Environment Report

Environmental Management

Pursuing green management

Environmental activities

The CoorsTek KK Group regards environmental conservation as a key management issue. We are engaged in environmental conservation activities on a continual and voluntary basis, guided by the Environmental Policy we established in 1989.

CoorsTek KK Group Environmental Policy

The CoorsTek KK Group works to bring together materials, technologies and people to create new values. In carrying out our activities, we promote environmental conservation in the belief that the Earth's resources are invaluable. Accordingly, we promote the following management concepts:

(1) Position environmental conservation as a critical issue at the heart of our business.
(2) Adhere to environmental laws, environmental guidelines agreed to by CoorsTek KK Group, and other voluntary environmental protection standards.
(3) Reduce the environmental impact of our business activities and prevent pollution.
(4) Set voluntarily action plans such as energy conservation to help prevent global warming, including policies such as zero emissions, through the effective use of resources and reducing the use of chemical substances.
(5) Promote green procurement, including prioritizing the selection of raw materials that have minimal environmental impact.
(6) Contribute to society by developing and providing superior environmental technology and products, cooperate with communities, and undertake environmental protection activities in general.

Environmental management structure

We have an integrated environmental management structure in which the Group Environmental Committee is the top decision-making body for matters relating to environmental management. All business sites operate under environmental management systems that comply with ISO14001 requirements, and activities are conducted following ISO14001:2015.

◆Environmental Management Organizational Structure

◆ISO 14001 Certification Status (as of March 31, 2018)

Business Site	Initial Certification Date	Certification Body
Oguni Facility	Feb. 1998	Intertek Certification Japan Ltd.
Hadano Facility	Mar. 1998	Intertek Certification Japan Ltd.
Kariya Facility	Apr. 2000	Japan Quality Assurance Organization
CoorsTek Tokuyama Corp.	Mar. 1998	Japan Quality Assurance Organization
CoorsTek Nagasaki Corp.	Dec. 2000	Intertek Certification Japan Ltd.

Environmental internal and external audits

The Chief Environmental Management Officer and EHS personnel conduct compliance audits and activity assessments of all business sites.

The CoorsTek Group uses its standards to verify compliance with environmental laws and regulations and assess the status of the Company's environmental activities. EHS personnel follow up on assessment results and work to improve environmental efforts.

Audit in process

Environmental education

In order to better understand and enhance our environmental conservation skills, all Group employees undergo environmental education on a regular basis. The content of the education varies according to positions and responsibilities. To ensure compliance and enhance the skills of individual employees, the Group supports and encourages employees to acquire qualifications and attend lectures.

Contractors working at the Group's sites are informed of environmental and safety requirements.

Objectives of Environmental Activities and Results

Green manufacturing to reduce environmental impact

Overview of the voluntary environmental action plan

The CoorsTek KK Group has formulated a voluntary environmental action plan and it conducts activities to reduce the environmental impact of business activities.

◆FY2017 Voluntary Environmental Action Plan and Performance

Priority Initiatives	FY2017 Voluntary Environmental Action Plan	Results	Evaluation*2
Global warming mitigation	Improvement of an average of 1% or more per year in ratio to direct costs (crude oil equivalent/DC) in the past 5 years	**Average of 6.8% improvement**	◎
Pursuit of zero emissions*1	Reduction of ratio of total waste discharged in relation to direct costs (value vs. waste /DC) over FY2016 level	**Increase of 5.1% over FY2016 level**	△
Reduction of chemical substances	Setting reduction targets at each business site for selected chemical substances used in large quantities	**10.7% increase of PRTR*3 substance use in ratio to direct costs compared to FY2016 level**	△
Others	Activities by following ISO14001:2015	**Two business sites certificated ISO14001:2015 Three business sites plan for certification in 2018**	○

*1 Zero emissions of waste: final disposal rate (final disposal amount / total waste discharged x 100) of ≦1

*2 ◎ Objective exceeded ○ Objective achieved △Objective not achieved

*3 PRTR (Pollutant Release and Transfer Register) is a system for ascertaining, aggregating, and publishing data on the amounts of harmful chemical substances released into the environment or transferred offsite and the sources of such substances

◆FY2018 Voluntary Environmental Action Plan and Medium- to Long-Term Plan

Priority Initiatives	FY2018 Voluntary Environmental Action Plan	Voluntary Environmental Actions and Medium- to Long-Term Plan
Global warming mitigation	Improvement of an average of 1% or more per year in ratio to direct costs (crude oil equivalent/DC) in the past 5 years	**(Medium- to long-term plan)** Reduce CO_2 emissions (total amount) by 3.8% or more in FY2020, taking FY2005 as a baseline.
Effective use of resources	Reduction of ratio of total waste discharged in relation to direct costs (value vs. waste /DC) over FY2017 level	**(Medium- to long-term plan)** Reduce final disposal rate (final disposal amount / total waste discharged x 100) to 2% or less in FY2020.
Reduction of chemical substances	Setting reduction targets of ratio of use to direct costs at each business site for selected chemical substances used in large quantities	–
Others	Activities by following ISO14001:2015	–

Environmental accounting

CoorsTek KK Group assesses environmental costs and applies the results to business activities.

◆Environmental Costs Millions of yen

Classification	Content	Expenditure*1	Costs*2
Ⅰ Business area costs		62.0	758.9
Ⅰ - i Pollution prevention costs	Prevention of pollution to atmosphere, water, soil, etc.	19.7	498.2
Ⅰ - ii Global environmental conservation costs	Mitigation of global warming, conservation of ozone layer, etc.	42.2	41.1
Ⅰ - iii Resource circulation costs	Effective utilization of resources, recycling of waste, etc.	0	219.6
Ⅱ Upstream/downstream costs	Green procurement, product recovery and recycling, etc.	0	0
Ⅲ Administration costs	Monitoring of environmental impacts, planting of greenery, etc.	0	27.7
Ⅳ R&D costs	Development of environmentally conscious products etc.	0	88.1
Ⅴ Social activity costs	Disclosure of information etc.	0	0.4
Ⅵ Environmental remediation costs	Natural restoration etc.	0	0.1
	Total environmental cost (millions of yen)	**62.0**	**875.2**

Period: January 2017 to December 2017 Subjects: 5 business sites

*1 Expenditures: of expenditures subject to depreciation, amounts for environmental conservation are reported.

*2 Costs: total amounts of expenditures for environmental conservation and depreciation of facilities are reported (including labor costs).

◆Environmental conservation effects

Energy consumption, water consumption, and amount of waste have increased year on year due to increased production.

Actual Effects	Environmental Impact Compared to FY2016	Monetary Value of Effects
Energy consumption	increase of 77,000 GJ	increase of 187.1 million yen
Water consumption	increase of 157,000 m^3	increase of 3.0 million yen
Amount of waste	increase of 1,322 t	increase of 79.9 million yen

Environmental Impact

Reducing environmental impact by continually analyzing the impact of business activities on the environment

INPUT

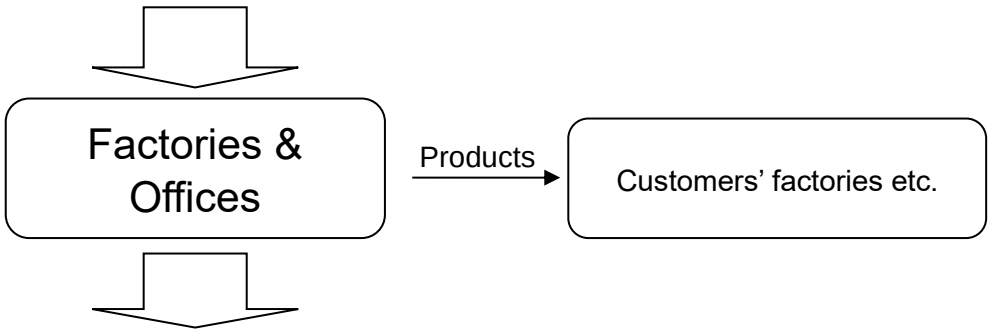
Energy Input		
Purchased electricity	1,466,934	GJ
LPG	46,567	GJ
Fuel oil A	40,023	GJ
Kerosene	14,955	GJ
Utility gas	5,875	GJ
Gas oil	306	GJ
Gasoline	294	GJ
Steam	103	GJ
Total energy input	1,575,057	GJ

Water Input		
Clean water, industrial water	238	10,000m^3
Groundwater	34	10,000m^3

Principal Raw Materials*1		
Silica	6,393	t
Alumina	405	t
Carbon	383	t
Silicon carbide	298	t
Coal tar and tar pitch	278	t
Silicon	185	t

Principal Source Gases*1		
Silicon tetrachloride	1,377	t

Amounts of PRTR Substances Handled		
Hydrogen fluoride and its water-soluble salts	429	t
Others	13	t



OUTPUT

Released into the Atmosphere		
Nitrogen oxides	5	t
Sulfur oxides	1	t
Amount of PRTR substances released (atmosphere)	2	t

Global Warming Gases		
CO_2 emissions (direct emissions)	7	kt-CO_2
CO_2 emissions (indirect emissions)	74	kt-CO_2
CO_2 emissions from transport	1	kt-CO_2

Discharge of Waste		
Total amount of waste discharged	8,446	t
Final amount of discharge	4,710	t
Amount of PRTR substances transferred	2	t

Discharged into Water		
BOD*2 + COD*3	13	t
SS*4	22	t
Drainage	451	10,000m^3

*1 Principal raw materials and source gases listed are those of which 100 tons or more are consumed per year.
*2 BOD: Biochemical oxygen demand
*3 COD: Chemical oxygen demand
*4 SS: Suspended solids

Mitigation of Global Warming

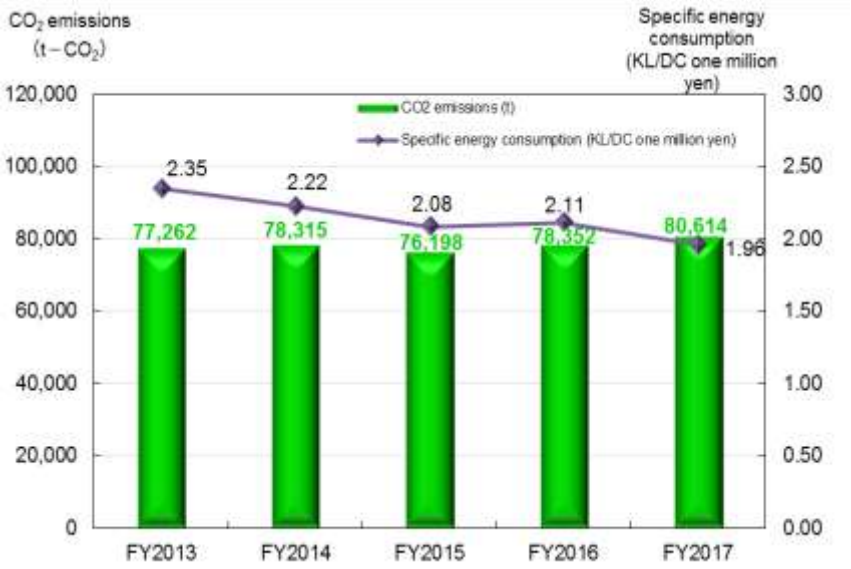
Reducing CO_2 emissions to counter global warming

Reduction of CO_2 emissions

The CoorsTek KK Group works to reduce CO_2 emissions through productivity improvements and energy conservation measures.

Due to increased production in fiscal 2017, CO_2 emissions increased by 2.9% over last year. On the other hand, specific energy consumption decreased by 7.1% as a result of implementing energy conservation activities.

◆CO_2 Emissions and Specific Energy Consumption



Measures to reduce CO_2 emissions

◆CO_2 Emissions Reduction Measures and Amount of Reduction

Measure	Facility	Details of Improvement	Amount of Reduction
Reduction of power consumption	Oguni Facility	Annual power consumption was reduced by 322,884 kWh with the reduction of defective products produced by faulty equipment.	176.0 t - CO_2
Reduction of power consumption	Hadano Facility	Annual power consumption was reduced by 54,522 kWh due to revising squeeze pump frequency under inverter control.	26.5 t - CO_2
Reduction of power consumption	Kariya Facility	Annual power consumption was reduced by 310,841 kWh by firing many products at a time in the firing furnace.	150.8 t - CO_2
Reduction of power consumption	CoorsTek Tokuyama Corp.	Annual power consumption was reduced by 71,653 kWh by not using air conditioners at night.	36.7 t - CO_2
Reduction of power consumption	CoorsTek Nagasaki Corp.	Annual power consumption was reduced by 51,954 kWh by decreasing heating temperature of furnace.	24.0 t - CO_2

Waste Management

Zero emissions for a recycling-based society based on the 3R concept

Initiatives to achieve zero emissions

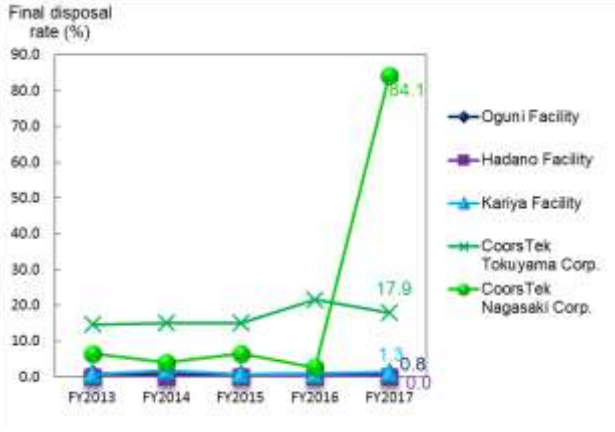
Each business site has a recycling center that manages waste and implements zero emissions activities to help realize a recycling-based society. Activities include minimizing defects and material loss by improving manufacturing yield and working with recycling partners for sludge and scrap waste in accordance with the 3R principles (reduce, reuse, recycle). Quality requirements from customers became more rigorous in fiscal 2017, resulting in an increase of 5.1% of total waste discharged in relation to direct cost compared to the previous last year.

The final disposal rate of CoorsTek Nagasaki Corp. increased due to an increase in production of raw quartz materials. On the other hand, Hadano Facility and Oguni Facility achieved perfect zero emissions*1 and zero emissions respectively.

*1 Perfect zero emissions: final disposal rate (final disposal amount / total waste discharged x 100) of = 0

◆Total waste discharged in relation to direct cost

◆Final disposal rate of each facility



Zero emissions measures

◆Zero Emissions Measures

Measure	Facility	Details
Education on waste sorting	Hadano Facility	The Hadano Facility provides education on waste sorting and use of the recycling center to personnel. It maintains its zero emissions status by thoroughly sorting waste.

Management of Chemical Substances

"One drop control"*1 policy for managing chemical substances

Chemical substance management measures

The CoorsTek KK Group promotes green procurement and responds to the EU's RoHS Directive and REACH. We manage chemical substances subject to the PRTR Law and substances subject to the Poisonous and Deleterious Substances Control Law, taking into consideration human health and safety, prevention of pollution, and reduction of environmental impact. As we strengthen the implementation of the "one drop control," we ensure meticulous management of data on usage, release, and transfer.

*1 "One drop control" is the Group's practice of meticulous substance management. It involves daily cleaning and inspection so that no leakage—not even one drop of oil, chemical, or other substance—is overlooked. Structures are designed and maintained to ensure easy detection of any leakage. For example, trays and overflow spill basins are kept dry.

Pollutant release and transfer register (PRTR) substances

The main PRTR substance that the CoorsTek KK Group handles is hydrofluoric acid, which is used for cleaning. There was an increase in the amount of hydrofluoric acid handled and released in fiscal 2017 due to an increase in the production of raw quartz materials.

◆PRTR Results for Fiscal 2017 (t)

Substance number specified by the PRTR Law	Substance name	Amount handled	Amount released	To air	To water	To soil	To on-site landfills	Amount transferred	To sewage	As waste
71	Ferric chloride	**4.5**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
302	Naphthalene	**6.8**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
349	Phenol	**1.3**	**1.3**	**1.3**	0.0	0.0	0.0	0.0	0.0	0.0
374	Hydrogen fluoride and its water-soluble salts	**429.4**	**0.5**	**0.5**	0.0	0.0	0.0	**1.7**	0.0	0.0
	Total	**442.2**	**1.8**	**1.8**	**0.0**	**0.0**	**0.0**	**1.7**	**0.0**	**0.0**

Storage of polychlorinated biphenyls (PCBs)

The Group systematically removes and strictly manages equipment that is stored or in use that contains PCBs to ensure no PCB environmental pollution occurs during the time until 2026, the year in which the government mandates that disposal must be completed by disposal companies.

◆Equipment Containing PCBs in Storage or Use (as of December 31, 2017)

Type of Equipment Containing PCBs (including low-concentration PCBs)	Unit type	Total
Transformers	Unit	16
Capacitors	Unit	16
Stabilizers	Unit	620
Other equipment	Unit	11
Others (effluents, waste cloths, etc.)	kg	138

Measures to prevent air pollution and offensive odors

The CoorsTek KK Group prevents air pollution and the release of offensive odors by installing exhaust gas treatment equipment, fuel conversion, and other measures. Each business site has established voluntary exhaust gas standards and works to reduce environmental impact.

Water pollution prevention

The Group reduces the burden on wastewater treatment facilities through appropriate use of raw materials, abrasives and chemical substances used in production processes at each business site. The Group has also established voluntary standards at each business site and is strengthening the monitoring of water quality.

In addition, each business site conducts emergency response drills to enable a rapid response in the event of an emergency.

History of Our Commitment to the Environment

Ever since our foundation, we have prioritized harmony with society and the environment in the conduct of business. We intend to continually strengthen the basis of environmental management with the aim of ensuring sustainable management*1.

*1 Sustainable management is defined as contributing to the realization of a sustainable society by practicing corporate responsibility in economics, society, and the environment and by respecting people.

History of CoorsTek KK Group	Main environmental conservation activities and commendations	Main improvements related to environmental conservation
1918 Toyo Taika Renga Co., Ltd. (currently Kariya Facility) is established.		
1928 Denki Kinyu Co., Ltd. (currently Oguni Facility) is established.		
	1951 Oguni Facility receives the Director-General Award for Excellent Factories for Energy Control (Heat Category).	1954 Oguni Facility's Akashiba Power Plant (hydroelectric) in Oguni, Yamagata prefecture, is completed.
1956 Kawatana Plant (currently CoorsTek Nagasaki Corp.) is established.		
1958 Nihon Denko Co., Ltd. is renamed Toshiba Denko Co., Ltd.		
1959 Tokai Rozai Co., Ltd., is renamed Toshiba Internal Insulation Co., Ltd.		
1961 Hadano Facility is established.		
1968 Toshiba Ceramics Co., Ltd. (currently CoorsTek KK) is established as a result of the merger between Denko Co., Ltd. and Toshiba Rozai Co., Ltd.		
1971 A research center (currently the Core Technology Center) is established.		
	1974 Oguni Facility receives the Director-General Award for Excellent Factories for Energy Control (Heat Category).	
	1978 Oguni Facility receives the Award of the Minister of International Trade and Industry for Excellent Factories for Energy Control (Heat Category).	
1982 Tokuyama Ceramics Co., Ltd. (currently CoorsTek Tokuyama Corp.) is established.		
1984 Tokai Ceramics Co., Ltd. is established.	1984 Kariya Facility receives the President's Prize from the Japan Energy Conservation Center as an example of excellent energy savings.	1985 Oguni Facility introduces waste heat-based snow removal equipment, which does not involve water spraying.
		1990 Oguni Facility' s second Akashiba Power Plant (hydroelectric) is completed.
1991 Niigata Toshiba Ceramics Co., Ltd. is established for volume production of large-diameter silicon wafers.	1991 Use of chlorine-based organic solvents is abolished throughout the Group.	
	1997 Oguni Facility starts manufacturing lead-free carbon brushes.	
	1998 Oguni Facility receives an award from the Director-General of the Tohoku Bureau of Economy, Trade and Industry for Excellent Factory Greening.	1998 An emergency automatic shut-off gate is introduced at the final discharge outlet of Oguni Facility.
	1999 Kariya Facility receives an award in the Aichi Prefecture Factory Greening Contest.	1999 Sound barrier walls are installed at site boundaries of Hadano Facility.
	1999 Nagasaki Toshiba Ceramics Co., Ltd. (currently CoorsTek Nagasaki Corp.) gains Eco-Mark certification for its foamed (porous) ceramics.	
	2000 Green Procurement Guidelines are established and suppliers are evaluated for green procurement.	2000 Removal of incinerators from all production sites is completed.
		2001 Heat storage exhaust gas treatment equipment is installed at

		Kariya Facility to control offensive odors and VOCs. 2004 Measuring equipment for total phosphorus and total nitrogen is installed at Kariya Facility. 2004 Introduction of central monitoring systems at final discharge outlets is completed at Oguni, Hadano and Kariya Facilities. 2004 Nagasaki Toshiba Ceramics Co., Ltd. (currently CoorsTek Nagasaki Corp.) changes furnace fuel from heavy oil to kerosene in order to reduce SOx.
	2005 Oguni Facility receives the Minister of Economy, Trade and Industry Award for Excellent Factories for Energy Control (Heat Category).	2005 Kariya Facility installs catalyst combustion type odor control equipment in furnaces at advanced ceramics factories 1, 2 and 3.
2006 SIC Investment, a special purpose corporation for the tender offer of Toshiba Ceramics' shares, is established. Toshiba Ceramics becomes a subsidiary of SIC investment following completion of the tender offer.	2006 Kariya Facility holds an explanatory meeting for local residents about soil and groundwater contamination. 2006 Onsite soil and groundwater measures are completed at Kariya Facility.	2006 Hadano Facility changes boiler fuel from heavy oil to LPG in order to reduce CO_2 emissions.
2007 Toshiba Ceramics Co., Ltd. becomes a wholly owned subsidiary of SIC Investment following completion of the share exchange. SIC Investment is renamed Covalent Materials Corp. Toshiba Ceramics merges with Covalent Materials Corp. and the new Company, Covalent Materials Corp., is inaugurated.	2007 Hadano Facility achieves zero emissions of waste. 2007 Cleanup of contaminated soil at Kariya Facility starts.	2007 Kariya Facility installs catalyst combustion type odor control equipment in the furnace.
	2008 Hadano Facility is awarded the Shonan Region Prefectural Administration Center Director's Award for its efforts in waste reduction, reuse, and recycling activities.	2008 Kariya Facility introduces an extra high voltage substation, eliminating use of heavy oil. 2008 Tunnel kiln fuel is converted from kerosene to LPG to reduce CO_2 emissions at Covalent Materials Nagasaki Corp. (currently CoorsTek Nagasaki Corp.). 2008 Kariya Facility's status as a specified air pollutant discharging plant is removed due to a shift in business structure and energy conversion. 2008 A new substation begins operation at Oguni Facility (installation of a high-efficiency "top runner" substation).
2010 Akashiba Power Plant is transferred to F-Power Co., Ltd.	2009 Cleanup of PCB-contaminated soil at Kariya Facility is completed.	
2012 Silicon wafer business is transferred to Sino-American Silicon Products.	2012 Electronic manifest system for industrial waste management begins at Hadano Facility.	

History of CoorsTek KK Group	Main environmental conservation activities and commendations	Main improvements related to environmental conservation
2013 Shares of Tokai Ceramics Co., Ltd. are transferred to Calderys Japan Co., Ltd. Shares of Covalent Sales Corp. are transferred to Hibino Corp.	2013 Oguni Facility enters the Yamagata Eco Smile Contest, resulting in one 2nd place winner and three special prize winners.	
	2013 Removal of all PCB equipment by a disposal company is completed by Covalent Materials Tokuyama Corp. (currently CoorsTek Tokuyama Corp.).	
2014 CoorsTek, Inc. acquires the shares of Covalent Materials Corp.	2014 Removal of all PCB equipment by a disposal company is completed by Covalent Materials Nagasaki Corp. (currently CoorsTek Nagasaki Corp.).	
	2014 Zero emissions status is achieved for the first time at Oguni Facility in fiscal 2013.	
2015 The Company is renamed CoorsTek KK.	2015 Electronic manifest system for industrial waste management begins at Oguni Facility.	2015 Three wastewater treatment facilities are consolidated into one at Oguni facility.
	2015 195 units of PCB equipment and 13.8 tons of pollutant by a disposal company are removed at Oguni, Hadano and Kariya Facilities.	
		2017 Kariya Facility installs catalyst combustion type odor control equipment in its furnace.