What is the RoHs Directive?

The RoHS Directive, EU Directive 2002/95/EG, which will go into affect on July 1, 2006 in Europe, mandates that electrical and electronic products (EEE) put in the market within the European Union (EU) shall contain restrictive levels of the following substances:

1. Lead (Pb)
2. Cadmium (Cd)
3. Mercury (Hg)
4. Hexavalent Chromium (Cr6+)
5. Polybrominated Biphenyls (PBB)
6. Polybrominated Diphenyl Ethers (PBDE)

This Directive, which aims to protect human health and the environment and mirrors the Directive on Waste Electrical and Electronic Equipment (WEEE), applies to electrical and electronic equipment that is dependent on electric or electromagnetic fields in order to work properly. It also applies to some equipment used for the generation, transfer, and measurement of such currents and fields designed for use with a voltage rating not exceeding 1,000 volts for alternating current (AC) and 1,500 volts for direct current (DC).

The RoHS Directive does not call for a total elimination of these substances. It mandates that the homogeneous materials within complaint products, or materials that cannot be mechanically disjointed into different materials, contain the levels of the six restricted substances below the maximum concentration levels.

The definition of homogeneous materials has caused some confusion in the past, but has been clarified in draft guidelines published by the European Commission. Homogeneous material is defined as "a material that cannot be mechanically disjoined in to different materials", such as a plastic (ex. the PVC insulation on insulated copper wire). Components such as capacitors, transistors and semiconductor packages are not "materials" but will contain several different materials. For example, a semiconductor package will contain at least six homogeneous materials as shown below.