



Certificate of Compliance – European Union REACH Regulation EC/1907/2006

pSemi certifies that the product listed below is to the best of our knowledge, compliant with the applicable requirements of the European Union Regulation EC 1907/2006 of the European Parliament Council of 18 December 2006 concerning the Registration, Evaluation, Authorization and Restriction of Chemicals.

This pSemi product does not contain the Substances of Very High Concern (SVHC) shown below and listed in Annex IV of the regulation, as measured by weight in the article, pursuant to the European Commission Regulation EC 1907/2006.

Product: PE4151

Description: Low Frequency Passive Mixer with Integrated LO Amplifier

List of Substances of Very High Concern

| Item | Restricted Substance | EC No | CAS No | MCV Threshold | Effective Date |
|------|---|------------------------|--|--------------------|----------------|
| 1 | 4,4'- Diaminodiphenylmethane (MDA) | 202-974-4 | 101-77-9 | 1000 ppm (0.1% wt) | 10/28/2008 |
| 2 | 5-tert-butyl-2,4,6-trinitro-m-xylene (Musk xylene) | 201-329-4 | 81-15-2 | 1000 ppm (0.1% wt) | 10/28/2008 |
| 3 | Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins) | 287-476-5 | 85535-84-8 | 1000 ppm (0.1% wt) | 10/28/2008 |
| 4 | Anthracene | 204-371-1 | 120-12-7 | 1000 ppm (0.1% wt) | 10/28/2008 |
| 5 | Benzyl butyl phthalate (BBP) | 201-622-7 | 85-68-7 | 1000 ppm (0.1% wt) | 10/28/2008 |
| 6 | Bis(tributyltin) oxide (TBTO) | 200-268-0 | 56-35-9 | 1000 ppm (0.1% wt) | 10/28/2008 |
| 7 | Diarsenic pentaoxide | 215-116-9 | 1303-28-2 | 1000 ppm (0.1% wt) | 10/28/2008 |
| 8 | Diarsenic trioxide | 215-481-4 | 1327-53-3 | 1000 ppm (0.1% wt) | 10/28/2008 |
| 9 | Dibutyl phthalate (DBP) | 201-557-4 | 84-74-2 | 1000 ppm (0.1% wt) | 10/28/2008 |
| 10 | Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified: Alpha-hexabromocyclododecane Beta-hexabromocyclododecane Gamma-hexabromocyclododecane | 247-148-4 221-695-9 | 25637-99-4 3194-55-6 134237-50-6 134237-51-7 134237-52-8 | 1000 ppm (0.1% wt) | 10/28/2008 |
| 11 | Lead hydrogen arsenate | 232-064-2 | 7784-40-9 | 1000 ppm (0.1% wt) | 10/28/2008 |
| 12 | Sodium dichromate | 234-190-3 | 7789-12-0 10588-01-9 | 1000 ppm (0.1% wt) | 10/28/2008 |



| Item | Restricted Substance | EC No | CAS No | MCV Threshold | Effective Date |
|------|---|------------------------|--------------------------------------|--------------------|----------------|
| 13 | Triethyl arsenate | 427-700-2 | 15606-95-8 | 1000 ppm (0.1% wt) | 10/28/2008 |
| 14 | 2,4-Dinitrotoluene | 204-450-0 | 121-14-2 | 1000 ppm (0.1% wt) | 1/13/2010 |
| 15 | Anthracene oil | 292-602-7 | 90640-80-5 | 1000 ppm (0.1% wt) | 1/13/2010 |
| 16 | Anthracene oil, anthracene paste | 292-603-2 | 90640-81-6 | 1000 ppm (0.1% wt) | 1/13/2010 |
| 17 | Anthracene oil, anthracene paste, anthracene fraction | 295-275-9 | 91995-15-2 | 1000 ppm (0.1% wt) | 1/13/2010 |
| 18 | Anthracene oil, anthracene paste, distn. lights | 295-278-5 | 91995-17-4 | 1000 ppm (0.1% wt) | 1/13/2010 |
| 19 | Anthracene oil, anthracene-low | 292-604-8 | 90640-82-7 | 1000 ppm (0.1% wt) | 1/13/2010 |
| 20 | Diisobutyl phthalate | 201-553-2 | 84-69-5 | 1000 ppm (0.1% wt) | 1/13/2010 |
| 21 | Lead chromate | 231-846-0 | 7758-97-6 | 1000 ppm (0.1% wt) | 1/13/2010 |
| 22 | Lead chromate molybdate sulphate red (C.I. Pigment Red 104) | 235-759-9 | 12656-85-8 | 1000 ppm (0.1% wt) | 1/13/2010 |
| 23 | Lead sulfochromate yellow (C.I. Pigment Yellow 34) | 215-693-7 | 1344-37-2 | 1000 ppm (0.1% wt) | 1/13/2010 |
| 24 | Pitch, coal tar, high temp. | 266-028-2 | 65996-93-2 | 1000 ppm (0.1% wt) | 1/13/2010 |
| 25 | Tris(2-chloroethyl)phosphate | 204-118-5 | 115-96-8 | 1000 ppm (0.1% wt) | 1/13/2010 |
| 26 | Acrylamide | 201-173-7 | 79-06-1 | 1000 ppm (0.1% wt) | 3/30/2010 |
| 27 | Ammonium dichromate | 232-143-1 | 7789-09-5 | 1000 ppm (0.1% wt) | 6/18/2010 |
| 28 | Boric acid | 233-139-2 234-343-4 | 10043-35-3 11113-50-1 | 1000 ppm (0.1% wt) | 6/18/2010 |
| 29 | Disodium tetraborate, anhydrous | 215-540-4 | 1303-96-4 1330-43-4 12179-04-3 | 1000 ppm (0.1% wt) | 6/18/2010 |
| 30 | Potassium chromate | 232-140-5 | 7789-00-6 | 1000 ppm (0.1% wt) | 6/18/2010 |
| 31 | Potassium dichromate | 231-906-6 | 7778-50-9 | 1000 ppm (0.1% wt) | 6/18/2010 |
| 32 | Sodium chromate | 231-889-5 | 7775-11-3 | 1000 ppm (0.1% wt) | 6/18/2010 |
| 33 | Tetraboron disodium heptaoxide, hydrate | 235-541-3 | 12267-73-1 | 1000 ppm (0.1% wt) | 6/18/2010 |
| 34 | Trichloroethylene | 201-167-4 | 79-01-6 | 1000 ppm (0.1% wt) | 6/18/2010 |
| 35 | 2-Ethoxyethanol | 203-804-1 | 110-80-5 | 1000 ppm (0.1% wt) | 12/15/2010 |
| 36 | 2-Methoxyethanol | 203-713-7 | 109-86-4 | 1000 ppm (0.1% wt) | 12/15/2010 |
| 37 | Acids generated from chromium trioxide and their oligomers. Names of the acids and their oligomers: Chromic acid, Dichromic acid, Oligomers of chromic acid and dichromic acid. | 231-801-5 236-881-5 | 7738-94-5 13530-68-2 | 1000 ppm (0.1% wt) | 12/15/2010 |
| 38 | Chromium trioxide | 215-607-8 | 1333-82-0 | 1000 ppm (0.1% wt) | 12/15/2010 |
| 39 | Cobalt(II) carbonate | 208-169-4 | 513-79-1 | 1000 ppm (0.1% wt) | 12/15/2010 |
| 40 | Cobalt(II) diacetate | 200-755-8 | 71-48-7 | 1000 ppm (0.1% wt) | 12/15/2010 |



| Item | Restricted Substance | EC No | CAS No | MCV Threshold | Effective Date |
|------|---|-----------|-----------------------|--------------------|----------------|
| 41 | Cobalt(II) dinitrate | 233-402-1 | 10141-05-6 | 1000 ppm (0.1% wt) | 12/15/2010 |
| 42 | Cobalt(II) sulphate | 233-334-2 | 10124-43-3 | 1000 ppm (0.1% wt) | 12/15/2010 |
| 43 | 1,2,3-trichloropropane | 202-486-1 | 96-18-4 | 1000 ppm (0.1% wt) | 6/20/2011 |
| 44 | 1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich | 276-158-1 | 71888-89-6 | 1000 ppm (0.1% wt) | 6/20/2011 |
| 45 | 1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters | 271-084-6 | 68515-42-4 | 1000 ppm (0.1% wt) | 6/20/2011 |
| 46 | 1-Methyl-2-pyrrolidone (NMP) | 212-828-1 | 872-50-4 | 1000 ppm (0.1% wt) | 6/20/2011 |
| 47 | 2-Ethoxyethyl acetate | 203-839-2 | 111-15-9 | 1000 ppm (0.1% wt) | 6/20/2011 |
| 48 | Hydrazine | 206-114-9 | 302-01-2 7803-57-8 | 1000 ppm (0.1% wt) | 6/20/2011 |
| 49 | Strontium chromate | 232-142-6 | 7789-06-2 | 1000 ppm (0.1% wt) | 6/20/2011 |
| 50 | Cobalt dichloride | 231-589-4 | 7646-79-9 | 1000 ppm (0.1% wt) | 6/20/2011 |
| 51 | 1,2-Dichloroethane | 203-458-1 | 107-06-2 | 1000 ppm (0.1% wt) | 12/19/2011 |
| 52 | 2,2'-dichloro-4,4'-methylenedianiline | 202-918-9 | 101-14-4 | 1000 ppm (0.1% wt) | 12/19/2011 |
| 53 | 2-Methoxyaniline,o-Anisidine | 201-963-1 | 90-04-0 | 1000 ppm (0.1% wt) | 12/19/2011 |
| 54 | 4-(1,1,3,3-tetramethylbutyl)phenol | 205-426-2 | 140-66-9 | 1000 ppm (0.1% wt) | 12/19/2011 |
| 55 | Aluminosilicate Refractory Ceramic Fibres are fibres covered by index number 650-017-00-8 in Annex VI, part 3, table 3.1 of Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, and fulfil the three following conditions: a) oxides of aluminium and silicon are the main components present (in the fibres) within variable concentration ranges b) fibres have a length weighted geometric mean diameter less two standard geometric errors of 6 or less micrometres (µm) c) alkaline oxide and alkali earth oxide (Na ₂ O+K ₂ O+CaO+MgO+BaO) content less or equal to 18% by weight | - | - | 1000 ppm (0.1% wt) | 12/19/2011 |
| 56 | Arsenic acid | 231-901-9 | 7778-39-4 | 1000 ppm (0.1% wt) | 12/19/2011 |
| 57 | Bis(2-methoxyethyl) ether | 203-924-4 | 111-96-6 | 1000 ppm (0.1% wt) | 12/19/2011 |
| 58 | Bis(2-methoxyethyl) phthalate | 204-212-6 | 117-82-8 | 1000 ppm (0.1% wt) | 12/19/2011 |
| 59 | Calcium arsenate | 231-904-5 | 7778-44-1 | 1000 ppm (0.1% wt) | 12/19/2011 |
| 60 | Dichromium tris(chromate) | 246-356-2 | 24613-89-6 | 1000 ppm (0.1% wt) | 12/19/2011 |



| Item | Restricted Substance | EC No | CAS No | MCV Threshold | Effective Date |
|------|--|-----------|------------|--------------------|----------------|
| 61 | Formaldehyde, oligomeric reaction products with aniline | 500-036-1 | 25214-70-4 | 1000 ppm (0.1% wt) | 12/19/2011 |
| 62 | Lead diazide, Lead azide | 236-542-1 | 13424-46-9 | 1000 ppm (0.1% wt) | 12/19/2011 |
| 63 | Lead dipicrate | 229-335-2 | 6477-64-1 | 1000 ppm (0.1% wt) | 12/19/2011 |
| 64 | Lead styphnate | 239-290-0 | 15245-44-0 | 1000 ppm (0.1% wt) | 12/19/2011 |
| 65 | N,N-dimethylacetamide | 204-826-4 | 127-19-5 | 1000 ppm (0.1% wt) | 12/19/2011 |
| 66 | Pentazinc chromate octahydroxide | 256-418-0 | 49663-84-5 | 1000 ppm (0.1% wt) | 12/19/2011 |
| 67 | Phenolphthalein | 201-004-7 | 77-09-8 | 1000 ppm (0.1% wt) | 12/19/2011 |
| 68 | Potassium hydroxyoctaoxodizincatedichromate | 234-329-8 | 11103-86-9 | 1000 ppm (0.1% wt) | 12/19/2011 |
| 69 | Trilead diarsenate | 222-979-5 | 3687-31-8 | 1000 ppm (0.1% wt) | 12/19/2011 |
| 70 | Zirconia Aluminosilicate Refractory Ceramic Fibres are fibres covered by index number 650-017-00-8 in Annex VI, part 3, table 3.1 of Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, and fulfil the three following conditions: a) oxides of aluminium, silicon and zirconium are the main components present (in the fibres) within variable concentration ranges b) fibres have a length weighted geometric mean diameter less two standard geometric errors of 6 or less micrometres (µm). c) alkaline oxide and alkali earth oxide (Na ₂ O+K ₂ O+CaO+MgO+BaO) content less or equal to 18% by weight | - | - | 1000 ppm (0.1% wt) | 12/19/2011 |
| 71 | 1,2-bis(2-methoxyethoxy)ethane (TEGDME, triglyme) | 203-977-3 | 112-49-2 | 1000 ppm (0.1% wt) | 6/18/2012 |
| 72 | 1,2-dimethoxyethane, ethylene glycol dimethyl ether (EGDME) | 203-794-9 | 110-71-4 | 1000 ppm (0.1% wt) | 6/18/2012 |
| 73 | 1,3,5-Tris(oxiran-2-ylmethyl)-1,3,5-triazinane-2,4,6-trione (TGIC) | 219-514-3 | 2451-62-9 | 1000 ppm (0.1% wt) | 6/18/2012 |
| 74 | 1,3,5-tris[(2S and 2R)-2,3-epoxypropyl]-1,3,5-triazine-2,4,6-(1H,3H,5H)-trione (β-TGIC) | 423-400-0 | 59653-74-6 | 1000 ppm (0.1% wt) | 6/18/2012 |
| 75 | 4,4'-bis(dimethylamino)-4''-(methylamino)trityl alcohol [with ≥ 0.1% of Michler's ketone (EC No. 202-027-5) or | 209-218-2 | 561-41-1 | 1000 ppm (0.1% wt) | 6/18/2012 |



| Item | Restricted Substance | EC No | CAS No | MCV Threshold | Effective Date |
|------|--|-----------|-------------|--------------------|----------------|
| | Michler's base (EC No. 202-959-2)] | | | | |
| 76 | 4,4'-bis(dimethylamino)benzophenone (Michler's ketone) | 202-027-5 | 90-94-8 | 1000 ppm (0.1% wt) | 6/18/2012 |
| 77 | [4-[4,4'-bis(dimethylamino)benzhydrylidene]cyclohexa-2,5-dien-1-ylidene]dimethylammonium chloride (C.I. Basic Violet 3) [with \geq 0.1% of Michler's ketone (EC No. 202-027-5) or Michler's base (EC No. 202-959-2)] | 208-953-6 | 548-62-9 | 1000 ppm (0.1% wt) | 6/18/2012 |
| 78 | [4-[4-anilino-1-naphthyl][4-(dimethylamino)phenyl]methyle ne]cyclohexa-2,5-dien-1-ylidene] dimethylammonium chloride (C.I. Basic Blue 26) [with \geq 0.1% of Michler's ketone (EC No. 202-027-5) or Michler's base (EC No. 202-959-2)] | 219-943-6 | 2580-56-5 | 1000 ppm (0.1% wt) | 6/18/2012 |
| 79 | Diboron trioxide | 215-125-8 | 1303-86-2 | 1000 ppm (0.1% wt) | 6/18/2012 |
| 80 | Formamide | 200-842-0 | 75-12-7 | 1000 ppm (0.1% wt) | 6/18/2012 |
| 81 | Lead(II) bis(methanesulfonate) | 401-750-5 | 17570-76-2 | 1000 ppm (0.1% wt) | 6/18/2012 |
| 82 | N,N,N',N'-tetramethyl-4,4'-methylenedianiline (Michler's base) | 202-959-2 | 101-61-1 | 1000 ppm (0.1% wt) | 6/18/2012 |
| 83 | α,α -Bis[4-(dimethylamino)phenyl]-4-(phenylamino)naphthalene-1-methanol (C.I. Solvent Blue 4) [with \geq 0.1% of Michler's ketone (EC No. 202-027-5) or Michler's base (EC No. 202-959-2)] | 229-851-8 | 6786-83-0 | 1000 ppm (0.1% wt) | 6/18/2012 |
| 84 | 1,2-Benzenedicarboxylic acid, dipentylester, branched and linear | 284-032-2 | 84777-06-0 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 85 | 1,2-Diethoxyethane | 211-076-1 | 629-14-1 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 86 | 1-bromopropane (n-propyl bromide) | 203-445-0 | 106-94-5 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 87 | 3-ethyl-2-methyl-2-(3-methylbutyl)-1,3-oxazolidine | 421-150-7 | 143860-04-2 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 88 | 4,4'-methylenedi-o-toluidine | 212-658-8 | 838-88-0 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 89 | 4,4'-oxydianiline and its salts | 202-977-0 | 101-80-4 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 90 | 4-(1,1,3,3-tetramethylbutyl)phenol, ethoxylated [covering well-defined | - | - | 1000 ppm (0.1% wt) | 12/19/2012 |



| Item | Restricted Substance | EC No | CAS No | MCV Threshold | Effective Date |
|------|---|-------------------------------------|-------------------------------------|--------------------|----------------|
| | substances and UVCB substances, polymers and homologues] | | | | |
| 91 | 4-Aminoazobenzene | 200-453-6 | 60-09-3 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 92 | 4-methyl-m-phenylenediamine (toluene-2,4-diamine) | 202-453-1 | 95-80-7 | 1000 ppm (0.1% wt) | 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] | - | - | 1000 ppm (0.1% wt) | 12/19/2012 |
| 94 | 6-methoxy-m-toluidine (p-cresidine) | 204-419-1 | 120-71-8 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 95 | [Phthalato(2-)]dioxotrilead | 273-688-5 | 69011-06-9 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 96 | Acetic acid, lead salt, basic | 257-175-3 | 51404-69-4 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 97 | Biphenyl-4-ylamine | 202-177-1 | 92-67-1 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 98 | Bis(pentabromophenyl) ether (decabromodiphenyl ether) (DecaBDE) | 214-604-9 | 1163-19-5 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 99 | 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] | 201-604-9 236-086-3 238-009-9 | 85-42-7 13149-00-3 14166-21-3 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 100 | Diazene-1,2-dicarboxamide (C,C'-azodi(formamide)) (ADCA) | 204-650-8 | 123-77-3 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 101 | Dibutyltin dichloride (DBTC) | 211-670-0 | 683-18-1 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 102 | Diethyl sulphate | 200-589-6 | 64-67-5 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 103 | Diisopentylphthalate | 210-088-4 | 605-50-5 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 104 | Dimethyl sulphate | 201-058-1 | 77-78-1 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 105 | Dinoseb (6-sec-butyl-2,4-dinitrophenol) | 201-861-7 | 88-85-7 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 106 | Dioxobis(stearato)trilead | 235-702-8 | 12578-12-0 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 107 | Fatty acids, C16-18, lead salts | 292-966-7 | 91031-62-8 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 108 | Furan | 203-727-3 | 110-00-9 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 109 | Henicosaflluoroundecanoic acid | 218-165-4 | 2058-94-8 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 110 | Heptacosaflluorotetradecanoic acid | 206-803-4 | 376-06-7 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 111 | Hexahydromethylphthalic anhydride [1], Hexahydro-4-methylphthalic | 247-094-1 243-072-0 | 25550-51-0 19438-60-9 | 1000 ppm (0.1% wt) | 12/19/2012 |



| Item | Restricted Substance | EC No | CAS No | MCV Threshold | Effective Date |
|------|---|------------------------|--------------------------|--------------------|----------------|
| | 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] | 256-356-4 260-566-1 | 48122-14-1 57110-29-9 | | |
| 112 | Lead bis(tetrafluoroborate) | 237-486-0 | 13814-96-5 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 113 | Lead cyanamidate | 244-073-9 | 20837-86-9 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 114 | Lead dinitrate | 233-245-9 | 10099-74-8 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 115 | Lead monoxide (lead oxide) | 215-267-0 | 1317-36-8 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 116 | Lead oxide sulfate | 234-853-7 | 12036-76-9 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 117 | Lead titanium trioxide | 235-038-9 | 12060-00-3 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 118 | Lead titanium zirconium oxide | 235-727-4 | 12626-81-2 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 119 | Methoxyacetic acid | 210-894-6 | 625-45-6 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 120 | Methyloxirane (Propylene oxide) | 200-879-2 | 75-56-9 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 121 | N,N-dimethylformamide | 200-679-5 | 68-12-2 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 122 | N-methylacetamide | 201-182-6 | 79-16-3 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 123 | N-pentyl-isopentylphthalate | | 776297-69-9 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 124 | o-aminoazotoluene | 202-591-2 | 97-56-3 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 125 | o-Toluidine | 202-429-0 | 95-53-4 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 126 | Orange lead (lead tetroxide) | 215-235-6 | 1314-41-6 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 127 | Pentacosafuorotridecanoic acid | 276-745-2 | 72629-94-8 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 128 | Pentalead tetraoxide sulphate | 235-067-7 | 12065-90-6 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 129 | Pyrochlore, antimony lead yellow | 232-382-1 | 8012-00-8 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 130 | Silicic acid (H ₂ Si ₂ O ₅), 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] | 272-271-5 | 68784-75-8 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 131 | Silicic acid, lead salt | 234-363-3 | 11120-22-2 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 132 | Sulfurous acid, lead salt, dibasic | 263-467-1 | 62229-08-7 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 133 | Tetraethyllead | 201-075-4 | 78-00-2 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 134 | Tetralead trioxide sulphate | 235-380-9 | 12202-17-4 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 135 | Tricosafuorododecanoic acid | 206-203-2 | 307-55-1 | 1000 ppm (0.1% wt) | 12/19/2012 |



| Item | Restricted Substance | EC No | CAS No | MCV Threshold | Effective Date |
|------|---|------------------------|------------|--------------------|----------------|
| 136 | Trilead bis(carbonate) dihydroxide | 215-290-6 | 1319-46-6 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 137 | Trilead dioxide phosphonate | 235-252-2 | 12141-20-7 | 1000 ppm (0.1% wt) | 12/19/2012 |
| 138 | 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] | - | - | 1000 ppm (0.1% wt) | 6/20/2013 |
| 139 | Ammonium pentadecafluorooctanoate (APFO) | 223-320-4 | 3825-26-1 | 1000 ppm (0.1% wt) | 6/20/2013 |
| 140 | Cadmium | 231-152-8 | 7440-43-9 | 1000 ppm (0.1% wt) | 6/20/2013 |
| 141 | Cadmium oxide | 215-146-2 | 1306-19-0 | 1000 ppm (0.1% wt) | 6/20/2013 |
| 142 | Dipentyl phthalate (DPP) | 205-017-9 | 131-18-0 | 1000 ppm (0.1% wt) | 6/20/2013 |
| 143 | Pentadecafluorooctanoic acid (PFOA) | 206-397-9 | 335-67-1 | 1000 ppm (0.1% wt) | 6/20/2013 |
| 144 | Cadmium sulphide | 215-147-8 | 1306-23-6 | 1000 ppm (0.1% wt) | 12/16/2013 |
| 145 | Diethyl phthalate | 201-559-5 | 84-75-3 | 1000 ppm (0.1% wt) | 12/16/2013 |
| 146 | Disodium 3,3'-[[1,1'-biphenyl]-4,4'-diylbis(azo)]bis(4-aminonaphthalene-1-sulphonate) (C.I. Direct Red 28) | 209-358-4 | 573-58-0 | 1000 ppm (0.1% wt) | 12/16/2013 |
| 147 | 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) | 217-710-3 | 1937-37-7 | 1000 ppm (0.1% wt) | 12/16/2013 |
| 148 | Imidazolidine-2-thione (2-imidazoline-2-thiol) | 202-506-9 | 96-45-7 | 1000 ppm (0.1% wt) | 12/16/2013 |
| 149 | Lead di(acetate) | 206-104-4 | 301-04-2 | 1000 ppm (0.1% wt) | 12/16/2013 |
| 150 | Triethyl phosphate | 246-677-8 | 25155-23-1 | 1000 ppm (0.1% wt) | 12/16/2013 |
| 151 | 1,2-Benzenedicarboxylic acid, dihexylester, branched and linear | 271-093-5 | 68515-50-4 | 1000 ppm (0.1% wt) | 6/16/2014 |
| 152 | Cadmium chloride | 233-296-7 | 10108-64-2 | 1000 ppm (0.1% wt) | 6/16/2014 |
| 153 | Sodium perborate, perboric acid, sodium salt | 239-172-9 234-390-0 | - | 1000 ppm (0.1% wt) | 6/16/2014 |
| 154 | Sodium peroxometaborate | 231-556-4 | 7632-04-4 | 1000 ppm (0.1% wt) | 6/16/2014 |
| 155 | 2-(2H-benzotriazol-2-yl)-4,6-ditertpentylphenol (UV-328) | 247-384-8 | 25973-55-1 | 1000 ppm (0.1% wt) | 12/17/2014 |
| 156 | 2-benzotriazol-2-yl-4,6-di-tert-butylphenol (UV-320) | 223-346-6 | 3846-71-7 | 1000 ppm (0.1% wt) | 12/17/2014 |



| Item | Restricted Substance | EC No | CAS No | MCV Threshold | Effective Date |
|------|--|-----------------------------|---------------------------------------|--------------------|----------------|
| 157 | 2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (DOTE) | 239-622-4 | 15571-58-1 | 1000 ppm (0.1% wt) | 12/17/2014 |
| 158 | Cadmium fluoride | 232-222-0 | 7790-79-6 | 1000 ppm (0.1% wt) | 12/17/2014 |
| 159 | Cadmium sulphate | 233-331-6 | 10124-36-4 31119-53-6 | 1000 ppm (0.1% wt) | 12/17/2014 |
| 160 | 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) | - | - | 1000 ppm (0.1% wt) | 12/17/2014 |
| 161 | Bis (2-ethylhexyl)phthalate (DEHP) | 204-211-0 | 117-81-7 | 1000 ppm (0.1% wt) | 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 \geq 0.3% of dihexyl phthalate (EC No. 201-559-5) | 271-094-0 272-013-1 | 68515-51-5 68648-93-1 | 1000 ppm (0.1% wt) | 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] | - | - | 1000 ppm (0.1% wt) | 6/15/2015 |
| 164 | 1,3-propanesultone | 214-317-9 | 1120-71-4 | 1000 ppm (0.1% wt) | 12/17/2015 |
| 165 | 2,4-di-tert-butyl-6-(5-chlorobenzotriazol-2-yl)phenol (UV-327) | 223-383-8 | 3864-99-1 | 1000 ppm (0.1% wt) | 12/17/2015 |
| 166 | 2-(2H-benzotriazol-2-yl)-4-(tert-butyl)-6-(sec-butyl)phenol (UV-350) | 253-037-1 | 36437-37-3 | 1000 ppm (0.1% wt) | 12/17/2015 |
| 167 | Nitrobenzene | 202-716-0 | 98-95-3 | 1000 ppm (0.1% wt) | 12/17/2015 |
| 168 | Perfluorononan-1-oiic-acid and its sodium and ammonium salts | 206-801-3 | 375-95-1, 21049-39-8, 4149-60-4 | 1000 ppm (0.1% wt) | 12/17/2015 |
| 169 | Benzo[def]chrysene (Benzo[a]pyrene) | 200-028-5 | 50-32-8 | 1000 ppm (0.1% wt) | 6/20/2016 |
| 170 | 4,4'-isopropylidenediphenol | 201-245-8 | 80-05-7 | 1000 ppm (0.1% wt) | 1/12/2017 |
| 171 | 4-Heptylphenol, branched and linear | - | - | 1000 ppm (0.1% wt) | 1/12/2017 |
| 172 | Nonadecafluorodecanoic acid (PFDA) and its sodium and ammonium salts - Nonadecafluorodecanoic acid, | 206-400-3 221-470-5 - | 335-76-2 3108-42-7 3830-45-3 | 1000 ppm (0.1% wt) | 1/12/2017 |



| Item | Restricted Substance | EC No | CAS No | MCV Threshold | Effective Date |
|------|---|-----------|------------------------|--------------------|----------------|
| | Ammonium nondecafluorodecanoate, Decanoic acid, nonadecafluoro-, sodium salt | | | | |
| 173 | p-(1,1-dimethylpropyl)phenol | 201-280-9 | 80-46-6 | 1000 ppm (0.1% wt) | 1/12/2017 |
| 174 | Perfluorohexane-1-sulphonic acid and its salts | - | - | 1000 ppm (0.1% wt) | 7/7/2017 |
| 175 | Benz[a]anthracene | 200-280-6 | 56-55-3, 1718-53-2 | 1000 ppm (0.1% wt) | 1/15/2018 |
| 176 | Cadmium carbonate | 208-168-9 | 513-78-0 | 1000 ppm (0.1% wt) | 1/15/2018 |
| 177 | Cadmium hydroxide | 244-168-5 | 21041-95-2 | 1000 ppm (0.1% wt) | 1/15/2018 |
| 178 | Cadmium nitrate | 233-710-6 | 10022-68-1, 10325-94-7 | 1000 ppm (0.1% wt) | 1/15/2018 |
| 179 | Chrysene | 205-923-4 | 218-01-9, 1719-03-5 | 1000 ppm (0.1% wt) | 1/15/2018 |
| 180 | Dodecachloropentacyclo[12.2.1.16, 9.02,13.05,10]octadeca-7,15-diene ("Dechlorane Plus™") covering any of its individual anti- and syn-isomers or any combination thereof | - | - | 1000 ppm (0.1% wt) | 1/15/2018 |
| 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 (4-HPbl) | - | - | 1000 ppm (0.1% wt) | 1/15/2018 |
| 182 | Benzene-1,2,4-tricarboxylic acid 1,2 anhydride trimellitic anhydride; TMA | 209-008-0 | 552-30-7 | 1000 ppm (0.1% wt) | 6/27/2018 |
| 183 | Benzo[ghi]perylene | 205-883-8 | 191-24-2 | 1000 ppm (0.1% wt) | 6/27/2018 |
| 184 | Decamethylcyclopentasiloxane | 208-764-9 | 541-02-6 | 1000 ppm (0.1% wt) | 6/27/2018 |
| 185 | Dicyclohexyl phthalate DCHP | 201-545-9 | 84-61-7 | 1000 ppm (0.1% wt) | 6/27/2018 |
| 186 | Disodium octaborate | 234-541-0 | 12008-41-2 | 1000 ppm (0.1% wt) | 6/27/2018 |
| 187 | Dodecamethylcyclohexasiloxane | 208-762-8 | 540-97-6 | 1000 ppm (0.1% wt) | 6/27/2018 |
| 188 | Ethylenediamine EDA | 203-468-6 | 107-15-3 | 1000 ppm (0.1% wt) | 6/27/2018 |
| 189 | Lead | 231-100-4 | 7439-92-1 | 1000 ppm (0.1% wt) | 6/27/2018 |
| 190 | Octamethylcyclotetrasiloxane | 209-136-7 | 556-67-2 | 1000 ppm (0.1% wt) | 6/27/2018 |
| 191 | Terphenyl, hydrogenated | 262-967-7 | 61788-32-7 | 1000 ppm (0.1% wt) | 6/27/2018 |
| 192 | 1,7,7-trimethyl-3-(phenylmethylene)bicyclo[2.2.1]heptan-2-one | 239-139-9 | 15087-24-8 | 1000 ppm (0.1% wt) | 1/15/2019 |
| 193 | 2,2-bis(4'-hydroxyphenyl)-4-methylpentane | 401-720-1 | 6807-17-6 | 1000 ppm (0.1% wt) | 1/15/2019 |



| Item | Restricted Substance | EC No | CAS No | MCV Threshold | Effective Date |
|------|--|---|---|--------------------|----------------|
| 194 | Benzo[k]fluoranthene | 205-916-6 | 207-08-9 | 1000 ppm (0.1% wt) | 1/15/2019 |
| 195 | Fluoranthene | 205-912-4 | 206-44-0, | 1000 ppm (0.1% wt) | 1/15/2019 |
| 196 | Phenanthrene | 201-581-5 | 206-44-0, | 1000 ppm (0.1% wt) | 1/15/2019 |
| 197 | Pyrene | 204-927-3 | 129-00-0, 1718-52-1 | 1000 ppm (0.1% wt) | 1/15/2019 |
| 198 | Tris(4-nonylphenyl, branched and linear) phosphite (TNPP) with $\geq 0.1\%$ w/w of 4-nonylphenol, branched and linear (4-NP) | - | - | 1000 ppm (0.1% wt) | 7/16/2019 |
| 199 | 4-tert-butylphenol | 202-679-0 | 98-54-4 | 1000 ppm (0.1% wt) | 7/16/2019 |
| 200 | 2-methoxyethyl acetate | 203-772-9 | 110-49-6 | 1000 ppm (0.1% wt) | 7/16/2019 |
| 201 | 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propionic acid, its salts and its acyl halides | - | - | 1000 ppm (0.1% wt) | 7/16/2019 |
| 202 | Perfluorobutane sulfonic acid (PFBS) and its salts | - | - | 1000 ppm (0.1% wt) | 1/16/2020 |
| 203 | Diisohexyl phthalate | 276-090-2 | 71850-09-4 | 1000 ppm (0.1% wt) | 1/16/2020 |
| 204 | 2-methyl-1-(4-methylphenyl)-2-morpholinopropan-1-one | 400-600-6 | 71868-10-5 | 1000 ppm (0.1% wt) | 1/16/2020 |
| 205 | 2-benzyl-2-dimethylamino-4'-morpholinobutyrophenone | 404-360-3 | 119313-12-1 | 1000 ppm (0.1% wt) | 1/16/2020 |
| 206 | 1-vinylimidazole | 214-012-0 | 1072-63-5 | 1000 ppm (0.1% wt) | 6/26/2020 |
| 207 | 2-methylimidazole | 211-765-7 | 693-98-1 | 1000 ppm (0.1% wt) | 6/26/2020 |
| 208 | Butyl 4-hydroxybenzoate | 202-318-7 | 94-26-8 | 1000 ppm (0.1% wt) | 6/26/2020 |
| 209 | Dibutylbis(pentane-2,4-dionato-O,O')tin | 245-152-0 | 22673-19-4 | 1000 ppm (0.1% wt) | 6/26/2020 |
| 210 | Bis(2-(2-methoxyethoxy)ethyl)ether | 205-594-7 | 143-24-8 | 1000 ppm (0.1% wt) | 1/19/2021 |
| 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 | - | - | 1000 ppm (0.1% wt) | 1/19/2021 |
| 212 | 2-(4-tert-butylbenzyl)propionaldehyde and its individual stereoisomers | - | - | 1000 ppm (0.1% wt) | 7/8/2021 |
| 213 | Orthoboric acid, sodium salt | 237-560-2 | 13840-56-7 | 1000 ppm (0.1% wt) | 7/8/2021 |
| 214 | 2,2-bis(bromomethyl)propane-1,3-diol (BMP); 2,2-dimethylpropan-1-ol, tribromo derivative/3-bromo-2,2-bis(bromomethyl)-1-propanol | 221-967-7, 253-057-0, 202-480-9 | 3296-90-0, 36483-57-5, 1522-92-5, | 1000 ppm (0.1% wt) | 7/8/2021 |



| Item | Restricted Substance | EC No | CAS No | MCV Threshold | Effective Date |
|------|--|-----------|-------------|--------------------|----------------|
| | (TBNPA); 2,3-dibromo-1-propanol (2,3-DBPA) | | 96-13-9 | | |
| 215 | Glutaral | 203-856-5 | 111-30-8 | 1000 ppm (0.1% wt) | 7/8/2021 |
| 216 | Medium chain chlorinated paraffins (MCCP) (UVCB substances consisting of more than or equal to 80% linear chloroalkanes with carbon chain lengths within the range from C14 to C17) | - | - | 1000 ppm (0.1% wt) | 7/8/2021 |
| 217 | Phenol, alkylation products (mainly in para position) with C12-rich branched alkyl chains from oligomerisation, covering any individual isomers and/ or combinations thereof (PDDP) | - | - | 1000 ppm (0.1% wt) | 7/8/2021 |
| 218 | 1,4-dioxane | 204-661-8 | 123-91-1 | 1000 ppm (0.1% wt) | 7/8/2021 |
| 219 | 4,4'-(1-methylpropylidene)bisphenol | 201-025-1 | 77-40-7 | 1000 ppm (0.1% wt) | 7/8/2021 |
| 220 | 6,6'-di-tert-butyl-2,2'-methylenedi-p-cresol | 204-327-1 | 119-47-1 | 1000 ppm (0.1% wt) | 1/17/2022 |
| 221 | tris(2-methoxyethoxy)vinylsilane | 213-934-0 | 1067-53-4 | 1000 ppm (0.1% wt) | 1/17/2022 |
| 222 | (±)-1,7,7-trimethyl-3-[(4-methylphenyl)methylene]bicyclo[2.2.1]heptan-2-one covering any of the individual isomers and/or combinations thereof (4-MBC) | - | - | 1000 ppm (0.1% wt) | 1/17/2022 |
| 223 | 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 | 401-850-9 | 255881-94-8 | 1000 ppm (0.1% wt) | 1/17/2022 |
| 224 | N-(hydroxymethyl)acrylamide | 213-103-2 | 924-42-5 | 1000 ppm (0.1% wt) | 6/10/2022 |

Signature:

Date: 06/10/2022

George Kong, Director of Quality