



SOUTHWEST MICROWAVE, INC.
Microwave Products Division
9055 South McKemy Street
Tempe, Arizona 85284-2946
Telephone (480) 783-0201
Fax (480) 783-0360
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**Lead-Free Soldering
Assembly Processing Requirements
Stemming From EC Directives
On “Waste Electrical and Electronic Equipment” (WEEE)
And On The
”Restriction of the Use of Certain Hazardous Substances”
in Electrical and Electronic Equipment (RoHS)**

The European Community’s Directives [2002/95/EC](#) on the restriction of the use of certain hazardous substances in electrical and electronic equipment and [2002/96/EC](#) on waste electrical and electronic equipment are designed to tackle the fast increasing waste stream of electrical and electronic equipment. The directives complement the European Union measures on landfill and incineration of waste. Increased recycling of electrical and electronic equipment will be required to limit the total quantity of waste going to final disposal. Producers will be responsible for taking back and recycling electrical and electronic equipment. This provides incentives to design electrical and electronic equipment in environmentally efficient manners, which will take waste management aspects fully into account. Consumers will be able to return their equipment free of charge. Even though the amount of lead used in electrical/electronic assemblies may be considered extremely low (as percentage of total use), due to the marketplace size and unanimity, the Directives are expected to prompt worldwide changes in design and processing.

In order to prevent the generation of hazardous waste, Directive 2002/95/EC requires that various heavy metals (lead, mercury, cadmium, and hexavalent chromium) and brominated flame retardants (polybrominated biphenyls [PBB] or polybrominated diphenyl ethers [PBDE]) not be used in new electrical and electronic equipment sold into the EC starting 1 July 2006.

This means that if components such as connectors are incorporated into higher-level products, the OEM/producer is considered “responsible” and cannot use these connectors for products sold starting 1 July 2006. However, given the lead-times needed for prototyping, production planning, plus UL/CSA/EU-CE testing and approvals, many manufacturers already have projects underway to change both assembly processing and the components themselves.

While RoHS is a European Union (EU) directive, manufacturers of EEE that are outside Europe must also abide by this legislation if the equipment they produce is ultimately imported into a EU member state. Other places such as California and South Korea are expected to follow suit soon. A considerable portion of the electronics produced in Japan was in conformance by early 2004.

The major impact for Southwest Microwave is that lead-free “soldering” processes currently involve solder materials requiring higher temperatures. Customer inputs and industry-literature indicate that process requirements may briefly exceed 235 °C. Southwest Microwave has tested its connectors to 245 °C without any evidence of degradation. There is concern that other, lower temperature connectors that use epoxy for retention may not maintain structural integrity at these higher temperatures although adequate recovery should be expected if the connectors were heated while in non-stress conditions.

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Key websites include:

European Union site on ROHS

http://europa.eu.int/comm/environment/waste/weee_index.htm

UK Inputs on Interpretation and Implementation of the EU Directives

<http://search1.dti.gov.uk/cgi-bin/cqcgi/@dti.env>

UK Site for Dept. of Trade and Industry (DTI) for

<http://www.dti.gov.uk/sustainability/weee/index.htm>

IPC ("Association Connecting Electronics Industries") Website (w/ Great downloads!)

<http://www.leadfree.org/>