

Environmental Impact and Resource Reduction, and Climate Change Countermeasures

Resource Recycling

FY : Fiscal Year means the year ending March 31.
For example, FY2016 means April 1, 2015 - March 31, 2016

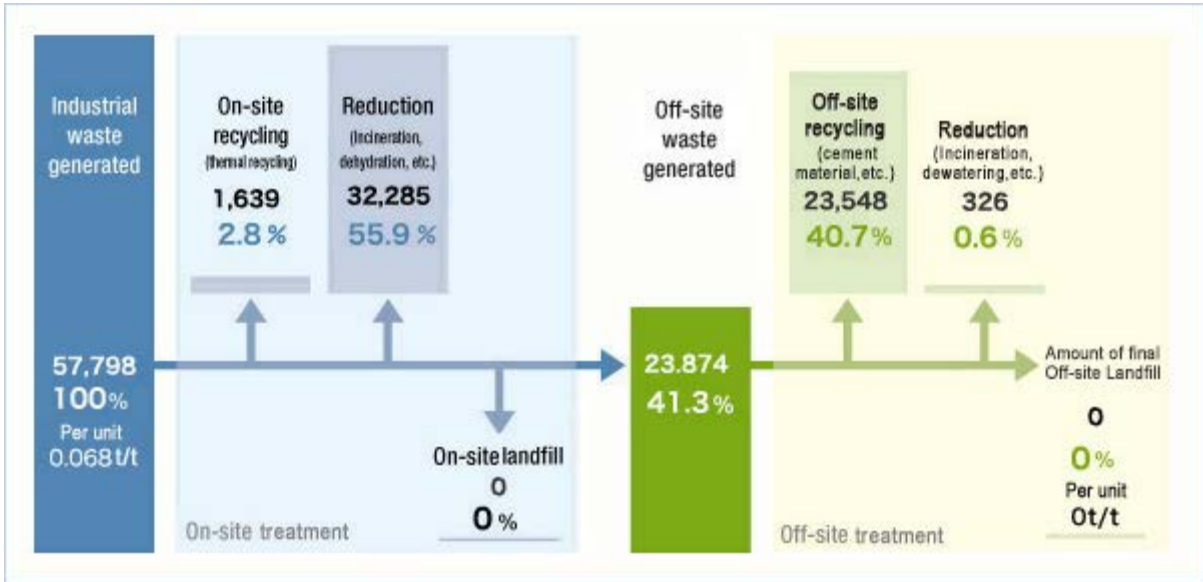
1. Initiatives to Reduce Industrial Waste
2. Application of 3R to Packaging Materials
3. Water Consumption

1. Initiatives to Reduce Industrial Waste

Since FY2001, JSR has been implementing its goal of "zero waste"*1 through activities that include prevention of waste materials, sorting of waste, and the search for recycling locations at all plants. In the period from FY2004 to FY2016, ongoing efforts have enabled us to reach our goals in zero waste activities. About 90% of the total volume of generated waste materials is taken up by surplus sludge resulting from the activated sludge treatment of wastewater and by coal ash generated in the coal boilers used for on-site power generation. With regard to this surplus sludge, sludge drying equipment was introduced at the Yokkaichi Plant in December 2012. This has enabled sludge to be processed into a valuable fuel product. Additionally, coal ash is recycled for use as cement materials. In addition to using waste oils and other materials as fuels, we promote the recycling of bottles, cans, drums, paper, fluorescent lamps, dry cell batteries and organic waste. The final landfill volume in FY2016 was zero. In the future, we will strive to implement ongoing zero waste operations by further continuing our search for recycling locations and our other efforts.

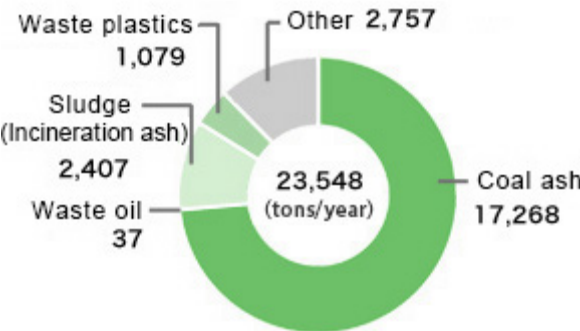
*1 Zero waste: When the volume of final off-site waste buried at third-party landfills is less than 0.1% of the volume of waste generated

Industrial Waste Processing Flowchart (FY2016 performance in tons/year)



Breakdown of Generated Industrial Waste

Breakdown of Outsourced Recycling



CSR Report 2016

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Priority issues identified by the JSR Group

Management

JSR Group CSR Priority Issues

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Environmental Impact and Resource Reduction, and Climate Change Countermeasures

Environmental Impact Reduction

Resource Recycling

Climate Change Countermeasures

Biodiversity Conservation

Environment and Safety (Related Data)

Responsible Care Activities by Group Companies

JSR Group CSR Priority Issues

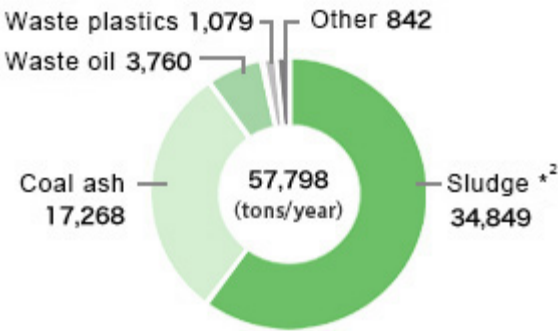
Sustainable Society where People Can Enjoy Health and Longevity

JSR Group CSR Priority Issues

Communication with Stakeholders

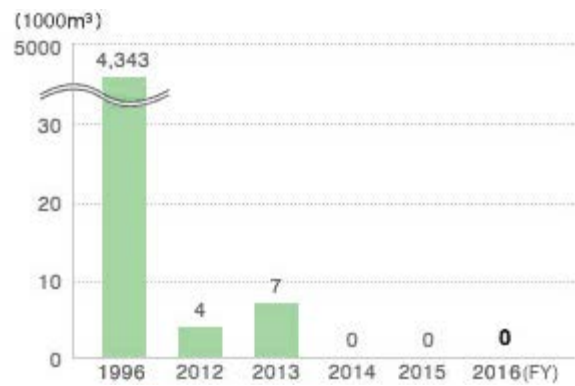
About the JSR Group

Evaluation by Outside Organization, Third-Party Opinion, and Independent Review



*2 20% of sludge accounted for as solid waste

Amount of Final Off-site Landfill



Changes of Amount of Recycle



2. Application of 3R to Packaging Materials

JSR has always been serious about environmental measures in the distribution and logistics workflow. Therefore, we promote 3R, (Reduce, Reuse, Recycle) to effectively utilize waste-free packaging materials and packaging containers.

Reduce: Reducing the weight of steel box pallets used as packing containers for synthetic rubber and the weight of external cardboard boxes (two-tier construction to single-tier).

Reuse: Preventing the breakage of packaging materials that can be reused as intermediate product containers.

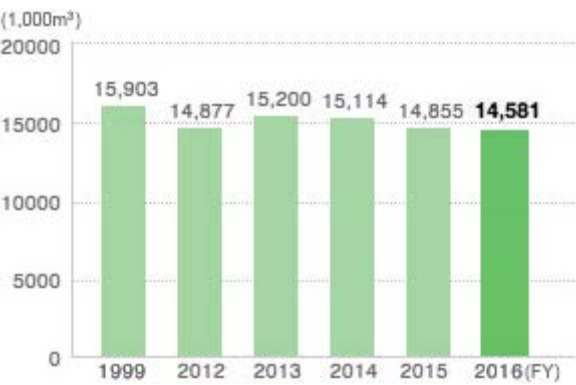
Recycle: Promoting a switchover to recyclable materials when selecting packaging materials. JSR will actively engage in the above 3R activities for packing materials to promote recycling and effective use of resources.

3. Water Consumption

JSR consumed approximately 14,580,000 cubic meters of industrial water, groundwater*3, and tap water in FY2016. Twenty-nine percent of this volume was recycled effectively for use in various work processes at each plant. Key goals include the implementation of initiatives to improve water resource management and maintain the current level of water recirculation and reuse. The Yokkaichi Plant participates in the Yokkaichi Region Environment Council and continues to reduce water usage through the sharing of information on new water quality regulations.

*3 Groundwater is not used at the Yokkaichi and Chiba Plants.

Water Consumption (industrial water, etc.)



Water Consumption (breakdown) and Intensity Index*4

(1,000m³)						
FY	1999	2012	2013	2014	2015	2016
Industrial water	15,196	14,319	14,671	14,733	14,359	14,190
Ground water	533	402	380	234	357	253

GRI Guidelines and Global Compact Content Index



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Evaluation by Outside Organizations



Tap water	174	156	149	147	139	138
Total Water Consumption	15,903	14,877	15,200	15,114	14,855	14,581
Intensity index *4	100	107	99	102	108	108
Usage of recycling water	0	4,144	4,377	4,496	4,249	4,159
Effective recycling ratio (%)	0	27.9	28.8	29.7	28.6	28.5
Seawater (coolant)	60,731	55,405	62,772	59,830	57,395	54,725

*4 FY1999 represents the 100 level.
[(fiscal year water consumption)/(annual production volume for the fiscal year)]/[(FY1999 water consumption)/(FY1999 production volume)]x100

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