



## Certificate of Compliance Semiconductor Products

**Date: 8/8/2008**


### **Pb-Free Semiconductors (RoHS 6 of 6)**

Microchip Technology Incorporated (Microchip) certifies, to the best of its knowledge and understanding, "Pb-Free" i.e., Matte Tin and Nickel/Palladium/Gold (Ni/Pd/Au) pin finish semiconductor products do not contain the substances listed in the table below in concentrations exceeding the Maximum Control Value (MCV)<sup>1</sup> unless otherwise specified.

EU RoHS / China RoHS / Korea RoHS	Maximum Control Value
<b>Substances of concern:</b>	<b>Maximum Control Value</b>
Lead	0.1% by weight (1000 ppm) <sup>2</sup>
Mercury	0.1% by weight (1000 ppm)
Cadmium	0.01% by weight (100 ppm)
Hexavalent Chromium	0.1% by weight (1000 ppm)
Polybrominated Biphenyls (PBB)	0.1% by weight (1000 ppm)
Polybrominated diphenylethers (PBDEs) including Deca-BDE or pentaBDE or octaBDE	0.1% by weight (1000 ppm)

These "Pb-Free" semiconductor products containing the substances listed in the table above, in concentrations below the MCV, are understood to be in compliance with EU RoHS, China RoHS, and Korea RoHS. Microchip's Pb-Free semiconductor products are "RoHS 6 of 6" compliant when ordered with a pin finish of Matte Tin or Ni/Pd/Au.



The China Environmental Friendly Use Period (EFUP) logo 1  appears on shipping boxes when Pb-Free plated products are shipped to the People's Republic of China.

### **SnPb Plating Semiconductor Products (RoHS 5 of 6)**

Microchip certifies, to the best of its knowledge and understanding, its SnPb solder-plated semiconductor products comply with content limitations in European Union Directive 2002/95/EC (EU RoHS), EXCEPT for the presence of lead (Pb) in the plating of the external pins. As such, these semiconductor products would comply with the EU RoHS Directive only if used in applications exempted from compliance by the Annex to the EU RoHS Directive. In trade parlance, Microchip's SnPb pin finish semiconductor products are "RoHS-5 of 6" compliant.

Customers who need Pb (lead) semiconductor products must specify the SnPb solder-plating in their order.

<sup>1</sup> Maximum Control Value (MCV) is defined at the homogeneous material level. A homogeneous material is defined as either a raw material or a material applied during the construction of the product.

<sup>2</sup> MCV does not apply to applications for which exemptions have been granted under EU RoHS Directive.



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The Environmental Friendly Use Period (EFUP) logo 2 and the associated declaration chart below appear on shipping boxes when SnPb solder-plated products are shipped to the People's Republic of China.

表二 有毒有害物质或元素名称及其含量标识样式 (Toxic Species or Toxic Element Name and Content Symbol)						
部件名称 (Name of Part)	有毒有害物质或元素 (Toxic Species or Element)					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
	X	0	0	0	0	0
0: 表示该有毒有害物质在该部件所有组成材料中的含量均在EUTR 2006/12/19规定的限量要求以下 X: 表示该有毒有害物质至少在该部件的某一组成材料中的含量超过EUTR 2006/12/19规定的限量要求 本产品仅于外部电子引脚处含有锡铅层 X = Pb only in SnPb solder plating on exterior electrical contact pins. 按照Microchip Technology Incorporated的产品技术规范使用该产品 Use only in accordance with Microchip Technology Incorporated's Technical Data Sheet for this product family. Microchip鼓励并建议客户将本产品废弃所在地的相关法令，进行安全风险的回收及再利用。切勿随意与一般垃圾混弃 Microchip Technology Incorporated encourages customers to recycle this product for precious metal value in accordance with local laws. Do not throw in trash.						

## Semiconductor Product Packing/Shipping Materials

Microchip certifies, to the best of its knowledge and understanding, its semiconductor product packing/shipment materials are compliant with EU 94/62/EC Packaging Waste Directive. This Directive and the Source Reduction Council of the Coalition of Northeastern Governors (CONEG), when combined together, limit the maximum sum total concentration of cadmium, hexavalent chromium, lead and mercury in packing materials to 100 ppm. Packing materials are marked in accordance with EU 94/62/EC Packaging: Marking and Material Identification System and GB 18455: 2001, National Standard of the People's Republic of China.

The protective tubes in which the specific product is shipped, the window envelope used to hold the packing slip on the outer box, and some adhesive labels are made from polyvinyl chloride plastic (CAS # 9002-86-2).

## Joint Industry Guide (JIG); Electronic Industries Alliance (EIA); Japan Green Procurement Survey Standardization Initiative (JGPSSI)

Substances from Annex A and B of the EIA / EICTA / JGPSSI Material Composition Declaration Guide are listed in the table below. They are not intentionally added to Microchip Semiconductor products in quantities above the reporting threshold level for these materials.



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<b>Joint Industry Guide (JIG)</b>	
<b>Electronic Industries Alliance (EIA)</b>	
<b>Japan Green Procurement Survey Standardization Initiative (JGPSSI)</b>	
<b>Substances of Concern<sup>3</sup>:</b>	
Arsenic and Arsenic Compounds	Not Intentionally Added  OR  Below all Reporting Thresholds
Asbestos	
Azo-Based Colorants and Dyes (capable of forming by reductive cleavage one or more of 22 carcinogenic aromatic amines)	
Beryllium and Beryllium Compounds	
Bismuth and Bismuth Compounds	
Cadmium/Cadmium compounds	
Certain Shortchain Chlorinated Paraffins (C10 – C13)	
Certain Tributyl Tin (TBT) and Triphenyl Tin (TPT)	
Chromium Compounds	
Class I and Class II Ozone Depleting Materials	
Ethylene-Series Glycol Ethers	
Ethylene-Series Glycol Ethers	
Halogenated Diphenyl Methanes	
Hexavalent Chromium/Hexavalent	
Mercury/Mercury Compounds	
n-Propyl Bromide (1-bromopropane)	
Perfluorooctanesulfone (PFOS)	
Phthalates, specific: BBP, DBP, DEHP, DINP, DIOP, and DNOP	
Polyaromatic Hydrocarbons	
Polybrominated Biphenyls (PBBs)	
Polybrominated Diphenylethers (PBDEs)	
Polychlorinated Biphenyls (PCBs) and Terphenyls (PCTs)	
Polychlorinated Naphthalenes (more than 3 chlorine atoms)	
Radioactive Substances	
Red Phosphorous:	
Inorganic particulate (all applications)	
Selenium and Selenium Compounds	
Short Chain Chlorinated Paraffins [alkanes C10 – C13]	
Tributyl Tin Oxide (TBTO) Certain Tributyl Tin(TBT) & Triphenyl Tin(TPT)	

<sup>3</sup> Many of Microchip semiconductor products contain trace (immeasurable) amounts of beryllium and beryllium compounds (gold, wire bond), arsenic (dopant – internal portion of the die), and lead (Pb) and lead (Pb) compounds (lead frame and pin finish).



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### **Level B Substances of Concern:**

Microchip's semiconductor products may contain antimony trioxide ( $\text{Sb}_2\text{O}_3$  – CAS# 1309-64-4), and one of two brominated (Br/B08) phenolic/epoxy polymers: CAS# 68541-56-0 or CAS# 40039-93-8 (used in the flame retardant system of the molding compounds). Please consult the specific Material Content Declaration (MCD) posted on Microchip's web pages for the estimated material content value over 1000 ppm.

Microchip is evaluating and qualifying new mold compounds with reduced antimony trioxide ( $\text{Sb}_2\text{O}_3$ ) that would comply to IEC 61249-2-21:2003.

Microchip semiconductor products may contain nickel (Ni). Nickel is one of the three plating materials used on the pins of the semiconductor in the Nickel / Palladium / Gold pin finish. The plating order is determined by the physical (adhesiveness) properties between each substance; Copper to Nickel to Palladium to Gold. Microchip semiconductor products are manufactured so that Gold is the outer most substance followed by Palladium and both cover Nickel, which is the innermost substance. Also, nickel is sometimes part of copper alloys and Alloy 42 lead frames, and an impurity of the Matte Tin plating process. As manufactured, and under normal use conditions, Nickel in Microchip's semiconductor products is not intended to come into direct prolonged contact with the skin nor likely to result in prolonged skin exposure. Please consult the specific Material Content Declaration (MCD) posted on Microchip's web pages for an estimated material content value.

### **Microchip Technology Incorporated's General Statement of Warranty:**

The exclusive, limited product warranties Microchip Technology Incorporated and each of its selling subsidiaries offer are contained in Microchip's standard terms and conditions of sale, which are provided to the customer in Microchip's quotations, sales order confirmations, acknowledgements, and invoices.

Microchip accepts no duty to notify users of Material Content Declarations of updates or changes and shall not be liable for any damages, direct or indirect, consequential or otherwise, suffered by users or third parties as a result of the users' reliance on the information in the Material Content Declarations (MCD) or independent third party test reports (SGS) or of this Certificate of Compliance for Semiconductor Products.

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