

# Test and Measurement Coalition

## RoHS Scope Review of Category 9 Products

### Lead Abstract Summary

#### 1. Use of Lead in test and measurement equipment

##### 1.1 General

There are several uses of lead and its compounds in electrical and optical equipment because of its special properties including as a flux in solder, and in radiation shielding due to its high density compared to other metals:

- In tin/lead solder, component lead-frame finishes and ball grid arrays to achieve viable electrical connections on and between assemblies;
- In products generating high levels of X-ray radiation as shielding for protection of operators of board testers and patient healthcare products;
- In alloys of steel, aluminium and copper such as brass;
- In pigments of paints, and stabilizer in plastics used in PVC cable jackets;
- In glass in cathode ray tubes, electronic components
- In re-chargeable batteries; and
- In sensors

The actual amount in use by five major test and measurement companies has been identified in our sector description paper. **Our primary concerns with substitution are associated with viability of potential alternatives in solders and in radiation shields. Substitute issues and exemption requests for these applications of lead are detailed in separate annexes.**

Information on other uses of lead in the test and measurement sector is described below-

#### **Lead in alloys of steel, aluminium and copper such as brass:**

Several uses of lead in alloys have been found such as brass material in RF connectors but all are below the limits set out in the RoHS Annex. One member company supplies a machined sub-part containing brass with 3.1% lead to a major connector manufacturer.

**Lead in Paints:**

Lead compounds in paints gives pigments from yellow to red. Some member companies have restricted lead to meet EU restrictions already imposed on paint manufacturers. There appears to be no issue with use of substitutes to achieve equivalent pigmentations for our member companies.

**Lead in stabilizer in plastics used in PVC cable jackets:**

Without stabilization PVC degrades in the presence of oxygen - details at <http://www.specialchem4polymers.com/tc/Tin-Stabilizers/index.aspx?id=2821>

Three main families of stabilizers available on the market are based on lead, tin and zinc. Zinc based stabilizers favoured in Europe, are 2% higher in cost and similar performance to lead in PVC cable jackets. Tin based stabilizers are favoured in the US. Trials have been conducted with organic based stabilizers but supply from processors is limited.

As our use of cables is not substantially different from other sectors, we are confident that our suppliers will be offering Pb-free stabilized cable jackets by 2010. Current lead stabilizers contain approximately 300ppm of lead in PVC jacket material.

**Lead in glass in cathode ray tubes and electronic components:**

There is small usage of components with leaded glass from CRTs to some glass diodes. These components are currently exempt in the RoHS Annex so we do not anticipate any issues in continued use.

**Lead in batteries:**

Batteries are excluded from the RoHS Directive. For most re-chargeable requirements nickel metal hydride types are used but some older products are still available with lead-acid batteries in power back-up applications.

**Lead in sensors:**

Coalition members do not manufacture sensors. We have no information on extent of lead used in sensors.