
Finisar Implementation of RoHS Compliant Transceivers

On January 23, 2003 the European Parliament issued the following directive to support the objectives of their environmental policy;

2002/95/EC deals with the Restriction on the use of certain Hazardous Substances (RoHS) in electrical and electronic equipment. Commonly referred to as the RoHS directive, it becomes effective July 1, 2006.

Finisar has developed, and continues to develop, products that comply with the European Union's RoHS legislation. The law requires that new electrical and electronic equipment put on the market effective July 1, 2006 do not contain certain specified substances. This directive can be found using the following link;

http://europa.eu.int/eur-lex/pri/en/oj/dat/2003/l_037/l_03720030213en00190023.pdf

The six restricted hazardous substances are:

- Lead (Pb)
- Mercury (Hg)
- Cadmium (Cd)
- Hexavalent Chromium (Cr6)
- Polybrominated biphenyls (PBB)
- Polybrominated diphenyl ethers (PBDE)

For concentration limits of the restricted substances in components Finisar is using the levels recommended by the Technical Adaptation Committee of the European Commission. The maximum concentration limits for the restricted hazardous substances are:

- 0.1% by weight in homogeneous materials for Pb, Hg, Cr⁶, PBB, and PBDE.
- 0.01% by weight in homogeneous materials for Cd.

Homogeneous material is defined as material that cannot be mechanically broken down into different constituents.

The Annex of Directive 2002/95/EC lists several exemptions to the restriction of hazardous substances. The only exemption that is being invoked for Finisar Transceivers is item 5 of the annex which exempts "Pb in the glass of cathode ray tubes, electronic components and fluorescent tubes." Finisar transceivers use glass, which may contain Pb, for components such as lenses, windows, isolators, and other electronic components.

Other Pb-Free Product Application Issues

1. Since SFPs and GBICs are pluggable modules there is no issue with attachment of these transceivers to a customer's host board.
2. For SFF modules, Finisar has chosen to use gold flash over Ni for all the pins that attach to the host board. The pins of the transceivers are capable of withstanding 260°C for 10 seconds, which is the typical condition required for wave soldering of the pins.
3. The gold plated pins on lead free transceivers are backwards compatible with lead-based solder attachment processes.
4. The industry has had a concern over the use of bright tin on copper leads, because under certain conditions tin whiskers are known to have developed causing bridging and shorting against adjacent leads. For components that require tin on copper Finisar transceivers use matte tin over Ni plate to overcome this problem.