August 30, 2017

Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

REACH is a European Community Regulation on chemicals and their safe use (EC 1907/2006). It deals with the **R**egistration, **E**valuation, **A**uthorisation and Restriction of **CH**emical substances. The law entered into force on 1 June 2007. The aim of REACH is to improve the protection of human health and the environment through the better and earlier identification of the intrinsic properties of chemical substances. More information may be found at http://ec.europa.eu/environment/chemicals/reach/reach_intro.htm.

Lattice is a supplier of "articles" as defined in REACH. The "substances" contained in these articles are not intentionally released, nor do the articles contain any of the substances on the updated SVHC Candidate List of 174 substances published on July 7, 2017 (see Table below). Additionally, Lattice's devices are in compliance with the substance restrictions enumerated in REACH **ANNEX XVII**, including the addition of February 9, 2017.

#	Substance Name	CAS #	SVHC Published Date
1	4,4'- Diaminodiphenylmethane (MDA)	101-77-9	10/28/2008
2	5-tert-butyl-2,4,6-trinitro-m-xylene (musk xylene)	81-15-2	10/28/2008
3	Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins)	85535-84-8	10/28/2008
4	Anthracene	120-12-7	10/28/2008
5	Benzyl butyl phthalate (BBP)	85-68-7	10/28/2008
6	Bis (2-ethylhexyl)phthalate (DEHP)	117-81-7	10/28/2008
7	Bis(tributyltin)oxide (TBTO)	56-35-9	10/28/2008
8	Cobalt dichloride	7646-79-9	10/28/2008 6/20/2011
9	Diarsenic pentaoxide	1303-28-2	10/28/2008
10	Diarsenic trioxide	1327-53-3	10/28/2008
11	Dibutyl phthalate (DBP)	84-74-2	10/28/2008
12	Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified: Alpha-hexabromocyclododecane Beta-hexabromocyclododecane Gamma-hexabromocyclododecane	25637-99-4 3194-55-6 (134237-50-6) (134237-51-7) (134237-52-8)	10/28/2008
13	Lead hydrogen arsenate	7784-40-9	10/28/2008
14	Sodium dichromate	7789-12-0 10588-01-9	10/28/2008
15	Triethyl arsenate	15606-95-8	10/28/2008

16	2,4-Dinitrotoluene	121-14-2	1/13/2010
17	Anthracene oil	90640-80-5	1/13/2010
18	Anthracene oil, anthracene paste	90640-81-6	1/13/2010
19	Anthracene oil, anthracene paste, anthracene fraction	91995-15-2	1/13/2010
20	Anthracene oil, anthracene paste, distn. lights	91995-17-4	1/13/2010
21	Anthracene oil, anthracene-low	90640-82-7	1/13/2010
22	Diisobutyl phthalate	84-69-5	1/13/2010
23	Lead chromate	7758-97-6	1/13/2010
24	Lead chromate molybdate sulphate red (C.I. Pigment Red 104)	12656-85-8	1/13/2010
25	Lead sulfochromate yellow (C.I. Pigment Yellow 34)	1344-37-2	1/13/2010
26	Pitch, coal tar, high temp.	65996-93-2	1/13/2010
27	Tris(2-chloroethyl)phosphate	115-96-8	1/13/2010
28	Acrylamide	79-06-1	3/30/2010
29	Ammonium dichromate	7789-09-5	6/18/2010
30	Boric acid	10043-35-3 11113-50-1	6/18/2010
31	Disodium tetraborate, anhydrous	1303-96-4 1330-43-4 12179-04-3	6/18/2010
32	Potassium chromate	7789-00-6	6/18/2010
33	Potassium dichromate	7778-50-9	6/18/2010
34	Sodium chromate	7775-11-3	6/18/2010
35	Tetraboron disodium heptaoxide, hydrate	12267-73-1	6/18/2010
36	Trichloroethylene	79-01-6	6/18/2010
37	2-Ethoxyethanol	110-80-5	12/15/2010
38	2-Methoxyethanol	109-86-4	12/15/2010
39	Chromic acid, Oligomers of chromic acid and dichromic acid, Dichromic acid	7738-94-5 -- 13530-68-2	12/15/2010
40	Chromium trioxide	1333-82-0	12/15/2010
41	Cobalt(II) carbonate	513-79-1	12/15/2010
42	Cobalt(II) diacetate	71-48-7	12/15/2010
43	Cobalt(II) dinitrate	10141-05-6	12/15/2010
44	Cobalt(II) sulphate	10124-43-3	12/15/2010
45	1,2,3-Trichloropropane	96-18-4	6/20/2011
46	1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich	71888-89-6	6/20/2011
47	1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters	68515-42-4	6/20/2011

48	1-Methyl-2-pyrrolidone	872-50-4	6/20/2011
49	2-Ethoxyethyl acetate	111-15-9	6/20/2011
50	Hydrazine	302-01-2 7803-57-8	6/20/2011
51	Strontium chromate	7789-06-2	6/20/2011
52	Dichromium tris(chromate)	24613-89-6	12/19/2011
53	Potassium hydroxyoctaoxodizincatedi-chromate	11103-86-9	12/19/2011
54	Pentazinc chromate octahydroxide	49663-84-5	12/19/2011
55	Aluminosilicate Refractory Ceramic Fibres (RCF)	--	12/19/2011
56	Zirconia Aluminosilicate Refractory Ceramic Fibres (Zr-RCF)	--	12/19/2011
57	Formaldehyde, oligomeric reaction products with aniline (technical MDA)	25214-70-4	12/19/2011
58	Bis(2-methoxyethyl) phthalate	117-82-8	12/19/2011
59	2-Methoxyaniline; o-Anisidine	90-04-0	12/19/2011
60	4-(1,1,3,3-tetramethyl butyl)phenol, (4-tert-Octylphenol)	140-66-9	12/19/2011
61	1,2-Dichloroethane	107-06-2	12/19/2011
62	Bis(2-methoxyethyl) ether	111-96-6	12/19/2011
63	Arsenic acid	7778-39-4	12/19/2011
64	Calcium arsenate	7778-44-1	12/19/2011
65	Trilead diarsenate	3687-31-8	12/19/2011
66	N,N-dimethylacetamide (DMAC)	127-19-5	12/19/2011
67	2,2'-dichloro-4,4'-methylenedianiline (MOCA)	101-14-4	12/19/2011
68	Phenolphthalein	77-09-8	12/19/2011
69	Lead azide, Lead diazide	13424-46-9	12/19/2011
70	Lead styphnate	15245-44-0	12/19/2011
71	Lead dipicrate	6477-64-1	12/19/2011
72	α,α-Bis[4-(dimethylamino)phenyl]-4 (phenylamino)naphthalene-1-methanol (C.I. Solvent Blue 4)	6786-83-0	6/18/2012
73	N,N,N',N'-tetramethyl-4,4'-methylenedianiline (Michler's base)	101-61-1	6/18/2012
74	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	6/18/2012
75	Diboron trioxide	1303-86-2	6/18/2012
76	1,2-bis(2-methoxyethoxy)ethane (TEGDME; triglyme)	112-49-2	6/18/2012
77	4,4'-bis(dimethylamino)-4"-(methylamino)trityl alcohol	561-41-1	6/18/2012

78	Lead(II) bis(methanesulfonate)	17570-76-2	6/18/2012
79	Formamide	75-12-7	6/18/2012
80	[4-[4,4'-bis(dimethylamino) benzhydrylidene]cyclohexa-2,5-dien-1-ylidene]dimethylammonium chloride	548-62-9	6/18/2012
81	1,2-dimethoxyethane; ethylene glycol dimethyl ether (EGDME)	110-71-4	6/18/2012
82	[4-[[4-anilino-1-naphthyl][4-(dimethylamino)phenyl]methylene]cyclohexa-2,5-dien-1-ylidene] dimethylammonium chloride	2580-56-5	6/18/2012
83	TGIC (1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione)	2451-62-9	6/18/2012
84	4,4'-bis(dimethylamino)benzophenone (Michler's ketone)	90-94-8	6/18/2012
85	Bis(pentabromophenyl) ether (decabromodiphenyl ether; DecaBDE)	1163-19-5	12/19/2012
86	Pentacosafluorotridecanoic acid	72629-94-8	12/19/2012
87	Tricosafluorododecanoic acid	307-55-1	12/19/2012
88	Henicosafluoroundecanoic acid	2058-94-8	12/19/2012
89	Heptacosafluorotetradecanoic acid	376-06-7	12/19/2012
90	Diazene-1,2-dicarboxamide (C,C'-azodi(formamide))	123-77-3	12/19/2012
91	Cyclohexane-1,2-dicarboxylic anhydride [1] cis-cyclohexane-1,2-dicarboxylic anhydride [2] trans-cyclohexane-1,2-dicarboxylic anhydride [3] [The individual cis- [2] and trans- [3] isomer substances and all possible combinations of the cis- and trans-isomers [1] are covered by this entry].	85-42-7, 13149-00-3, 14166-21-3	12/19/2012
92	Hexahydromethylphthalic anhydride [1], Hexahydro-4-methylphthalic anhydride [2], Hexahydro-1-methylphthalic anhydride [3], Hexahydro-3-methylphthalic anhydride [4] [The individual isomers [2], [3] and [4] (including their cis- and trans- stereo isomeric forms) and all possible combinations of the isomers [1] are covered by this entry]	25550-51-0, 19438-60-9, 48122-14-1, 57110-29-9	12/19/2012
93	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]	--	12/19/2012
94	4-(1,1,3,3-tetramethylbutyl)phenol, ethoxylated [covering well-defined substances and UVCB substances, polymers and homologues]	--	12/19/2012
95	Methoxyacetic acid	625-45-6	12/19/2012
96*	N,N-dimethylformamide	68-12-2	12/19/2012

97	Dibutyltin dichloride (DBTC)	683-18-1	12/19/2012
98	Lead monoxide (Lead oxide)	1317-36-8	12/19/2012
99	Orange lead (Lead tetroxide)	1314-41-6	12/19/2012
100	Lead bis(tetrafluoroborate)	13814-96-5	12/19/2012
101	Trilead bis(carbonate)dihydroxide	1319-46-6	12/19/2012
102	Lead titanium trioxide	12060-00-3	12/19/2012
103	Lead titanium zirconium oxide	12626-81-2	12/19/2012
104	Silicic acid, lead salt	11120-22-2	12/19/2012
105	Silicic acid (H2Si2O5), barium salt (1:1), lead-doped [with lead (Pb) content above the applicable generic concentration limit for 'toxicity for reproduction' Repr. 1A (CLP) or category 1 (DSD); the substance is a member of the group entry of lead compounds, with index number 082-001-00-6 in Regulation (EC) No 1272/2008]	68784-75-8	12/19/2012
106	1-bromopropane (n-propyl bromide)	106-94-5	12/19/2012
107	Methyloxirane (Propylene oxide)	75-56-9	12/19/2012
108	1,2-Benzenedicarboxylic acid, dipentylester, branched and linear	84777-06-0	12/19/2012
109	Diisopentylphthalate (DIPP)	605-50-5	12/19/2012
110	N-pentyl-isopentylphthalate	776297-69-9	12/19/2012
111	1,2-diethoxyethane	629-14-1	12/19/2012
112	Acetic acid, lead salt, basic	51404-69-4	12/19/2012
113	Lead oxide sulfate	12036-76-9	12/19/2012
114	[Phthalato(2-)]dioxotrilead	69011-06-9	12/19/2012
115	Dioxobis(stearato)trilead	12578-12-0	12/19/2012
116	Fatty acids, C16-18, lead salts	91031-62-8	12/19/2012
117	Lead cynamidate	20837-86-9	12/19/2012
118	Lead dinitrate	10099-74-8	12/19/2012
119	Pentalead tetraoxide sulphate	12065-90-6	12/19/2012
120	Pyrochlore, antimony lead yellow	8012-00-8	12/19/2012
121	Sulfurous acid, lead salt, dibasic	62229-08-7	12/19/2012
122	Tetraethyllead	78-00-2	12/19/2012
123	Tetralead trioxide sulphate	12202-17-4	12/19/2012
124	Trilead dioxide phosphonate	12141-20-7	12/19/2012
125	Furan	110-00-9	12/19/2012
126	Diethyl sulphate	64-67-5	12/19/2012
127	Dimethyl sulphate	77-78-1	12/19/2012
128	3-ethyl-2-methyl-2-(3-methylbutyl)-1,3-oxazolidine	143860-04-2	12/19/2012
129	Dinoseb (6-sec-butyl-2,4-dinitrophenol)	88-85-7	12/19/2012
130	4,4'-methylenedi-o-toluidine	838-88-0	12/19/2012

131	4,4'-oxydianiline and its salts	101-80-4	12/19/2012
132	4-aminoazobenzene	60-09-3	12/19/2012
133	4-methyl-m-phenylenediamine (toluene-2,4-diamine)	95-80-7	12/19/2012
134	6-methoxy-m-toluidine (p-cresidine)	120-71-8	12/19/2012
135	Biphenyl-4-ylamine	92-67-1	12/19/2012
136	o-aminoazotoluene [(4-o-tolylazo-o-toluidine)]	97-56-3	12/19/2012
137	o-toluidine	95-53-4	12/19/2012
138	N-methylacetamide	79-16-3	12/19/2012
139	Cadmium	7440-43-9	6/20/2013
140	Ammonium pentadecafluorooctanoate (APFO)	3825-26-1	6/20/2013
141	Pentadecafluorooctanoic acid (PFOA)	335-67-1	6/20/2013
142	Dipentyl phthalate (DPP)	131-18-0	6/20/2013
143	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]	--	6/20/2013
144	Cadmium oxide	1306-19-0	6/20/2013
145	Cadmium sulphide	1306-23-6	12/16/2013
146	Dihexyl phthalate	84-75-3	12/16/2013
147	Disodium 3,3'-[[1,1'-biphenyl]-4,4'-diylbis(azo)]bis(4-aminonaphthalene-1-sulphonate)(C.I. Direct Red 28)	573-58-0	12/16/2013
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	12/16/2013
149	Imidazolidine-2-thione; 2-imidazoline-2-thiol	96-45-7	12/16/2013
150	Lead di(acetate)	301-04-2	12/16/2013
151	Trixylyl phosphate	25155-23-1	12/16/2013
152	1,2-Benzenedicarboxylic acid, dihexyl ester, branched and linear	68515-50-4	6/16/2014
153	Sodium perborate; perboric acid, sodium salt	--	6/16/2014
154	Sodium peroxometaborate	7632-04-4	6/16/2014
155	Cadmium chloride	10108-64-2	6/16/2014
156	2-(2H-benzotriazol-2-yl)-4,6-ditertpentylphenol (UV-328)	25973-55-1	12/17/2014
157	2-benzotriazol-2-yl-4,6-di-tert-butylphenol (UV-320)	3846-71-7	12/17/2014
158	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)	--	12/17/2014
159	Cadmium fluoride	7790-79-6	12/17/2014

160	Cadmium sulphate	10124-36-4, 31119-53-6	12/17/2014
161	2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (DOTE)	15571-58-1	12/17/2014
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 (EC No. 201-559-5)	68515-51-5 68648-93-1	6/15/2015
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 stereoisomers of [1] and [2] or any combination thereof	--	6/15/2015
164	Nitrobenzene	98-95-3	12/17/2015
165	2,4-di-tert-butyl-6-(5-chlorobenzotriazol-2-yl)phenol (UV-327)	3864-99-1	12/17/2015
166	2-(2H-benzotriazol-2-yl)-4-(tert-butyl)-6-(sec-butyl)phenol (UV-350)	36437-37-3	12/17/2015
167	1,3-propanesultone	1120-71-4	12/17/2015
168	Perfluorononan-1-oic-acid and its sodium and ammonium salts	375-95-1 21049-39-8 4149-60-4	12/17/2015
169	Benzo[def]chrysene (Benzo[a]pyrene)	50-32-8	6/20/2016
170	4,4'-isopropylidenediphenol (bisphenol A; BPA)	80-05-7**	1/12/2017
171	Nonadecafluorodecanoic acid (PFDA) and its sodium and ammonium salts	335-76-2 3830-45-3 3108-42-7	1/12/2017
172	p-(1,1-dimethylpropyl)phenol	80-46-6	1/12/2017
173	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]	-	1/12/2017
174	Perfluorohexane-1-sulphonic acid and its salts	-	7/7/2017

* This substance is present in Lattice's 1020-ball flip chip package at approx. 0.26% of total package weight.
** This substance may be present in substrate core material BT resins at <1% of substance weight.

While our products do not currently fall within the scope of REACH's registration requirement, we continue to monitor the EU regulation for changes that may require our attention.

Lattice is fully supportive of the various industry efforts throughout the world to phase out the use of undesirable elements from electronic equipment materials and manufacturing processes. Lattice remains committed to continually reducing its impact on the world's natural environment, and we work closely with our customers and suppliers to identify and rapidly eliminate hazardous substances from our products.

Be assured that your business is greatly valued by Lattice Semiconductor and that we will do everything within our power to provide you with the highest level of service and support.

Regards,

Chris Leonhard
Sr. Customer Requirements Administrator
Lattice Semiconductor Corp.
custreq@latticesemi.com