

Environmentally Hazardous Substances in Production Process

Eliminating Ozone-Depleting Chemicals (ODCs)

The "Montreal Protocol on Substances That Deplete the Ozone Layer," signed in 1987, set forth a schedule for the elimination of ODCs. At one time, Murata used ODCs as cleansers. However, we have adopted strategies such as process modifications and the introduction of substitute cleaners. We also promoted a campaign through which our purchasing department suggested changes to our material suppliers. As a result, we were able to eliminate the use of ODCs prior to the Montreal Protocol, including among the suppliers to our material purchasing department.

Regarding specified fluorocarbons, we eliminated the use of 1,1,1-trichloroethane in March 1993 and HCFCs (a fluorocarbon substitute) in December 1995.

Elimination of Chlorinated Organic Solvents

Because chlorinated organic solvents such as trichloroethylene, tetrachloroethylene and dichloromethane are inexpensive and nonflammable, Murata has used these excellent cleaners for the removal of fats and in cleaning processes. Also, we have a history of partially adopting these substances as substitutes for ODCs.

However, we became aware that chlorinated organic solvents have a significant effect on the environment, causing air pollution, water pollution and contamination of soil and groundwater. Therefore, following the elimination of ODCs in May 1993, we adopted an independent policy to eliminate the use of chlorinated organic solvents. As a result, we eliminated use of these substances at all but one facility as of the end of

1995, and achieved complete elimination by March 1998.

Furthermore, in June 1997 we extended this policy to include raw material suppliers to our purchasing department. We sought their cooperation and adjustments toward the goal of eliminating the use of these substances as of March 1999. To date, most of our suppliers have extended their cooperation and complied with the elimination of these substances.

Adoption of Voluntary Standards for Environmentally Hazardous Substances in Production Process

Among the chemical substances used in processing, those that have the possibility of imparting an environmental impact have been subject to Murata's own voluntary regulation standards, which were established in November 1997. We are targeting the reduction and elimination of substances specified in our product regulation program.

As for existing processes, we are implementing reduced use and release based on our voluntary regulation program. As for environmentally hazardous substances used in new processes, we are studying reduced usage and release of these substances.

Moreover, in May 2002, we adjusted our voluntary regulation program following an examination of the laws and regulations and the trends toward voluntary response within the electrical and electronics industry.

As part of these revisions, and especially because Murata uses volatile organic chemicals such as toluene and xylene in relative abundance, we have adopted measures to reduce the release of these substances into the atmosphere.

Voluntary Regulation Program for environmentally hazardous substances in production process

Ranking		Target Substance	
A	Prohibited (41 substance groups)	•Asbestos	• Trichloroethylene
	Any application prohibited	•Cadmium and its compounds (limited to resins)	• Halon
B	Application prohibited within a specified period (23 substance groups)	•Dioxins	• Benzene
	Prohibited after a specified period	•White lead	• CFCs
C	Reduce emissions (22 substance groups)	• Acrylonitrile	• HCFCs
	Reduced emissions planned	• Arsenic and its compounds (excluding semiconductors)	etc.
D	Prepare to reduce emissions (45 substance groups)	• Cadmium and its compounds (excluding resins)	• Organic lead
	Control emissions and voluntarily prepare to reduce emission	• Mercury and its compounds	• Hexavalent chromium compounds
D	Control emissions and voluntarily prepare to reduce emission	• Acetaldehyde	• Lead and its compounds (used in some ceramics, solder, etc.)
		• Chloroform	• Toluene
D	Control emissions and voluntarily prepare to reduce emission	• Cyanide compounds	• Xylene
		• Formaldehyde	• PFCs
D	Control emissions and voluntarily prepare to reduce emission	• Nickel sulfate	etc.
		• Zinc and its compounds	• Lead and its compounds (used in some ceramics, glass, alloys, etc.)
D	Control emissions and voluntarily prepare to reduce emission	• Chrome and its compounds	• Arsenic and its compounds (application limited to semiconductors)
		• Copper and its compounds	etc.
D	Control emissions and voluntarily prepare to reduce emission	• Nickel powder	
		• Methyl ethyl ketone	