



Environmental Conservation Activities

Environmental Technology and Environmental Solutions

Environmental Education

To develop personnel who promote environmentally friendly manufacturing, we conduct environmental education.

●Lead-free Soldering School (Certification System)

To improve our technology to eliminate lead from our products, we are operating a Lead-free Soldering Skills Certification System. Lead-free solder has a high melting temperature and thus requires working fast. To prevent heat-sensitive parts from breaking, and to avoid bad soldering, the soldering technicians need skills of a higher level than before. This is where we evaluate lead-free soldering skills with regards to fifty items and certify technicians in five levels based on the total score. The operation of this company-internal system helps us to train specialists who are highly skilled in a specialized technology required for the elimination of lead in products. In fiscal 2004, we introduced the system at our production sites in China in a

move to expand it on a global scale. The school is run by Oki Human Network Co., Ltd., a group company in charge of human resource development.



Lead-free Soldering School



Environmental Consulting Business

The Oki group offers consulting services on environmental conservation activities. Oki Engineering Co., Ltd., a group company engaged in measurement and analysis, has strengthened its business in two fields: measuring and analyzing chemical substances contained in electronic parts, etc. and evaluating and analyzing parts, etc. suitable for the elimination of lead in products. The following shows some examples.

●Assistance in Green Procurement/Chemical Substance Surveys

To reduce chemical substances with a grave effect on the environment, or chemical substances subject to the RoHS directive*1) (lead, hexavalent chromium, cadmium, and others) contained in a product, it is necessary to research the chemical substances for each individual part making up that product. Also with respect to green procurement, chemical substance surveys for parts are indispensable. This is where we take advantage of our know-how in reliability assessment to propose possible

causes for chemical substances getting mixed into a product, or for processes that can eliminate a chemical substance. The proposals are based on assumptions from the quantity and the location of the chemical substance. In other words, we do not just research whether certain chemical substances exist – we also provide our customers with a way to solve their problems.

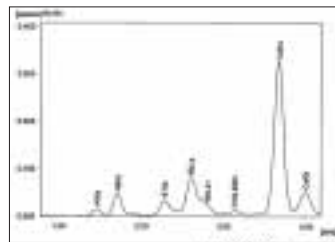
*1) RoHS Directive: A directive of the European Parliament and the European Commission on restricting the use of specific hazardous substances contained in electric and electronic equipment.

●Support in Material Analysis Employing both Simple Measurements and High-precision Analysis.....

For material analysis, we have accumulated know-how using high-precision analysis equipment. In fiscal 2004, we introduced energy-dispersive X-ray fluorescence spectrometers for simple measurements used in screenings. Together with the high-precision analysis equipment, we are now able to respond to a wide range of analysis requests from inside and outside of the company. For example, the two types of equipment can be used in a way that high-precision measurements are performed once every year, while the X-ray spectrometer helps to control the manufacturing line. Once correlations are obtained in precise analysis, it is possible to change to simple analysis. If the data are correlated, we can make an analysis that sufficiently meets the requirement level of the RoHS directive at low cost.

In the future, we will combine the simple measurement and the precision analysis techniques to provide reliable data.

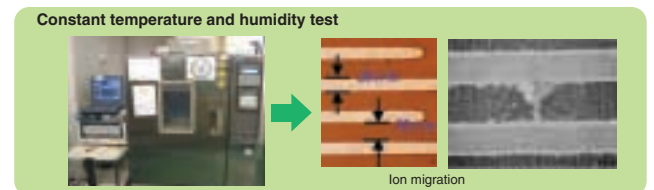
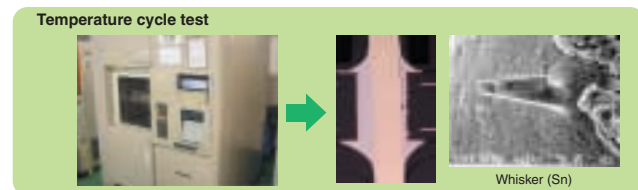
●Analysis Example of the X-Ray Fluorescence Spectrometer



●Assistance in Testing and Evaluating the Reliability of Lead-free Solder

We conduct reliability tests and evaluations for printed circuit boards using lead-free solder. Based on JIS and other standards, we perform mechanical strength tests, soldering suitability tests, environmental tests and heat resistance evaluations. We also create evaluation boards tailored to the requests of our customers and can provide comprehensive services consisting of tests, analysis and evaluation.

●Examples for Environmental Tests



●Assistance in Reducing the Measuring Time for the Concentration of Hexavalent Chromium

We developed a highly efficient analysis technology to measure the concentration of hexavalent chromium –a substance subject to the RoHS directive– using ultrasound washing equipment. The generally known method is to place the item into hot water to extract hexavalent chromium. The new method, however, uses ultrasound washing equipment, which improves the efficiency of the extraction. The new technology helps to reduce the types of chemicals used for the analysis and enables us to measure the concentration of hexavalent chromium in approximately one hour.