

Although chemical substances are indispensable for our daily life, they can have a grave effect on the environment if they are not used and controlled in an adequate way. Oki group is well aware of this effect and therefore striving to control and reduce chemical substances.

## 1 Chemical Substance Control

We designate chemical substances in products that have a grave effect on the environment and control them by classifying them into three types: prohibited substances, restricted substances and voluntarily controlled substances.

### Control criteria for chemical substances

Classification	Number of substances	Designation criteria
Prohibited substance	97	<ul style="list-style-type: none"> <li>• Substances prohibited for production by laws or regulations</li> <li>• Substances requiring production licenses by laws or regulations</li> <li>• Voluntarily prohibited substances</li> </ul>
Restricted substance	94	<ul style="list-style-type: none"> <li>• Substances for which a reduction (schedule for production prohibition, etc.) has already been decided by laws or regulations</li> <li>• Voluntarily restricted substances</li> </ul>
Voluntarily controlled substance	101	<ul style="list-style-type: none"> <li>• All substances not included in "prohibited substances" or "restricted substances"</li> </ul>

## 2 Reduction of Chemical Substances in Purchased Articles (Promotion of Green Procurement)

We are purchasing the majority of materials and parts that we use for our products. For these, we put an emphasis on green procurement, preferring materials/parts containing very small quantity of chemical substances that affect the environment.

### ■ Publication of Green Procurement Standard

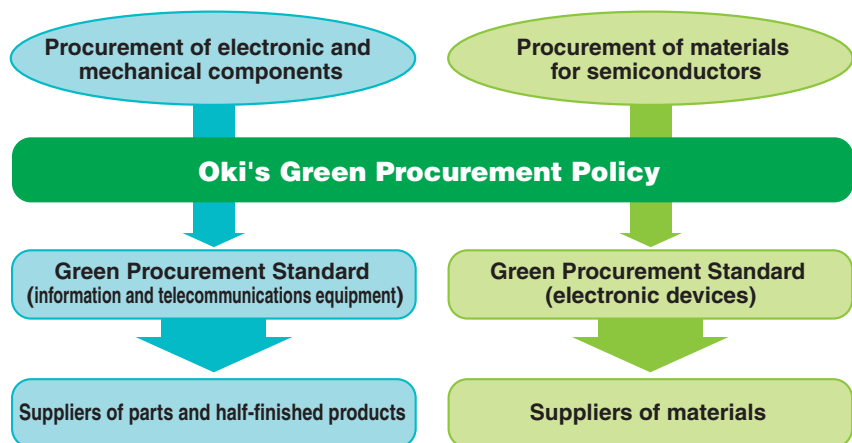
In April 2002, the Conference on the Standardization of Green Procurement of the Japan Electronics and Information Technology Industries Association (JEITA) created "Green Procurement Standardization Guidelines" and started trials of so-called "green procurement surveys" —surveys on chemical substances contained in products. Oki used this occasion to also formulate and publish a new Green Procurement Standard.

The new Green Procurement Standard contains two documents: one for electronic and mechanical components purchased by information and telecommunications equipment divisions, and the other for materials purchased by the semiconductor manufacturing divisions.

These documents are published on our website.



Green Procurement Standard



### ■ Reduction of chemical substances through operation of "hazardous substance management system"

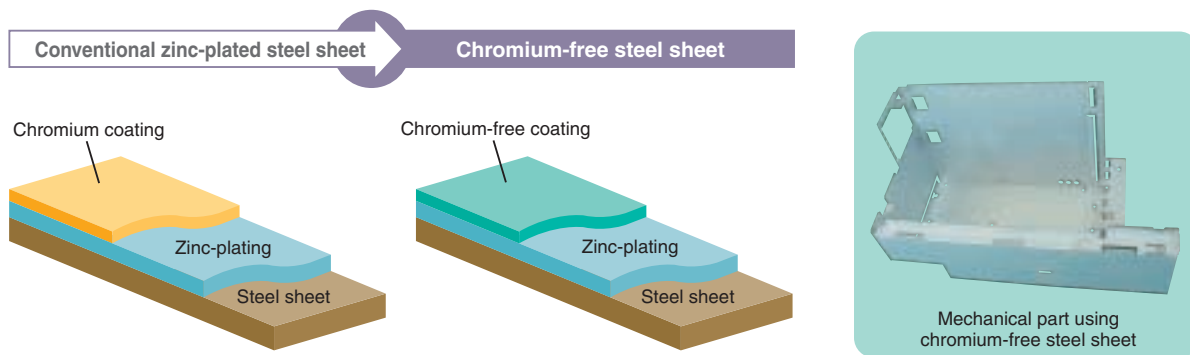
To reduce environment impacting chemical substances contained in parts and materials purchased, we operate a "hazardous substance management system" (internally known as "COSMOS"). The data collected in the green procurement surveys are stored in this system, and the designers in each site select eco-friendly parts and materials based on this information. The COSMOS database is upgraded every year, with respect to both quality and quantity.

■ Example for the reduction of chemical substances in purchased articles (use of chromium-free steel sheets)

Steel sheets with zinc plating, which are widely used in automobiles and electric appliances, etc. are also used for Oki's major products —ATM (automated teller machines) and telecommunications equipment. The chromium coating, which improves the antirust performance of these zinc-plated steel sheets, contains a very small quantity of hexavalent chromium, a substance subject to the PRTR (Pollutant Release and Transfer Register) system. For this reason, we made efforts to use steel sheets with chromium-free surface coating.

To employ steel sheets with chromium-free surface coating, we had to solve the issues of maintaining a quality equivalent or superior to the steel sheets used before, and of changing the production process. To select the right material, we evaluated and tested steel sheets with chromium-free surface treatment from steel sheet manufacturers with respect to 18 points, including corrosion resistance, welding properties, coating properties, fingerprint resistance, as well as points related to the production process, possibility of procurement from overseas, and cost. As a result, steel sheets with chromium-free surface treatment from two manufacturers passed the quality standard we defined. We verified that we could guarantee the product quality without changing the production process, and were able to switch over to the new material very soon.

In 2002, we conducted the switchover for 450 tons of plated steel sheet used in our domestic plants. We will further complete the switchover of 800 tons per year used in our overseas plants by the end of March 2005.



3 Succeeded in the development of a technology for lead-free pin plating for semiconductor packages

One of the goals established in our Eco Plan 21 —our activity plan for environmental protection— is the complete abolition of lead-containing solder, and the whole Oki group is working towards this.

In 2002, we succeeded in the development of a technology for lead-free pin plating for semiconductor packages and installed the facilities at our production sites. We expect that this will reduce the use of lead by 900kg per year.

There are two types of soldering for semiconductor package pins: solder plated pins for external lead-type semiconductors, and solder balls for ball-type semiconductors. During the development of lead-free technology, we kept in mind that we had to keep the quality, reliability and cost at least at the same level as of the ordinary Sn-Pb (tin-lead) solder. The material composition of lead-free solder we selected is Sn-Bi (tin-bismuth) material for external-lead type semiconductors, and Sn-Ag-Cu (tin-silver-copper) material for ball-type semiconductors. These materials have a higher melting point than ordinary solder, and we faced the problem that this affected the heat resistance of semiconductor packages. Despite this, we succeeded in ensuring reliability through measures such as changing to heat-resistant resin. Reliability tests were conducted in accordance with the conditions specified by the lead-free project of JEITA (Japan Electronics and Information Technology Industries Association).

