

RoHS Wake Up Call For Plastics Industry

by xxxxxx

The RoHS Directive, which comes into force on 1st July 2006, will restrict the use of 6 hazardous materials in the manufacture of various types of electronic and electrical devices. From this date on, any new product "put onto the market" in Europe - that is imported into EU member states or manufactured in EU member states - and available for sale, must consequently comply with the legislation. If it does not, manufacturers run the risk of being fined or even worse. As such the importance of compliance testing cannot be underestimated.

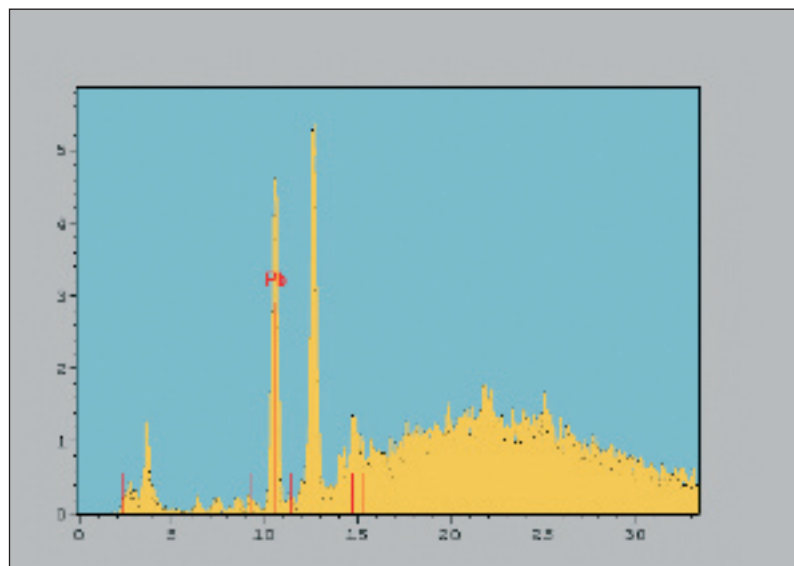


Figure 1 - The result of a test on PVC found to contain Lead

The forthcoming RoHS Directive has significant implications for the plastics industry. It is important that all parts of the industry supply chain understand their responsibilities and the impact this Directive may have on them. Tin Technology believes that many companies are still unaware of the full implications of the Directive and should be taking the necessary steps to meet the deadline date.

RoHS (Restriction of use of certain Hazardous Substances in Electrical and Electronic Equipment) is one of a series of EU environmental Directives and is closely linked with the WEEE (Waste Electrical and Electronic Equipment) Directive. Electrical and electronic equipment must not contain more than the permitted concentrations of the following substances: Lead (Pb), Mercury (Hg), Cadmium (Cd), Hexavalent Chromium (Cr(VI)), Polybrominated Biphenyls (PBB) and Polybrominated Diphenyl Ethers (PBDE).

Non-compliance – the risks

Suppliers of polymeric materials to the electrical and electronic manufacturing industry will be asked to show that their product conforms to the RoHS Directive or be prepared to lose customers. Electronic and electrical equipment suppliers can be fined or have their product withdrawn from the European market if they do not comply with this legislation. Lead can be present as a stabiliser or lubricant. Cadmium is still used as a pigment, typically in reds or yellows but has been found in greens. Chromium and Mercury are rarely found. However brominated flame retardants (FR) can be found in many applications.

Whilst only PBB & PBDE are banned, screening equipment is unlikely to be capable of distinguishing between these two banned FRs and the permitted ones. This subtle point needs to be understood before more

expensive chemical analysis is undertaken. Failure to comply could lead to loss of business; so what will industry do? The favoured choice will be to ask the original polymer supplier for a compliance declaration. But there will be times when this is just not feasible, so on occasions testing will be the only route possible.

Compliance testing

There is no simple and cheap test for RoHS compliance. The most accurate techniques are destructive, costly and time consuming. Most companies however require a simple, cost-effective screening method that quickly identifies any "suspect" products. XRF (X-ray fluorescence) is a quick, easy and non-destructive screening technique that is now widely used to screen for RoHS compliance. The electrons in the shell of the elements present in a sample are disrupted by a low energy X-ray. Each element responds by

producing X-rays at a unique set of energies, allowing the concentration of each element to be measured. However because the method only looks at atoms on or close to the surface, it is only useful as a first step detection method. If part per million analysis to pick up trace quantities of restricted materials is required then ICP (Induction Coupled Plasma) should be used. It is unlikely that any laboratory will offer a compliance declaration certificate, but they will offer some form of report that indicates the presence or non-presence of the banned materials and this should become part

of the technical compliance file for that component.

The plastics and rubber supply chain is beginning to wake up to the need for RoHS compliance. The use of alternatives to Lead as a stabiliser in PVC, such as calcium/zinc stearates is growing. Cadmium is still used for colouring low temperature application plastics for which organic pigments are now widely available. Even continued use of brominated flame retardants such as PBB & PBDE is being questioned as halogen-free systems are introduced into the market from a number of suppliers.

