirconium are the main components present (in the fibres) within variable concentration ranges】	0.05	n.d.
72.	[4-[[4-anilino-1-naphthyl] [4-(dimethylamino) phenyl] methylene] cyclohexa-2,5-dien-1-ylidene] dimethylammonium chloride (C.I. Basic Blue 26) (CAS No.: 2580-56-5) [with ≥ 0.1% of Michler's ketone or Michler's base]	0.05	n.d.
73.	[4-[4,4'-bis(dimethylamino) benzhydrylidene] cyclohexa-2,5-dien-1-ylidene] dimethylammonium chloride (C.I. Basic Violet 3) (CAS No.: 548-62-9) [with ≥ 0.1% of Michler's ketone or Michler's base]	0.05	n.d.
74.	1,2-bis (2-methoxyethoxy) ethane (TEGDME; triglyme) (CAS No.: 112-49-2)	0.05	n.d.
75.	1,2-dimethoxyethane; ethylene glycol dimethyl ether (EGDME) (CAS No.: 110-71-4)	0.05	n.d.

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No.	Substance Name	RL (%)	Concentration (%)
76.	TGIC (1,3,5-tris(oxiranylmethyl)- 1,3,5-triazine-2,4,6 (1H,3H,5H)-trione) (CAS No.: 2451-62-9)	0.05	n.d.
77.	β-TGIC (1,3,5-tris [(2S and 2R)-2,3-epoxypropyl]- 1,3,5-triazine-2,4,6- (1H,3H,5H)-trione) (CAS No.: 59653-74-6) (※3)	0.05	n.d.
78.	4,4'-bis (dimethylamino)-4''-(methylamino) trityl alcohol (CAS No.: 561-41-1) [with ≥ 0.1% of Michler's ketone or Michler's base]	0.05	n.d.
79.	4,4'-bis (dimethylamino) benzophenone (Michler's ketone) (CAS No.: 90-94-8)	0.05	n.d.
80.	Diboron trioxide*** (CAS No.: 1303-86-2)	-	n.d.
81.	Formamide (CAS No.: 75-12-7)	0.05	n.d.
82.	Lead(II) bis(methanesulfonate)*** (CAS No.: 17570-76-2)	-	n.d.
83.	N,N,N',N'-tetramethyl- 4,4'-methylenedianiline (Michler's base) (CAS No.: 101-61-1)	0.05	n.d.
84.	α,α-Bis[4-(dimethylamino) phenyl]-4 (phenylamino) naphthalene-1-methanol (C.I. Solvent Blue 4) (CAS No.: 6786-83-0) [with ≥ 0.1% of Michler's ketone or Michler's base]	0.05	n.d.
85.	[Phthalato(2-)] dioxotrilead*** (CAS No.: 69011-06-9)	-	n.d.
86.	1,2-Benzenedicarboxylic acid, dipentylester, branched and linear (CAS No.: 84777-06-0)	0.05	n.d.
87.	1,2-Diethoxyethane (CAS No.: 629-14-1)	0.05	n.d.
88.	1-bromopropane (CAS No.: 106-94-5)	0.05	n.d.
89.	3-ethyl-2-methyl-2-(3-methylbutyl)-1,3-oxazolidine (CAS No.: 143860-04-2)	0.05	n.d.
90.	4-(1,1,3,3-tetramethylbutyl) phenol, ethoxylated [covering well-defined substances and UVCB substances, polymers and homologues]	0.05	n.d.
91.	4,4'-methylenedi-o-toluidine (CAS No.: 838-88-0)	0.05	n.d.
92.	4,4'-oxydianiline and its salts (CAS No.: 101-80-4)	0.05	n.d.
93.	4-Aminoazobenzene (CAS No.: 60-09-3)	0.05	n.d.
94.	4-methyl-m-phenylenediamine (2,4-toluenediamine) (CAS No.: 95-80-7)	0.05	n.d.
95.	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]	0.05	n.d.
96.	6-methoxy-m-toluidine (p-cresidine) (CAS No.: 120-71-8)	0.05	n.d.
97.	Acetic acid, lead salt, basic*** (CAS No.: 51404-69-4)	-	n.d.
98.	Biphenyl-4-ylamine (CAS No.: 92-67-1)	0.05	n.d.
99.	Bis(pentabromophenyl) ether (DecaBDE) (CAS No.: 1163-19-5)	0.05	n.d.

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No.	Substance Name	RL (%)	Concentration (%)
100.	Cyclohexane-1,2-dicarboxylic anhydride (HHPA), cis-cyclohexane-1,2- dicarboxylic anhydride, trans-cyclohexane-1,2- dicarboxylic anhydride (Hexahydrophthalic anhydride - HHPA) (CAS No.: 85-42-7, 13149-00-3, 14166-21-3)	0.05	n.d.
101.	Diazene-1,2-dicarboxamide (C,C'-azodi(formamide)) (CAS No.: 123-77-3)	0.05	n.d.
102.	Dibutyltin dichloride (DBTC)*** (CAS No.: 683-18-1)	-	n.d.
103.	Diethyl sulphate (CAS No.: 64-67-5)	0.05	n.d.
104.	Diisopentylphthalate (CAS No.: 605-50-5)	0.05	n.d.
105.	Dimethyl sulphate (CAS No.: 77-78-1)	0.05	n.d.
106.	Dinoseb (CAS No.: 88-85-7)	0.05	n.d.
107.	Dioxobis(stearato) trilead*** (CAS No.: 12578-12-0)	-	n.d.
108.	Fatty acids, C16-18, lead salts*** (CAS No.: 91031-62-8)	-	n.d.
109.	Furan (CAS No.: 110-00-9)	0.05	n.d.
110.	Henicosafuoroundecanoic acid (CAS No.: 2058-94-8)	0.05	n.d.
111.	Heptacosafuorotetradecanoic acid (CAS No.: 376-06-7)	0.05	n.d.
112.	Hexahydromethylphthalic anhydride (CAS No.: 25550-51-0) Hexahydro-4-methylphthalic anhydride (CAS No.: 19438-60-9) Hexahydro-1-methylphthalic anhydride (CAS No.: 48122-14-1) Hexahydro-3-methylphthalic anhydride (CAS No.: 57110-29-9)	0.05	n.d.
113.	Lead bis(tetrafluoroborate)*** (CAS No.: 13814-96-5)	-	n.d.
114.	Lead cyanamidate*** (CAS No.: 20837-86-9)	-	n.d.
115.	Lead dinitrate*** (CAS No.: 10099-74-8)	-	n.d.
116.	Lead oxide (lead monoxide)*** (CAS No.: 1317-36-8)	-	n.d.
117.	Lead oxide sulfate*** (CAS No.: 12036-76-9)	-	n.d.
118.	Lead titanium trioxide*** (CAS No.: 12060-00-3)	-	n.d.
119.	Lead Titanium Zirconium Oxide*** (CAS No.: 12626-81-2)	-	n.d.
120.	Methoxy acetic acid (CAS No.: 625-45-6)	0.05	n.d.
121.	Propylene oxide; 1,2-epoxypropane; methyloxirane (CAS No.: 75-56-9)	0.05	n.d.
122.	N,N-dimethylformamide; dimethyl formamide (CAS No.: 68-12-2)	0.05	n.d.
123.	N-methylacetamide (CAS No.: 79-16-3)	0.05	n.d.
124.	N-pentyl-isopentylphthalate (CAS No.: 776297-69-9)	0.05	n.d.
125.	o-aminoazotoluene (CAS No.: 97-56-3)	0.05	n.d.
126.	Lead tetroxide (orange lead)*** (CAS No.: 1314-41-6)	-	n.d.
127.	o-Toluidine; 2-Aminotoluene (CAS No.: 95-53-4)	0.05	n.d.
128.	Pentacosafuorotridecanoic acid (CAS No.: 72629-94-8)	0.05	n.d.

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No.	Substance Name	RL (%)	Concentration (%)
129.	Pentalead tetraoxide sulphate*** (CAS No.: 12065-90-6)	-	n.d.
130.	Pyrochlore, antimony lead yellow*** (CAS No.: 8012-00-8)	-	n.d.
131.	Silicic acid, barium salt, lead-doped (※4) (CAS No.: 68784-75-8)	0.05	n.d.
132.	Silicic acid, lead salt*** (CAS No.: 11120-22-2)	-	n.d.
133.	Sulfurous acid, lead salt, dibasic*** (CAS No.: 62229-08-7)	-	n.d.
134.	Tetraethyllead*** (CAS No.: 78-00-2)	-	n.d.
135.	Tetralead trioxide sulphate*** (CAS No.: 12202-17-4)	-	n.d.
136.	Tricosafuorododecanoic acid (CAS No.: 307-55-1)	0.05	n.d.
137.	Trilead bis(carbonate) dihydroxide (basic lead carbonate)*** (CAS No.: 1319-46-6)	-	n.d.
138.	Trilead dioxide phosphonate*** (CAS No.: 12141-20-7)	-	n.d.
139.	4-Nonylphenol, branched and linear, ethoxylated [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]	0.05	n.d.
140.	Ammoniumpentadecafluorooctanoate (APFO)*** (CAS No.: 3825-26-1)	-	n.d.
141.	Cadmium (Cd) (CAS No.: 7440-43-9)	0.005	n.d.
142.	Cadmium oxide*** (CAS No.: 1306-19-0)	-	n.d.
143.	Dipentyl phthalate (CAS No.: 131-18-0)	0.05	n.d.
144.	Pentadecafluorooctanoic acid (PFOA) (CAS No.: 335-67-1)	0.05	n.d.
145.	Cadmium sulphide*** (CAS No.: 1306-23-6)	-	n.d.
146.	Dihexyl phthalate (CAS No.: 84-75-3)	0.05	n.d.
147.	Disodium 3,3'-[[1,1'-biphenyl]-4,4'-diylbis(azo)]bis(4-aminonaphthalene-1-sulphonate) (C.I. Direct Red 28) (CAS No.: 573-58-0)	0.05	n.d.
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) (CAS No.: 1937-37-7)	0.05	n.d.
149.	Imidazolidine-2-thione; 2-imidazoline-2-thiol (CAS No.: 96-45-7)	0.05	n.d.
150.	Lead di(acetate)*** (CAS No.: 301-04-2)	-	n.d.
151.	Trixylyl phosphate (CAS No.: 25155-23-1)	0.05	n.d.
152.	1,2-Benzenedicarboxylic acid, dihexyl ester, branched and linear (CAS No.: 68515-50-4)	0.05	n.d.
153.	Cadmium chloride*** (CAS No.: 10108-64-2)	-	n.d.
154.	Sodium perborate; perboric acid, sodium salt***	-	n.d.
155.	Sodium peroxometaborate*** (CAS No.: 7632-04-4)	-	n.d.
156.	2-(2H-benzotriazol-2-yl)-4,6-ditertpentylphenol (UV-328) (CAS No.: 25973-55-1)	0.05	n.d.
157.	2-benzotriazol-2-yl-4,6-di-tert-butylphenol (UV-320) (CAS No.: 3846-71-7)	0.05	n.d.

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No.	Substance Name	RL (%)	Concentration (%)
158.	2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (DOTE)*** (CAS No.: 15571-58-1)	-	n.d.
159.	Cadmium fluoride*** (CAS No.: 7790-79-6)	-	n.d.
160.	Cadmium sulphate*** (CAS No.: 10124-36-4; 31119-53-6)	-	n.d.
161.	Reaction mass of 2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate and 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 and MOTE)***	-	n.d.
162.	1,2-benzenedicarboxylic acid, di-C6-10-alkyl esters; 1,2-benzenedicarboxylic acid, mixed decyl and hexyl and octyl diesters with $\geq 0.3\%$ of dihexyl phthalate (CAS No.: 68515-51-5; 68648-93-1)	0.05	n.d.
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]	0.05	n.d.
164.	1,3-propanesultone (CAS No.: 1120-71-4)	0.05	n.d.
165.	2,4-di-tert-butyl-6-(5-chlorobenzotriazol-2-yl)phenol (UV-327) (CAS No.: 3864-99-1)	0.05	n.d.
166.	2-(2H-benzotriazol-2-yl)-4-(tert-butyl)-6-(sec-butyl)phenol (UV-350) (CAS No.: 36437-37-3)	0.05	n.d.
167.	Nitrobenzene (CAS No.: 98-95-3)	0.05	n.d.
168.	Perfluorononan-1-oic acid (2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,9-heptadecafluorononanoic acid and its sodium and ammonium salts (CAS No.: 375-95-1; 21049-39-8; 4149-60-4)	0.05	n.d.
169.	Benzo[def]chrysene (Benzo[a]pyrene) (CAS No.: 50-32-8)	0.05	n.d.
170.	4,4'-isopropylidenediphenol (Bisphenol A) (CAS No.: 80-05-7)	0.05	n.d.
171.	4-Heptylphenol, branched and linear [substances with a linear and/or branched alkyl chain with a carbon number of 7 covalently bound predominantly in position 4 to phenol, covering also UVCB- and well-defined substances which include any of the individual isomers or a combination thereof]	0.05	n.d.
172.	Nonadecafluorodecanoic acid (PFDA) and its sodium and ammonium salts (CAS No.: 3108-42-7, 335-76-2, 3830-45-3)	0.05	n.d.
173.	p-(1,1-dimethylpropyl) phenol (PTAP) (CAS No.: 80-46-6)	0.05	n.d.

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## Remark:

1. The chemical analysis of 173 SVHC is performed by means of currently available analytical techniques against the list published by ECHA on 2016 December 19.  
<http://echa.europa.eu/web/guest/candidate-list-table>
2. In accordance with Regulation (EC) No 1907/2006, any producer or importer of articles shall notify ECHA, in accordance with paragraph 2 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.

## Note :

1. mg/kg = ppm; 0.1wt% = 1000ppm
2. RL = Reporting Limit
3. n.d.= not detected = below Reporting Limit
4. (\* 1): Oligomers of chromic acid and dichromic acid : since the oligomers are made of the unknown amount of chromic acid or dichromic acid that results in no fixed molecular weight, therefore the monomer of chromic acid or dichromic acid is relevant and considered.
5. (\* 2): Tetraboron disodium heptaoxide, hydrate: Only anhydrous form of disodium tetraborate is relevant and considered according to ECHA explanation (Ref no.: INC 000000032519).
6. F Parameter Conversion Table : Please refer to [http://twap.sgs.com/sgsrsts/chn/download-REACH\\_tw.asp](http://twap.sgs.com/sgsrsts/chn/download-REACH_tw.asp)
7. Classification : Please refer to [http://twap.sgs.com/sgsrsts/chn/download-REACH\\_tw.asp](http://twap.sgs.com/sgsrsts/chn/download-REACH_tw.asp)
8. " - " = Not Regulated
9. (\*): conc. of Sodium dichromate dihydrate (CAS No.: 7789-12-0) = conc. of sodium dichromate × 1.1374
10. (\*\*): The concentrations of above-mentioned mixtures are evaluated per the gained composition rate between the selected marks and the mixtures.

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11. \*\*\*: The substance was calculated by the test results of MonoctylTin, Dioctyl Tin, Tributyl Tin, Dibutyl Tin, PFOA or element (Ex. Arsenic, Lead, Cr(VI), Boron, Cobalt, Barium, Cadmium respectively).

**The test result is given as:**

Substance Name	RL (%)	Concentration (%)
Tributyl Tin (TBT)	0.05	n.d.
Arsenic (As) (※2)	0.005	n.d.
Lead (Pb)	0.005	n.d.
Hexavalent Chromium Cr(VI)	0.005	n.d.
Boron (B) (※2)	0.005	n.d.
Cobalt (Co)	0.005	n.d.
Dibutyl Tin (DBT)	0.05	n.d.
Barium (Ba)	0.005	n.d.
Dioctyl Tin (DOT)	0.0230	n.d.
MonoctylTin (MOT)	0.0138	n.d.

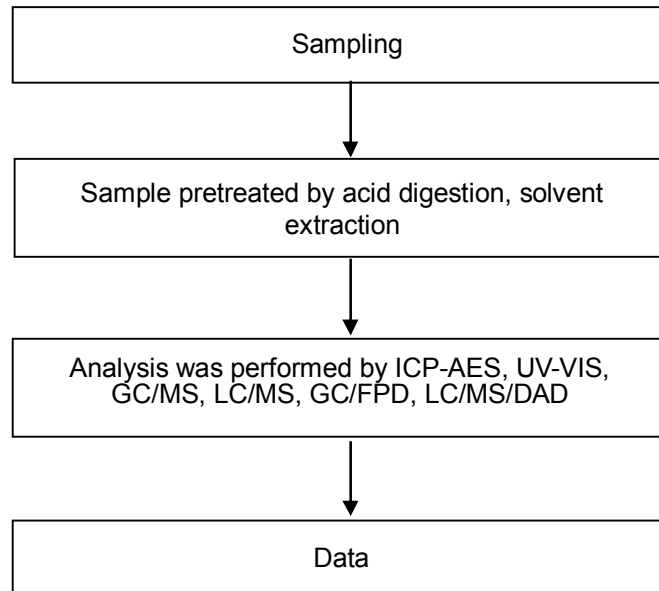
12. (※1): Regarding the compound containing arsenic and lead, lead and arsenic are tested and respectively used for the calculation of the independent concentration of the compound containing arsenic and lead. The minimum value of the two independently calculated concentrations is used as the final concentration for the report.
13. (※2): The extracted soluble Boron / Arsenic are detected by ICP-AES.
14. (※3): TGIC is a mixture and also contains β-TGIC. According to the ECHA's technical dossier the ratio of β-TGIC to TGIC is around 1 to 10. Therefore β-TGIC is issued based on the above-mentioned ratio.
15. (※4): Only if both qualitative results of lead and silicon are positive, the test result of the compound will be calculated based on the concentration of barium.
16. (※5): Regarding the compound containing Cr(VI) and lead, lead and Cr(VI) are tested and respectively used for the calculation of the independent concentration of the compound containing Cr(VI) and lead. The minimum value of the two independently calculated concentrations is used as the final concentration for the report.

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### Analytical flow chart of SVHC

- Technician: Yaling Tu, JR Wang
- Supervisor: Troy Chang



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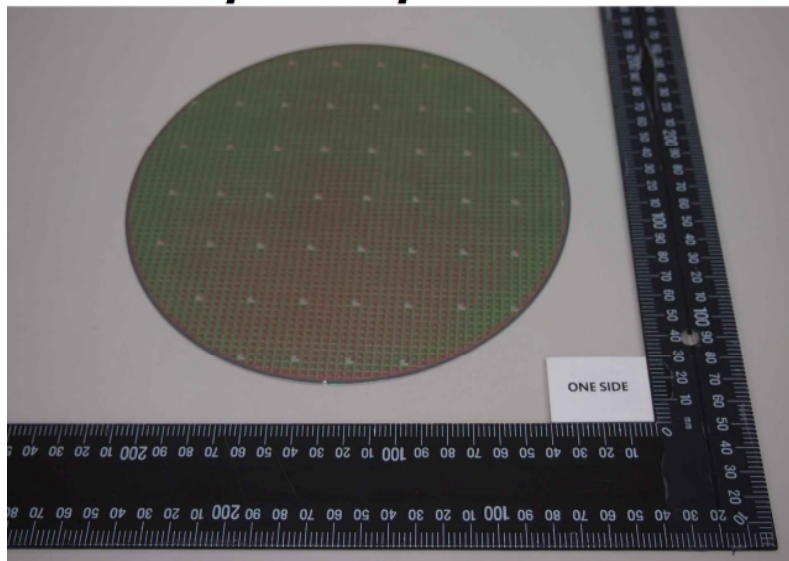
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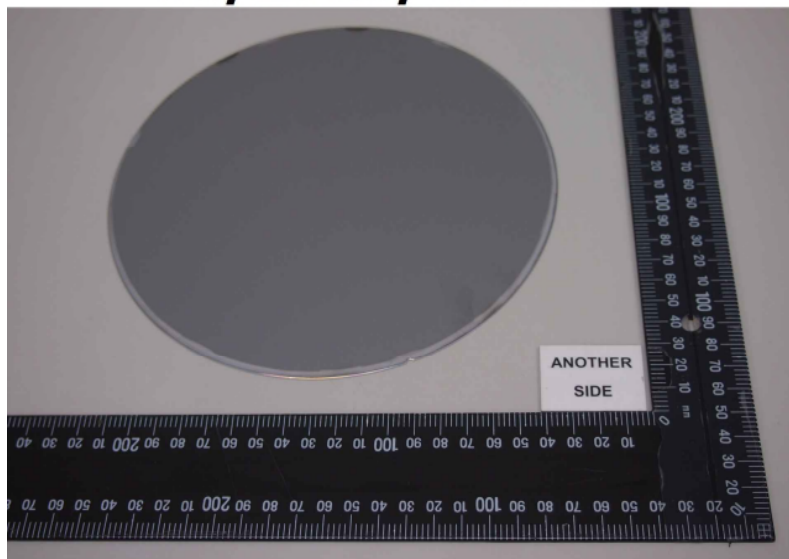


\* The tested sample / part is marked by an arrow if it's shown on the photo. \*

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\*\* End of Report \*\*

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