

Certificate of the comply Hazardous Substances

We guarantee that our products MLCC Pb Free Series comply EU REACH 201 SVHC (substances of very high concern), with the tolerance of no greater than 0.1wt% (1000ppm).

List of the substances containing REACH. prohibited from use as below :

| No. | Substance name | CAS number | EC number |
|-----|--|--|------------------------|
| 1 | Anthracene | 120-12-7 | 204-371-1 |
| 2 | 4,4'-Diaminodiphenylmethane | 101-77-9 | 202-974-4 |
| 3 | Dibutyl phthalate | 84-74-2 | 201-557-4 |
| 4 | Cobalt dichloride | 7646-79-9 | 231-589-4 |
| 5 | Diarsenic pentaoxide | 1303-28-2 | 215-116-9 |
| 6 | diarsenic trioxide | 1327-53-3 | 215-481-4 |
| 7 | Sodium dichromate | 7789-12-0 10588-01-9 | 234-190-3 |
| 8 | 5-tert-butyl-2,4,6-trinitro- m-xylene(musk xylene) | 81-15-2 | 201-329-4 |
| 9 | Bis(2- ethyl (hexyl)phthalate (DEHP) | 117-81-7 | 204-211-0 |
| 10 | Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified (α - HBCDD, β -HBCDD, γ - HBCDD) | 25637-99-4 3194-55-6 (134237-51-7, 134237-50-6, 134237-52-8) | 247-148-4 221-695-9 |
| 11 | Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins) | 85535-84-8 | 287-476-5 |
| 12 | Bis(tributyltin) oxide | 56-35-9 | 200-268-0 |
| 13 | Lead hydrogen arsenate | 7784-40-9 | 232-064-2 |
| 14 | Benzyl butyl phthalate | 85-68-7 | 201-622-7 |
| 15 | Triethyl arsenate | 15606-95-8 | 427-700-2 |
| 16 | 2,4-Dinitrotoluene | 121-14-2 | 204-450-0 |
| 17 | Anthracene oil | 90640-80-5 | 292-602-7 |
| 18 | Anthracene oil, anthracene paste, distn. Lights | 91995-17-4 | 295-278-5 |
| 19 | Anthracene oil, anthracene paste, anthracene fraction | 91995-15-2 | 295-275-9 |
| 20 | Anthracene oil, anthracene-low | 90640-82-7 | 292-604-8 |
| 21 | Anthracene oil, anthracene paste | 90640-81-6 | 292-603-2 |

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| 22 | Diisobutyl phthalate | 84-69-5 | 201-553-2 |
| 23 | Lead chromate | 7758-97-6 | 231-846-0 |
| 24 | Lead chromate molybdate sulfate red (C. I. Pigment Red 104) | 12656-85-8 | 235-759-9 |
| 25 | Lead sulfochromate yellow (C. I. Pigment Yellow 34) | 1344-37-2 | 215-693-7 |
| 26 | Acrylamide | 79-06-1 | 201-173-7 |
| 27 | Tris (2-chloroethyl) phosphate | 115-96-8 | 204-118-5 |
| 28 | Coal tar pitch, high temperature | 65996-93-2 | 266-028-2 |
| 29 | Trichloroethylene | 79-01-6 | 201-167-4 |
| 30 | Boric acid | 10043-35-3 /11113-50-1 | 233-139-2 /234-343-4 |
| 31 | Disodium tetraborate, anhydrous | 1330-43-4 12179-04-3 1303-96-4 | 215-540-4 |
| 32 | Tetraboron disodium heptaoxide hydrate | 12267-73-1 | 235-541-3 |
| 33 | Sodium chromate | 7775-11-3 | 231-889-5 |
| 34 | Potassium chromate | 7789-00-6 | 232-140-5 |
| 35 | Ammonium dichromate | 7789-09-5 | 232-143-1 |
| 36 | Potassium dichromate | 7778-50-9 | 231-906-6 |
| 37 | Cobalt (II) sulfate | 10124-43-3 | 233-334-2 |
| 38 | Cobalt (II) dinitrate | 10141-05-6 | 233-402-1 |
| 39 | Cobalt (II) carbonate | 513-79-1 | 208-169-4 |
| 40 | Cobalt (II) diacetate | 71-48-7 | 200-755-8 |
| 41 | 2-METHOXYETHANOL | 109-86-4 | 203-713-7 |
| 42 | 2-ETHOXYETHANOL | 110-80-5 | 203-804-1 |
| 43 | Chromium trioxide | 1333-82-0 | 215-607-8 |
| 44 | Acids generated from chromium trioxid and their oligomers: • Chromic acid, • Dichromic acid, • oligomers of chromic acid and dichromoic acid | 7738-94-5 13530-68-2 | 231-801-5 236-881-5 |
| 45 | 2-ethoxyethyl acetate | 111-15-9 | 203-839-2 |
| 46 | Strontium chromate | 7789-06-2 | 232-142-6 |
| 47 | 1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters (DHNU) | 68515-42-4 | 271-084-6 |

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| 48 | Hydrazine | 7803-57-8 302-01-2 | 206-114-9 |
| 49 | 1-methyl-2-pyrrolidone | 872-50-4 | 212-828-1 |
| 50 | 1, 2, 3-trichloropropane | 96-18-4 | 202-486-1 |
| 51 | 1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich (DIHP) | 71888-89-6 | 276-158-1 |
| 52 | Dichromiumtris (chromate) | 24613-89-6 | 246-356-2 |
| 53 | Potassium hydroxyoctaoxidizincatedichromate | 11103-86-9 | 234-329-8 |
| 54 | Pentazinc chromate octahydroxide | 49663-84-5 | 256-418-0 |
| 55 | Formaldehyde, oligomeric reaction products with aniline (technical MDA) | 25214-70-4 | 500-036-1 |
| 56 | Bis(2-methoxyethyl) phthalate | 117-82-8 | 204-212-6 |
| 57 | 2-Methoxyaniline; o-Anisidine | 90-04-0 | 201-963-1 |
| 58 | Zirconia Aluminosilicate Refractory Ceramic Fibres (Zr-RCF) | - | - |
| 59 | Aluminosilicate Refractory Ceramic Fibres (RCF) | - | - |
| 60 | 4-(1, 1, 3, 3-tetramethylbutyl)phenol, 4-tert-Octylphenol) | 140-66-9 | 205-426-2 |
| 61 | 1-2-Dichloroethane | 107-06-2 | 203-458-1 |
| 62 | Bis(2-methoxyethyl) ether | 111-96-6 | 203-924-4 |
| 63 | Arsenic acid | 7778-39-4 | 231-901-9 |
| 64 | Calcium arsenate | 7778-44-1 | 231-904-5 |
| 65 | Trilead diarsenate | 3687-31-8 | 222-979-5 |
| 66 | N,N-dimethylacetamide (DMAC) | 127-19-5 | 204-826-4 |
| 67 | 2-2' -dichloro-4,4' -methylenedianiline (MOCA) | 101-14-4 | 202-918-9 |
| 68 | Phenolphthalein | 77-09-8 | 201-004-7 |
| 69 | Lead diazide | 13424-46-9 | 236-542-1 |
| 70 | Lead styphnate | 15245-44-0 | 239-290-0 |
| 71 | Lead dipicrate | 6477-64-1 | 229-335-2 |
| 72 | 1, 2-bis(2-methoxyethoxy)ethane(TEGDME; triglyme) | 112-49-2 | 203-977-3 |
| 73 | 1,2-dimethoxyethane;ethylene glycol dimethyl ether(EGDME) | 110-71-4 | 203-794-9 |
| 74 | Diboron trioxide | 1303-86-2 | 215-125-8 |
| 75 | Formamide | 75-12-7 | 200-842-0 |
| 76 | Lead(II) bis(methanesulfonate) | 17570-76-2 | 401-750-5 |
| 77 | TGIC(1, 3, 5-tris(oxiranylmethyl)-1, 3, 5-triazine-2, 4, 6(1H, 3H, 5H | 2451-62-9 | 219-514-3 |

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| |)-trione) | | |
| 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 |
| 79 | 4, 4'-bis(dimethylamino)benzophenone(Michler's ketone) | 90-94-8 | 202-027-5 |
| 80 | N, N, N'-tetramethyl-4, 4'-methylenedianiline(Michler's base) | 101-61-1 | 202-959-2 |
| 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 |
| 82 | [4-[[4-anilino-1-naphthyl][4-(dimethylamino)phenyl] | 2580-56-5 | 219-943-6 |
| 83 | α, α -Bis[4-(dimethylamino)phenyl]-4(phenylamino)naphthalene-1-methanol(C. I. Solvent Blue 4) | 6786-83-0 | 229-851-8 |
| 84 | 4, 4'-bis(dimethylamino)-4''-(methylamino)trityl alcohol | 561-41-1 | 209-218-2 |
| 85 | Bis(pentabromophenyl) ether (DecaBDE) | 214-604-9 | 1163-19-5 |
| 86 | Pentacosafuorotridecanoic acid | 72629-94-8 | 276-745-2 |
| 87 | Tricosafuorododecanoic acid | 307-55-1 | 206-203-2 |
| 88 | Henicosafuoroundecanoic acid | 2058-94-8 | 218-165-4 |
| 89 | Heptacosafuorotetradecanoic acid | 376-06-7 | 206-803-4 |
| 90 | 4-(1, 1, 3, 3-tetramethylbutyl)phenol, ethoxylated -covering well-defined substances and UVCB substances, polymers and homologues | - | - |
| 91 | 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 | - | - |
| 92 | Diazene-1, 2-dicarboxamide (C, C'-azodi(formamide)) | 123-77-3 | 204-650-8 |
| 93 | Cyclohexane-1, 2-dicarboxylic anhydride (Hexahydrophthalic anhydride - HHPA) | 85-42-7 13149-00-3 14166-21-3 | 201-604-9 236-086-3 238-009-9 |
| 94 | 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 |
| 95 | Methoxy acetic acid | 625-45-6 | 210-894-6 |
| 96 | 1, 2-Benzenedicarboxylic acid, dipentylester, branched and linear | 84777-06-0 | 284-032-2 |

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| 97 | Diisopentylphthalate (DIPP) | 605-50-5 | 210-088-4 |
| 98 | N-pentyl-isopentylphthalate | 776297-69-9 | - |
| 99 | 1,2-Diethoxyethane | 629-14-1 | 211-076-1 |
| 100 | N,N-dimethylformamide; dimethyl formamide | 68-12-2 | 200-679-5 |
| 101 | Dibutyltin dichloride (DBT) | 683-18-1 | 211-670-0 |
| 102 | Acetic acid, lead salt, basic | 51404-69-4 | 257-175-3 |
| 103 | Basic lead carbonate (trilead bis(carbonate)dihydroxide) | 1319-46-6 | 215-290-6 |
| 104 | Lead oxide sulfate (basic lead sulfate) | 12036-76-9 | 234-853-7 |
| 105 | [Phthalato(2-)]dioxotrilead (dibasic lead phthalate) | 69011-06-9 | 273-688-5 |
| 106 | Dioxobis(stearato)trilead | 12578-12-0 | 235-702-8 |
| 107 | Fatty acids, C16-18, lead salts | 91031-62-8 | 292-966-7 |
| 108 | Lead bis(tetrafluoroborate) | 13814-96-5 | 237-486-0 |
| 109 | Lead cyanamate | 20837-86-9 | 244-073-9 |
| 110 | Lead dinitrate | 10099-74-8 | 233-245-9 |
| 111 | Lead oxide (lead monoxide) | 1317-36-8 | 215-267-0 |
| 112 | Lead tetroxide (orange lead) | 1314-41-6 | 215-235-6 |
| 113 | Lead titanium trioxide | 12060-00-3 | 235-038-9 |
| 114 | Lead Titanium Zirconium Oxide | 12626-81-2 | 235-727-4 |
| 115 | Pentalead tetraoxide sulphate | 12065-90-6 | 235-067-7 |
| 116 | Pyrochlore, antimony lead yellow | 8012-00-8 | 232-382-1 |
| 117 | Silicic acid, barium salt, lead-doped | 68784-75-8 | 272-271-5 |
| 118 | Silicic acid, lead salt | 11120-22-2 | 234-363-3 |
| 119 | Sulfurous acid, lead salt, dibasic | 62229-08-7 | 263-467-1 |
| 120 | Tetraethyllead | 78-00-2 | 201-075-4 |
| 121 | Tetralead trioxide sulphate | 12202-17-4 | 235-380-9 |
| 122 | Trilead dioxide phosphonate | 12141-20-7 | 235-252-2 |
| 123 | Furan | 110-00-9 | 203-727-3 |
| 124 | Propylene oxide; 1,2-epoxypropane; methyloxirane | 75-56-9 | 200-879-2 |
| 125 | Diethyl sulphate | 64-67-5 | 200-589-6 |
| 126 | Dimethyl sulphate | 77-78-1 | 201-058-1 |
| 127 | 3-ethyl-2-methyl-2-(3-methylbutyl)-1,3-oxazolidine | 143860-04-2 | 421-150-7 |
| 128 | Dinoseb | 88-85-7 | 201-861-7 |

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| 129 | 4, 4' -methylenedi-o-toluidine | 838-88-0 | 212-658-8 |
| 130 | 4, 4' -oxydianiline and its salts | 101-80-4 | 202-977-0 |
| 131 | 4-Aminoazobenzene; 4-Phenylazoaniline | 60-09-3 | 200-453-6 |
| 132 | 4-methyl-m-phenylenediamine (2, 4-toluene-diamine) | 95-80-7 | 202-453-1 |
| 133 | 6-methoxy-m-toluidine (p-cresidine) | 120-71-8 | 204-419-1 |
| 134 | Biphenyl-4-ylamine | 92-67-1 | 202-177-1 |
| 135 | o-aminoazotoluene | 97-56-3 | 202-591-2 |
| 136 | o-Toluidine; 2-Aminotoluene | 95-53-4 | 202-429-0 |
| 137 | N-methylacetamide | 79-16-3 | 201-182-6 |
| 138 | 1-bromopropane; n-propyl bromide | 106-94-5 | 203-445-0 |
| 139 | Cadmium | 7440-43-9 | 231-152-8 |
| 140 | Cadmium oxide | 1306-19-0 | 215-146-2 |
| 141 | Dipentyl phthalate (DPP) | 131-18-0 | 205-017-9 |
| 142 | 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] | - | - |
| 143 | Ammonium pentadecafluorooctanoate (APFO) | 3825-26-1 | 223-320-4 |
| 144 | Pentadecafluorooctanoic acid (PFOA) | 335-67-1 | 206-397-9 |
| 145 | Cadmium sulphide | 1306-23-6 | 215-147-8 |
| 146 | Dihexyl phthalate | 84-75-3 | 201-559-5 |
| 147 | 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 |
| 148 | Disodium 4-amino-3-[[4' -[(2, 4-diaminophenyl)azo][1, 1' -biphenyl]-4-yl]azo] -5-hydroxy-6-(phenylazo)naphthalene-2, 7-di sulphonate (C. I. Direct Black 38) | 1937-37-7 | 217-710-3 |
| 149 | Imidazolidine-2-thione; 2-imidazoline-2-thiol | 96-45-7 | 202-506-9 |
| 150 | Lead di (acetate) | 301-04-2 | 206-104-4 |
| 151 | Trixylyl phosphate | 25155-23-1 | 246-677-8 |
| 152 | 1, 2-Benzenedicarboxylic acid, dihexyl ester, branched and linear | 68515-50-4 | 271-093-5 |

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| 153 | Sodium perborate ; perboric acid, sodium salt | - | 239-172-9; 234-390-0 |
| 154 | Sodium peroxometaborate | 7632-04-4 | 231-556-4 |
| 155 | Cadmium chloride | 10108-64-2 | 233-296-7 |
| 156 | Cadmium fluoride | 7790-79-6 | 232-222-0 |
| 157 | Cadmium sulphate | 10124-36-4 31119-53-6 | 233-331-6 |
| 158 | 2-benzotriazol-2-yl-4,6-di-tert-butylphenol (UV-320) | 3846-71-7 | 223-346-6 |
| 159 | 2-(2H-benzotriazol-2-yl)-4,6-ditertpentylphenol (UV-328) | 25973-55-1 | 247-384-8 |
| 160 | 2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (DOTE) | 15571-58-1 | 239-622-4 |
| 161 | Reaction mass of 2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate and 2-ethylhexyl10-ethyl-4-[[2-[(2-ethylhexyl)oxy]-2-oxoethyl]thio]-4-octyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (reaction mass of DOTEand MOTE) | - | - |
| 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 | 68515-51-5 68648-93-1 | 271-094-0 272-013-1 |
| 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] | - | - |
| 164 | Nitrobenzene | 98-95-3 | 202-716-0 |
| 165 | 2,4-di-tert-butyl-6-(5-chlorobenzotriazol-2-yl)phenol (UV-327) | 3864-99-1 | 223-383-8 |
| 166 | 2-(2H-benzotriazol-2-yl)-4-(tert-butyl)-6-(sec-butyl)phenol (UV-350) | 36437-37-3 | 253-037-1 |
| 167 | 1,3-propanesul tone | 1120-71-4 | 214-317-9 |
| 168 | Perfluorononan-1-oic-acid and its sodium and ammonium salts | 375-95-1; 21049-39-8; 4149-60-4 | 206-801-3 |
| 169 | Benzo[def]chrysene(Benzo[a]pyrene) | 50-32-8 | 200-028-5 |

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| 170 | 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] | | |
| 171 | Nonadecafluorodecanoic acid (PFDA) and its sodium and ammonium salts | 3108-42-7 335-76-2 3830-45-3 | - 206-400-3 221-470-5 |
| 172 | p-(1,1-dimethylpropyl)phenol | 80-46-6 | 201-280-9 |
| 173 | 4,4' -isopropylidenediphenol(bisphenol A; BPA) | 80-05-7 | 201-245-8 |
| 174 | Perfluorohexane-1-sulphonic acid and its salts (PFHxS) | 355-46-4 | 206-587-1 |
| 175 | Chrysene | 218-01-9, 1719-03-5 | 205-923-4 |
| 176 | Benz[a]anthracene | 56-55-3, 1718-53-2 | 200-280-6 |
| 177 | Cadmium nitrate | 10022-68-1, 10325-94-7 | 233-710-6 |
| 178 | Cadmium hydroxide | 21041-95-2 | 244-168-5 |
| 179 | Cadmium carbonate | 513-78-0 | 208-168-9 |
| 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 | - | - |
| 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) | - | - |
| 182 | Benzene-1,2,4-tricarboxylic acid 1,2 anhydride (trimellitic anhydride; TMA) | 552-30-7 | 209-008-0 |
| 183 | Benzo[ghi]perylene | 191-24-2 | 205-883-8 |
| 184 | Decamethylcyclopentasiloxane (D5) | 541-02-6 | 208-764-9 |
| 185 | Dicyclohexyl phthalate (DCHP) | 84-61-7 | 201-545-9 |
| 186 | Disodium octaborate | 12008-41-2 | 234-541-0 |
| 187 | Dodecamethylcyclohexasiloxane (D6) | 540-97-6 | 208-762-8 |

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| 188 | Ethylenediamine (EDA) | 107-15-3 | 203-468-6 |
| 189 | Lead | 7439-92-1 | 231-100-4 |
| 190 | Octamethylcyclotetrasiloxane (D4) | 556-67-2 | 209-136-7 |
| 191 | Terphenyl, hydrogenated | 61788-32-7 | 262-967-7 |
| 192 | 1, 7, 7-trimethyl-3-(phenylmethylene) bicyclo[2. 2. 1]heptan-2-one (3-benzylidene camphor) | 15087-24-8 | 239-139-9 |
| 193 | 2, 2-bis(4' -hydroxyphenyl)-4-methylpentane | 6807-17-6 | 401-720-1 |
| 194 | Benzo[k]fluoranthene | 207-08-9 | 205-916-6 |
| 195 | Fluoranthene | 206-44-0; 93951-69-0 | 205-912-4 |
| 196 | Phenanthrene | 85-01-8 | 201-581-5 |
| 197 | Pyrene | 129-00-0; 1718-52-1 | 204-927-3 |
| 198 | 2, 3, 3, 3-tetrafluoro-2-(heptafluoropropoxy)propionic acid, its salts and its acyl halides | - | - |
| 199 | 2-methoxyethyl acetate | 110-49-6 | 203-772-9 |
| 200 | 4-tert-butylphenol | 98-54-4 | 202-679-0 |
| 201 | Tris(4-nonylphenyl, branched and linear) phosphite (TNPP) with $\geq 0.1\%$ w/w of 4-nonylphenol, branched and linear (4-NP) | - | - |

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(Date) : 2019 (Y) 8 (M) 8 (D)