

### Monolithic Power Systems, Lead-Free Policy

With the adoption of EU directive RoHS (Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment), the ban on lead (PB) and other hazardous substances have a legal basis and a statutory deadline of July 1, 2006.

Monolithic Power Systems, Inc (MPS) products are compatible with lead free packaging based upon engineering evaluations performed in 2002. Product has been transferred to lead free packages. We guarantee that substances given below are not included at all in our lead free packaged products or in our packaging materials such as reel, tape, and moisture barrier bag, inner or outer boxes. MPS also guarantees it's compliance with the NORWAY restriction and does not take any exemptions as allowed under these regulations.

MPS states that it is compliant with the REACH Initiative (Regulation, Evaluation, Authorization and restriction of Chemical substances) regulations of October 28 2008, January 13 2010, June 18 2010, December 15 2010, June 2 2011, December 19 2011, June 18 2012, December 19 2012, June 21 2013, September 2 2013, December 16 2013, June 18 2014, October 16 2014, December 17 2014, June 15 2015, December 17 2015, June 20 2016 and January 12 2017, the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer, the EU directive RoHS II (Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment) 2011/65/EU May 27, 2011, China RoHS , March 2007 and Halogen Free Initiative IEC 61249-2-21, with threshold limits defined as:

#### **RoHS**

Lead (Pb)	<1000 ppm
Cadmium(Cd)	<100 ppm
Hexavalent Chromium (CR VI)	<1000 ppm
Mercury (Hg)	<1000 ppm
Polybrominated Biphenyls (PBB)	<1000 ppm
Polibrominated Diphenyl Ethers (PBDE)	<1000 ppm
Bis (2-ethylhexyl) phthalate (DEHP)	<1000 ppm
Benzyl butyl phthalate (BBP)	<1000 ppm
Dibutyl phthalate (DBP)	<1000 ppm
Diisobutyl phthalate (DIBP)	<1000 ppm

#### **Halogens**

Bromine (Br) < 900 ppm
Chlorine (Cl) < 900 ppm
Chlorine (Cl) + Bromine (Br) < 1500 ppm
Fluorine (F) < 900 ppm
Iodine (I) < 900 ppm

MPS supports the EICC Code of Conduct and the Social and Environmental Responsibility in Metals Supply to the Electronics industry. This latter initiative opposes the use of precious metals mined in countries where the negative social impacts of mining range from human rights violations and labor issues, to socio-economic disturbances, corruption and conflict. In particular, MPS supports the ban on precious metals from the Democratic Republic of the Congo, Indonesia, Mozambique, Rwanda, Zambia and Mozambique.

**List of Substances**

<b>Substance</b>	<b>CAS No.</b>
Cadmium & Cadmium Compounds	7440-43-9
Lead & Lead Compounds	7439-92-1
Mercury and Mercury Compounds	7439-97-6
Hexavalent Chromium Compounds	7440-47-3
Polychlorinated biphenyl (PCB)	1336-36-3
Polychlorinated Naphthalene (PCN)	70776-03-3
Chlorinated paraffins (CP)	85525-8509
Mirex (Perchlodecone)	2385-85-5
Polybrominated biphenyls (PBB),	36355-01-8
Polybrominated diphenylethes (PBDE)	Various
Tetrabromobisphenol-A-bis- (2, 3-dibromopropylether) (TBBP-A-bis)	79-94-7
Organic tin compounds (Tributyl tin compounds, Triphenyl tin compounds)	Various
Asbestos	1332-21-4
Azo compounds	Various
Benzotriazole	95-14-7
Deca BDE	1163-19-5
Halogens: Chlorine, Bromine, Fluorine, Iodine	7782-50-5, 7726-95-6, 7782-41-4, 7553-56-2
Antimony Trioxide and its' compounds	1309-64-4
Red Phosphorous	7723-14-0
Polycyclic aromatic hydrocarbon (PAH)	120-12-7
Polyvinyl chloride (PVC)	9002-86-2
Dimethyl Formamide	68-12-2
Dimethylfumerate (DMF)	624-49-7
Nonyl Phenol	25154-52-3
Formaldehyde	50-00-0
Diisononyl Phthalate (DINP)	28553-12-0
Diisodecyl Phthalate (DIDP)	26761-40-0
Beryllium and its' compounds	7440-41-7
Ozone Depleting Substances	Various
Perfluorooctane Sulfonates (PFOS)	1763-23-1
Perfluorooctanoic Acid (PFOA)	335-67-1

**REACH SVHC's effective 01/12/2017:**

Substance	CAS No.
4,4'-isopropylidenediphenol	80-05-7
4-Heptylphenol, branched and linear	-
Nonadecafluorodecanoic acid (PFDA) and its sodium and ammonium salts	-
Nonadecafluorodecanoic acid	335-76-2
Ammonium nonadecafluorodecanoate	3108-42-7
Decanoic acid, nonadecafluoro-, sodium salt	3830-45-3
p-(1,1-dimethylpropyl)phenol	80-46-6
Benzo[def]chrysene	50-32-8
1,3-propanesultone	1120-71-4
2,4-di-tert-butyl-6-(5-chlorobenzotriazol-2-yl)phenol (UV-327)	3864-99-1
2-(2H-benzotriazol-2-yl)-4-(tert-butyl)-6-(sec-butyl)phenol (UV-350)	36437-37-3
Nitrobenzene	98-95-3
Perfluorononan-1-oic-acid and its sodium and ammonium salts	-
Ammonium salts of perfluorononan-1-oic-acid	-, 4149-60-4
Perfluorononan-1-oic-acid	375-95-1
Sodium salts of perfluorononan-1-oic-acid	-, 21049-39-8
1,2-benzenedicarboxylic acid, di-C6-10-alkyl esters or mixed decyl and hexyl and octyl diesters	-
1,2-Benzenedicarboxylic acid, di-C6-10-alkyl esters	68515-51-5
1,2-Benzenedicarboxylic acid, mixed decyl and hexyl and octyl diesters	68648-93-1
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]	-
5-sec-butyl-2-(4,6-dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane	-
5-sec-butyl-2-(2,4-dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane	-
2-(2H-benzotriazol-2-yl)-4,6-ditertpentylphenol (UV-328)	25973-55-1
2-benzotriazol-2-yl-4,6-di-tert-butylphenol (UV-320)	3846-71-7
2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (DOTE)	15571-58-1
Cadmium fluoride	7790-79-6
Cadmium sulphate	10124-36-4, 31119-53-6
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)	-
1,2-Benzenedicarboxylic acid, dihexyl ester, branched and linear	68515-50-4
Cadmium chloride	10108-64-2
Sodium perborate, perboric acid, sodium salt	-
Sodium perborate	15120-21-5
Perboric acid, sodium salt	11138-47-9
Sodium peroxometaborate	7632-04-4
Cadmium sulphide	1306-23-6

Dihexyl phthalate	84-75-3
Disodium 3,3'-[[1,1'-biphenyl]-4,4'-diylbis(azo)]bis(4-aminonaphthalene-1-sulphonate) (C.I. Direct Red 28)	573-58-0
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
Imidazolidine-2-thione (2-imidazoline-2-thiol)	96-45-7
Lead di(acetate)	301-04-2
Trixylyl phosphate	25155-23-1
4-Nonylphenol, branched and linear, ethoxylated	-
Ammonium pentadecafluorooctanoate (APFO)	3825-26-1
Cadmium	7440-43-9
Cadmium oxide	1306-19-0
Dipentyl phthalate (DPP)	131-18-0
Pentadecafluorooctanoic acid (PFOA)	335-67-1
1,2-Benzenedicarboxylic acid, dipentyl ester, branched and linear	84777-06-0
1,2-diethoxyethane	629-14-1
1-bromopropane (n-propyl bromide)	106-94-5
3-ethyl-2-methyl-2-(3-methylbutyl)-1,3-oxazolidine	143860-04-2
4,4'-methylenedi-o-toluidine	838-88-0
4,4'-oxydianiline and its salts	-
4,4'-oxydianiline	101-80-4
4-(1,1,3,3-tetramethylbutyl)phenol, ethoxylated	-
4-aminoazobenzene	60-09-3
4-methyl-m-phenylenediamine (toluene-2,4-diamine)	95-80-7
4-Nonylphenol, branched and linear	-
6-methoxy-m-toluidine (p-cresidine)	120-71-8
[Phthalato(2-)]dioxotrilead	69011-06-9
Acetic acid, lead salt, basic	51404-69-4
Biphenyl-4-ylamine	92-67-1
Bis(pentabromophenyl) ether (decabromodiphenyl ether) (DecaBDE)	1163-19-5
Cyclohexane-1,2-dicarboxylic anhydride	-
cis-cyclohexane-1,2-dicarboxylic anhydride	13149-00-3
Cyclohexane-1,2-dicarboxylic anhydride	85-42-7
trans-cyclohexane-1,2-dicarboxylic anhydride	14166-21-3
Diazene-1,2-dicarboxamide (C,C'-azodi(formamide)) (ADCA)	123-77-3
Dibutyltin dichloride (DBTC)	683-18-1
Diethyl sulphate	64-67-5
Diisopentyl phthalate	605-50-5
Dimethyl sulphate	77-78-1
Dinoseb (6-sec-butyl-2,4-dinitrophenol)	88-85-7
Dioxobis(stearato)trilead	12578-12-0
Fatty acids, C16-18, lead salts	91031-62-8
Furan	110-00-9
Henicosaflluoroundecanoic acid	2058-94-8
Heptacosaflluorotetradecanoic acid	376-06-7
Hexahydromethylphthalic anhydride	-
Hexahydro-4-methylphthalic anhydride	19438-60-9
Hexahydromethylphthalic anhydride	25550-51-0

Hexahydro-1-methylphthalic anhydride	48122-14-1
Hexahydro-3-methylphthalic anhydride	57110-29-9
Lead bis(tetrafluoroborate)	13814-96-5
Lead cyanamidate	20837-86-9
Lead dinitrate	10099-74-8
Lead monoxide (lead oxide)	1317-36-8
Lead oxide sulfate	12036-76-9
Lead titanium trioxide	12060-00-3
Lead titanium zirconium oxide	12626-81-2
Methoxyacetic acid	625-45-6
Methyloxirane (Propylene oxide)	75-56-9
N,N-dimethylformamide	68-12-2
N-methylacetamide	79-16-3
N-pentyl-isopentylphthalate	776297-69-9
o-aminoazotoluene	97-56-3
o-toluidine	95-53-4
Orange lead (lead tetroxide)	1314-41-6
Pentacosafuorotridecanoic acid	72629-94-8
Pentalead tetraoxide sulphate	12065-90-6
Pyrochlore, antimony lead yellow	8012-00-8
Silicic acid (H <sub>2</sub> Si <sub>2</sub> O <sub>5</sub> ), barium salt (1:1), lead-doped	68784-75-8
Silicic acid, lead salt	11120-22-2
Sulfurous acid, lead salt, dibasic	62229-08-7
Tetraethyllead	78-00-2
Tetralead trioxide sulphate	12202-17-4
Tricosafuorododecanoic acid	307-55-1
Trilead bis(carbonate) dihydroxide	1319-46-6
Trilead dioxide phosphonate	12141-20-7
1,2-bis(2-methoxyethoxy)ethane (TEGDME, triglyme)	112-49-2
1,2-dimethoxyethane, ethylene glycol dimethyl ether (EGDME)	110-71-4
1,3,5-Tris(oxiran-2-ylmethyl)-1,3,5-triazinane-2,4,6-trione (TGIC)	2451-62-9
1,3,5-tris[(2S and 2R)-2,3-epoxypropyl]-1,3,5-triazine-2,4,6-(1H,3H,5H)-trione (β-TGIC)	59653-74-6
4,4'-bis(dimethylamino)-4''-(methylamino)trityl alcohol	561-41-1
4,4'-bis(dimethylamino)benzophenone (Michler's ketone)	90-94-8
[4-[4,4'-bis(dimethylamino) benzhydrylidene]cyclohexa-2,5-dien-1-ylidene]dimethylammonium chloride (C.I. Basic Violet 3)	548-62-9
[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
Diboron trioxide	1303-86-2
Formamide	75-12-7
Lead(II) bis(methanesulfonate)	17570-76-2
N,N,N',N'-tetramethyl-4,4'-methylenedianiline (Michler's base)	101-61-1
α,α-Bis[4-(dimethylamino)phenyl]-4 (phenylamino)naphthalene-1-methanol (C.I. Solvent Blue 4)	6786-83-0
1,2-dichloroethane	107-06-2
2,2'-dichloro-4,4'-methylenedianiline	101-14-4
2-Methoxyaniline, o-Anisidine	90-04-0
4-(1,1,3,3-tetramethylbutyl)phenol	140-66-9

Aluminosilicate Refractory Ceramic Fibres	-
Arsenic acid	7778-39-4
Bis(2-methoxyethyl) ether	111-96-6
Bis(2-methoxyethyl) phthalate	117-82-8
Calcium arsenate	7778-44-1
Dichromium tris(chromate)	24613-89-6
Formaldehyde, oligomeric reaction products with aniline	25214-70-4
Lead diazide, Lead azide	13424-46-9
Lead dipicrate	6477-64-1
Lead styphnate	15245-44-0
N,N-dimethylacetamide	127-19-5
Pentazinc chromate octahydroxide	49663-84-5
Phenolphthalein	77-09-8
Potassium hydroxyoctaoxidizincatedichromate	11103-86-9
Trilead diarsenate	3687-31-8
Zirconia Aluminosilicate Refractory Ceramic Fibres	-
1,2,3-trichloropropane	96-18-4
1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich	71888-89-6
1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters	68515-42-4
1-Methyl-2-pyrrolidone (NMP)	872-50-4
2-ethoxyethyl acetate	111-15-9
Hydrazine	302-01-2, 7803-57-8
Strontium chromate	7789-06-2
2-ethoxyethanol	110-80-5
2-methoxyethanol	109-86-4
Acids generated from chromium trioxide and their oligomers	-
Chromic acid	13530-68-2, 7738-94-5
Oligomers of chromic acid and dichromic acid	-
Dichromic acid	13530-68-2, 7738-94-5
Chromium trioxide	1333-82-0
Cobalt(II) carbonate	513-79-1
Cobalt(II) diacetate	71-48-7
Cobalt(II) dinitrate	10141-05-6
Cobalt(II) sulphate	10124-43-3
Ammonium dichromate	7789-09-5
Boric acid	-
Boric acid, crude natural	11113-50-1
Boric acid	10043-35-3
Disodium tetraborate, anhydrous	12179-04-3, 1303-96-4, 1330-43-4
Potassium chromate	7789-00-6
Potassium dichromate	7778-50-9
Sodium chromate	7775-11-3
Tetraboron disodium heptaoxide, hydrate	12267-73-1
Trichloroethylene	79-01-6
Acrylamide	79-06-1
2,4-dinitrotoluene	121-14-2
Anthracene oil	90640-80-5
Anthracene oil, anthracene paste	90640-81-6

Anthracene oil, anthracene paste, anthracene fraction	91995-15-2
Anthracene oil, anthracene paste, distn. lights	91995-17-4
Anthracene oil, anthracene-low	90640-82-7
Diisobutyl phthalate	84-69-5
Lead chromate	7758-97-6
Lead chromate molybdate sulphate red (C.I. Pigment Red 104)	12656-85-8
Lead sulfochromate yellow (C.I. Pigment Yellow 34)	1344-37-2
Pitch, coal tar, high-temp.	65996-93-2
Tris(2-chloroethyl) phosphate	115-96-8
4,4'- Diaminodiphenylmethane (MDA)	101-77-9
5-tert-butyl-2,4,6-trinitro-m-xylene (Musk xylene)	81-15-2
Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins)	85535-84-8
Anthracene	120-12-7
Benzyl butyl phthalate (BBP)	85-68-7
Bis (2-ethylhexyl)phthalate (DEHP)	117-81-7
Bis(tributyltin) oxide (TBTO)	56-35-9
Cobalt dichloride	7646-79-9
Diarsenic pentaoxide	1303-28-2
Diarsenic trioxide	1327-53-3
Dibutyl phthalate (DBP)	84-74-2
Hexabromocyclododecane (HBCDD)	-
1,2,5,6,9,10-hexabromocyclododecane	3194-55-6
gamma-hexabromocyclododecane	134237-52-8
Hexabromocyclododecane	25637-99-4
alpha-hexabromocyclododecane	134237-50-6
beta-hexabromocyclododecane	134237-51-7
Lead hydrogen arsenate	7784-40-9
Sodium dichromate	10588-01-9, 7789-12-0
Triethyl arsenate	15606-95-8

### **Polycarbonate Aromatic Hydrocarbons**

- acenaphthene
- acenaphthylene
- anthracene
- benz[a]anthracene
- benzo[a]pyrene
- benzo[e]pyrene
- benzo[b]fluoranthene
- benzo[g,h,i]perylene
- benzo[j]fluoranthene
- benzo[k]fluoranthene
- chrysene
- dibenz[a,h]anthracene
- fluoranthene
- fluorene
- indeno[1,2,3-c,d] pyrene
- phenanthrene
- pyrene



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