



## Material Declaration Data Sheet

FC-PGA4  
Flip Chip Pin Grid Array4  
PinCount: All

Pb Free Product: Yes-Second Level Interconnect

Product Weight (grams): 4.80  
Manufacturer: Intel Corporation  
Revision Date: 11/15/2006

### Restrictions on Hazardous Substances (RoHS) Compliance

#### RoHS Definition

- \* Quantity limit of 0.1% by mass (1000 PPM) of homogeneous material for: Lead (Pb), Mercury, Hexavalent Chromium, Polybrominated Biphenyls (PBB), Polybrominated Diphenyl Ethers (PBDE)
- \* Quantity limit of 0.01% by mass (100 PPM) of homogeneous material for: Cadmium

Intel understands RoHS requires: Lead and other materials banned in RoHS Directive are either (1) below all applicable substance thresholds as defined by the EU or (2) an approved exemption applies. (Note: RoHS implementation details are not fully defined and may change.)

#### RoHS Declaration

\* The part does not contain RoHS restricted substances per the definition above except lead, which is used under the following exemption: Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit Flip Chip packages.

Where the part is declared to meet RoHS requirements, it has been verified to be in conformance with 2002/95/EC as we currently understand the requirements. Intel has systems in place to verify conformance with all applicable environmental requirements and to the best of our knowledge the information is true and correct.

### LEVEL A MATERIALS AND SUBSTANCES

Materials from Annex A of the EIA/EICTA/JGPSSI Material Composition Declaration Guide and listed in the table below are not contained in this product in quantities above the threshold level for these materials as stated in the EIA/EICTA/JGPSSI Material Composition Declaration Guide, nor intentionally added to this product.

Asbestos	Mercury / Mercury Compounds	Polychlorinated Naphthalenes
Azo colorants	Ozone Depleting Substances	Radioactive Substances
Cadmium / Cadmium Compounds	Polybrominated Biphenyls (PBBs)	Shortchain Chlorinated Paraffins
Hexavalent Chromium	Polybrominated Diphenylethers (PBDEs)	Tributyl Tin (TBT) and Triphenyl Tin (TPT)
Hexavalent Chromium Compounds	Polychlorinated Biphenyls (PCBs)	Tributyl Tin Oxide (TBTO)

If this product contains lead (Pb) above the threshold limit of 1000 ppm, the concentration, location and use for this product are listed below.

	Description of Use	Location in Product	Material Concentration (ppm)
Lead/Lead Compounds	Electrical Interconnect, C4 Die Bump / substrate solder	FLI	6530

### LEVEL B MATERIALS AND SUBSTANCES

Antimony/Antimony Compounds	Bismuth/Bismuth Compounds	Phthalates
Arsenic/Arsenic Compounds	Brominated Flame Retardants	Selenium/Selenium Compounds
Beryllium/Beryllium Compounds	Nickel/Nickel Compounds	Vinyl Chloride Polymer (PVC)

If this product contains materials listed in Annex B of the EIA/EICTA/JGPSSI Material Composition Declaration Guide above the threshold level of 1000 ppm, those materials/substances are listed below.

	Description of Use	Location in Product	Material Concentration (ppm)
Antimony	Electrical interconnect	LSC/ Pin Solder	1800
Brominated Flame Retardant	Flame retardant	Substrate	17600
Nickel	Plating	Substrate / SLI	17100

### COMMENTS

1. The information on materials and substances listed above is based on the following package: FC-PGA4 All, Product Code Name FC-PGA4. Material content listed at the product level are based on analytical testing intended to validate Intel's RoHS Compliance Systems. Material content listed for individual components are engineering model approximations based on supplier data and/or analytical testing. Results may vary due to differences in production and /or sensitivities of the methods and tools used for analytical testing and modeling. Intel's certification of RoHS compliance at the homogenous material level is based on Supplier Declarations of Conformance.

2. This data sheet is based on the product specified and other packages are assumed to be similar.

3. Data in parts per million (ppm) can be used to estimate content for other packages assumed to be similar.

4. Material mass can be estimated by multiplying concentration (ppm) by product weight.

5. The remainder of this package consists of non-reportable metals (e.g., tin, iron, etc), epoxy resin and other non-metal materials.

6. Material concentrations are the maximum expected concentration of the substances in the product and may not represent the actual concentration.

INTEL ACCEPTS NO DUTY TO UPDATE THIS MDDS OR TO NOTIFY USERS OF THIS MDDS OF UPDATES OR CHANGES TO THIS MDDS. INTEL 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 INFORMATION IN THIS MDDS THAT HAS BEEN UPDATED OR CHANGED.



## Material Declaration Data Sheet

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Pin Count	Prod Weight
478	4.8

### Marketing Designators\*\*: LF, RH

\* Product Weight listed at the top of the MDDS is the maximum weight for this package technology for all pin count sizes. The table above shows actual measured weights for various pin counts within this package technology.

\*\* Intel frequently updates its marketing designators, and therefore this list may not represent all the marketing designators associated with this MDDS.



## Material Declaration Data Sheet

### Management Methods on Control of Pollution From Electronic Information Products (China RoHS declaration)

#### 产品中有毒有害物质的名称及含量

#### Hazardous Substances Table

部件名称 (Parts)	有毒有害物质或元素 (Hazardous Substance)					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr6+)	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
半导体元件 Semiconductor component	X	○	○	○	○	○

○：表示该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T 11363-2006 标准规定的限量要求以下。

○：Indicates that this hazardous substance contained in all homogeneous materials of this part is below the limit requirement in SJ/T 11363-2006.

×：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T 11363-2006 标准规定的限量要求。

×：Indicates that this hazardous substance contained in at least one of the homogeneous materials of this part is above the limit requirement in SJ/T 11363-2006.

对销售之日的所售产品，本表显示我公司供应链的电子信息产品可能包含这些物质。注意：在所售产品中可能会也可能不会含有所有所列的部件。

This table shows where these substances may be found in the supply chain of our electronic information products, as of the date of sale of the enclosed product. Note that some of the component types listed above may or may not be a part of the enclosed product.

除非另外特别的标注，此标志为针对所涉及产品的环保使用期限标志。某些可更换的零部件可能会有一个不同的环保使用期限（例如，电池单元模块）。

此环保使用期限只适用于产品在产品手册中所规定的条件下工作。



The Environment-Friendly Use Period (EFUP) for all enclosed products and their parts are per the symbol shown here, unless otherwise marked. Certain field-replaceable parts may have a different EFUP (for example, battery modules) number. The Environment-Friendly Use Period is valid only when the product is operated under the conditions defined in the product manual.