

Used Fluorescent Lamp Recycling System

Crushed and washed glass recycled into residential insulation and raw materials for fluorescent lamps. Aluminum and metallic bases recycled into aluminum raw material. Mercury recovered from the wastewater after washing.

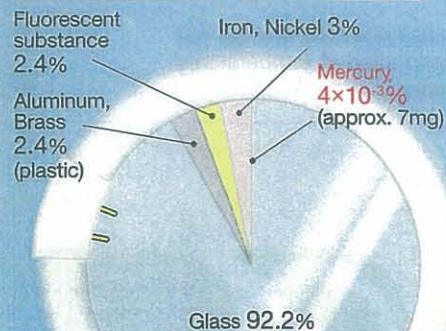
Recycling Process Flow



Waste fluorescent lamps

Mercury is contained in various types of fluorescent lamps; circle, straight, ball and compact lamps. A proper recycling process is necessary for each type of lamps.

Composition example (40W fluorescent lamp)



When lamps are coated with film, the film is peeled off by hand.



JIG concentration plant
Sorting out each substance by specific gravity



Crushing and Separation

Crushing fluorescent lamps (when carried in uncrushed) Separating the glass and other non-glass parts including metallic bases



Washing and Separation

Washing the crushed glass to completely remove foreign substance and mercury



Mercury sludge



Mercury vapor



Condensation tower

Mercury recycling

Condensation
While the mercury vapor passes through the condensation tower, it is cooled down and condensed into the liquid mercury.

Refining
Recovered crude mercury is refined into high-purity metallic mercury (inorganic mercury)



Injecting mercury into fluorescent lamps just prior to shipping

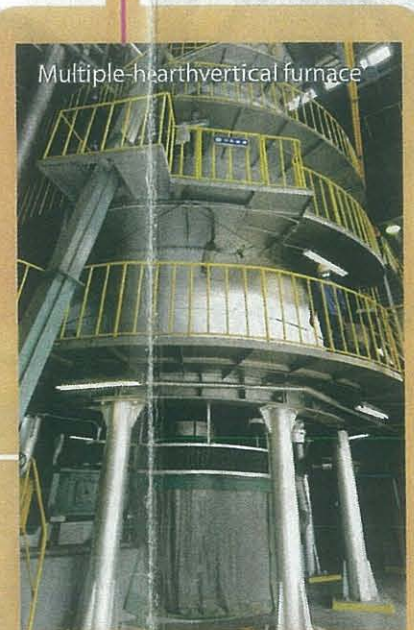
Mercury

Producing various mercury reagents



Universities and research institutions
Mercury reagents are used in various experiments and researches.

Manufacturing plants for fluorescent lamps and other products including specialized measurement instruments
Recycled mercury and glass cullet are reused to produce fluorescent lamps.



Multiple-hearth vertical furnace

Roasting process

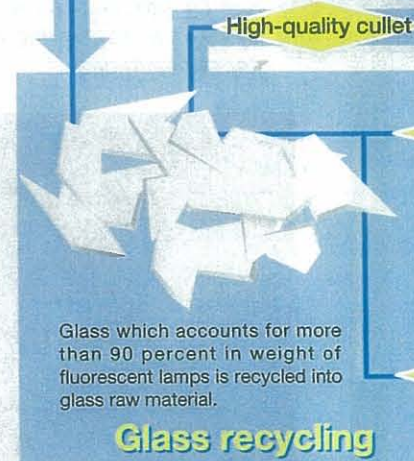
Heating the sludge at 600 to 800 °C to vaporize the mercury



Metallic base and other non-glass parts



Separation



Glass which accounts for more than 90 percent in weight of fluorescent lamps is recycled into glass raw material.

Glass recycling

High-quality cullet

Cullet

Mixed cullet



Glass wool manufacturing plants
Cullet is reused to produce residential insulation.



Cement raw material



Aluminum, metallic bases



Aluminum raw material



Producing glass for fluorescent lamps out of glass cullet

Lamps into lamps

Used Dry-cell Battery Recycling System



Mercury recovered in the roasting process for recycling. Roasted dry-cell batteries separated into outer iron casings and residual zinc. Iron casings recycled into steelwork. Zinc recycled into nutrients and zinc ingots.

Recycling Process Flow

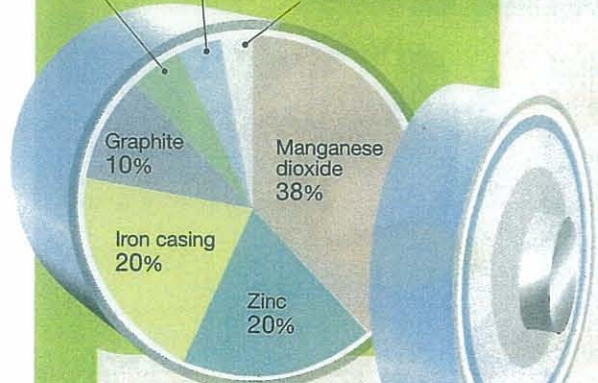


Waste dry-cell batteries

Primary batteries - i.e., manganese and alkaline dry-cell batteries - are collected to be recycled.

Composition example (AA alkaline dry-cell battery)

Brass 10% Water 4% Paper, plastic 3%



Sorting

Sorting collected batteries by size and separating non dry-cell batteries

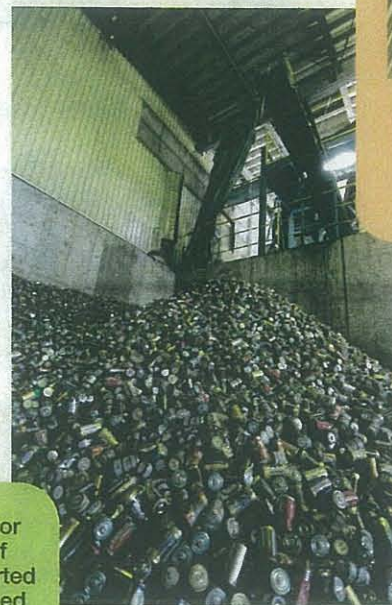


Rotary furnace



Roasting process

Heating the sludge at 600 to 800°C to vaporize the mercury



Rechargeable or other types of batteries are sorted out to be shipped for recycling at other recycling manufacturers.

Pulverization and magnetic separation

Outer casings of dry-cell batteries are eliminated using magnets



Batteries heated in the furnace



Iron recycling

Iron scraps
Ironworks
Mercury reagents are used in various experiments and researches.



Zinc and manganese recycling

Residual zinc
Black powder mainly composed of oxidized zinc and manganese
Fertilizer
Soil conditioner
Mercury reagents are used in various experiments and researches.
Zinc ingots
Residual zinc is refined at zinc refineries and reused to produce zinc ingots.

Roasting is to heat the substance at temperatures sufficient to cause chemical change but insufficient to cause it to melt. At Itomuka Refinery, roasting is conducted at temperatures higher than 600°C to vaporize mercury contained in the waste batteries.



Mercury vapor



Condensation tower

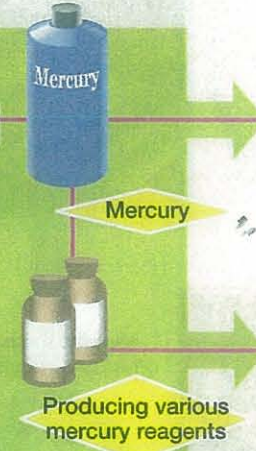
Mercury recycling

Condensation

While the mercury vapor passes through the condensation tower, it is cooled down and condensed into the liquid mercury.

Refining

Recovered crude mercury is refined into high-purity metallic mercury (inorganic mercury).



Producing various mercury reagents

Manufacturing plants for fluorescent lamps and other products including specialized measurement instruments
Recycled mercury is reused to produce fluorescent lamps.

Universities and research institutions
Mercury reagents are used in various experiments and researches.

*Please contact any one of our sales representatives for inquiries about a plant visit and where we deliver our recycled products.

NOMURA KOHSAN CO.,LTD.

HEAD OFFICE 2-1-3 Horidome-cho, Nihonbashi Chuo-ku, Tokyo, Japan 103-0012 Telephone No. : +81-3-5695-2530 Fax No. : +81-3-5695-2540
 KANSAI WORKS 2-4-143 Nakajima Nishiyodogawa-ku, Osaka City, Japan 555-0041 Telephone No. : +81-6-6476-0025 Fax No. : +81-6-6476-0026
 ITOMUKA 217-1 Fujimi, Rubeshibe-cho, Kitami City, Hokkaido, Japan 091-0162 Telephone No. : +81-157-45-2911 Fax No. : +81-157-45-2912

<http://www.nomurakohsan.co.jp>