



## Material Declaration Certificate for Semiconductor Products

TI certifies that the material content information provided by TI as of the date of disclosure is representative and accurate. TI semiconductor products designated by TI as "Pb-Free" or "Green" (defined below) do not exceed Joint Industry Guide (JIG) Level-A Substance thresholds and are compliant with the threshold requirements of the European Union's Restriction on Use of Hazardous Substances ("RoHS") Directive, 2002/95/EC and the China Management Methods for controlling Pollution by Electronic Information Products ("China RoHS"). EU RoHS exempt applications such as flip-chip solder bumps (exemption 15) are designated as "RoHS exempt."

JIG Level-A Banned Substances	Threshold, Homogeneous Level (1)
Asbestos	Not intentionally added
Azo colorants	Not intentionally added
RoHS - Cadmium/Cadmium Compounds	75 ppm, Not intentionally added (RoHS threshold = 100ppm)
RoHS - Hexavalent Chromium/Hex.Chromium.Compounds	1000 ppm, Not intentionally added
RoHS - Lead/Lead Compounds	1000 ppm, Not intentionally added
RoHS - Mercury/Mercury Compounds	1000 ppm, Not intentionally added
Ozone Depleting Substances	Class I : Not intentionally added Class II : 1000ppm
RoHS - Polybrominated Biphenyls (PBBs)	1000 ppm, Not intentionally added
RoHS - Polybrominated Diphenyl Ethers (PBDEs)	1000 ppm, Not intentionally added
Polychlorinated Biphenyls (PCBs)	Not intentionally added
Polychlorinated Naphthalenes (>3 Chlorine atoms)	Not intentionally added
Radioactive Substances	Not intentionally added
Shortchain Chlorinated Paraffins	Not intentionally added
Tributyl Tin (TBT) and Triphenyl Tin (TPT)	Not intentionally added
Tributyl Tin Oxide (TBTO)	Not intentionally added

(1) Threshold does not apply to applications covered by a RoHS substance exemption.

For TI semiconductor products NOT designated as "Pb-Free" or "Green", these products meet the RoHS and China RoHS thresholds for all substances except Lead (Pb), which may be found in the leadframe plating or solder balls, or in RoHS exempt applications. This situation is known as "RoHS-5" or "5 of 6" compliant. For such products containing lead, the China RoHS EFUP is 50 years ([www.ti.com/leadfree](http://www.ti.com/leadfree)).

TI's packing materials (boxes, trays, etc) comply with EU Directive 2004/12/EC for Packaging and Packaging Waste Material. Content details for TI's packing materials are available at [www.ti.com/ecoinfo](http://www.ti.com/ecoinfo).

TI bases its material content knowledge on information provided by third parties and has taken and continues to take commercially reasonable steps to provide representative and accurate information but may not have conducted destructive testing or chemical analysis on incoming materials and chemicals. TI and TI suppliers consider certain limited information to be proprietary, and thus CAS numbers and other limited information may not be available for release. TI's standard warranty and limitation of liability provisions of TI's Standard Terms and Conditions (available at <http://www.ti.com/sc/docs/stdterms.htm>) apply to the representations herein unless otherwise provided by a written contract or other agreement signed by the parties.

Signature:

*David W. Reed*

Name/Title: David Reed Vice President, Worldwide Quality

Date: Jan 29, 2009

**Pb-Free:** TI defines "Pb-Free" or "RoHS Compliant" to mean semiconductor products that are compliant with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI "Pb-Free" and "RoHS Compliant" products are suitable for use in specified lead-free processes.

**RoHS Exempt:** TI defines "RoHS Exempt" to mean products that contain lead but are compliant with RoHS pursuant to an exemption.

**Green:** TI defines "Green" to mean Pb-Free/RoHS Compliant and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous mold compound material). To satisfy customer requests, efforts through early 2Q09 are being made to verify that all non-metal homogeneous materials contained in TI Green semiconductor products meet the proposed industry standard threshold levels of <=900ppm each of brominated flame retardants (BFRs) and chlorinated flame retardants (CFRs).