

ENVIRONMENTAL REPORT

YKK Group Environmental Report 2002

Seeking harmonization between abundant and healthy lives
for all humankind and the environment



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This report was prepared based on the results of activities for fiscal 2001 (April 1, 2001 to March 31, 2002). The next publication is scheduled for the end of June 2003.

Message

Now that the seriousness of the problem of disposal of huge quantities of waste and global warming which threaten the continued existence of mankind have become obvious, in order to build the new society and economy of the 21st century, "environmental problems" have become a theme of urgent importance.

Various systems for forming a recycling-oriented society were started in 2001 such as establishment and reinforcement of recycling and green purchasing laws, primarily the Basic Law for Promoting Formation of Recycling-Oriented Society.

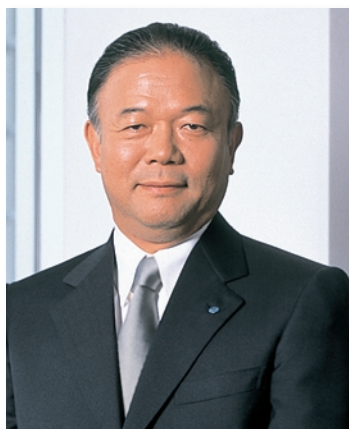
The themes provided to businesses by the 21st century are to what degree we can make industry recycling-oriented. We must weave "environmental problems" into our management concept in the future.

The YKK Group ranks environmental problems as an important theme of management. We hope to contribute to building a recycling-oriented society by continuing to improve efficiency of the "environmental" and "economic" aspects by establishing an environmental management plan that promotes our environmental policy systematically and strategically in accordance with so-called artery and vein systems in all fields of business activities.

For that reason, we are carrying out activities toward specific targets such as publishing our "contribution to construction of a recycling-oriented society" as our mid-term basic environmental policy, "promotion of development and provision of eco-products" to reduce environmental stress and the customer use and discard stages by development of environment-friendly products from the design stage, "more thorough environmental stress reduction management" by energy and resource conservation and reduction of waste, "construction and use of a global environmental management system" that takes environmental initiatives for the same targets for the entire group, and "promotion of environmental communication" for assuring customers of our accountability toward society.

Sustained improvement in environmental conservation will continue to be one of the most important themes for management in the future as well. We are currently doing our best to enhance our corporate value. We hope this report will serve to enlighten you concerning our activities and philosophy toward environmental conservation. If you have any opinions or advice, we'd love to hear from you.

August 2002



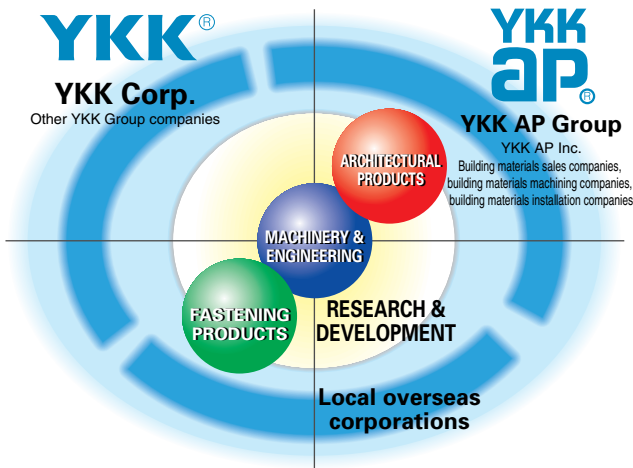
YKK Group

Tadahiyo Yoshida
Tadahiyo Yoshida

I • YKK Group overview / Range of environmental report

With YKK Corporation as its parent company, the YKK Group's worldwide operation are based on the twin pillars of fastening products and architectural products. YKK Architectural Products Inc. performs architectural work under the brand name "YKK AP", in close partnership with other YKK AP Group companies. Representing the core of YKK

Group technologies, Machinery and Engineering division support the vertically integrated production system for our fastening and architectural products. The Research and Development division conducts advanced research into materials and technologies closely tied to these operations.



◆ Member companies

(As of March 31 2002)

	No. of companies	Capital (unit: ¥100 million)	No. of employees
Domestic	YKK Corp.	1	114
	YKK AP Group *1	11	23
	Other YKK Group companies	17	11
Overseas corporations *2	92	725	17,595
Total	121	873	35,379

◆ Group outlet sales (for fiscal 2001)

(Unit: ¥100 million)

	Domestic	Overseas	Total
Fastening	345	1,476	1,821
Building materials	3,147	270	3,417
Machinery	305	—	305
Others	55	18	73
Total	3,852	1,764	5,616

*1 YKK AP Group

YKK AP Inc.

2 building materials companies

7 building materials machining companies, building materials installation companies

1 design support company

*2 overseas corporations (59 countries, 92 companies, 251 bases)

67 fastening product companies

8 building materials companies

17 others

YKK Group report target range for 2002 environmental report

① YKK Corp. domestic production plants	
Kurobe Manufacturing Center	Kurobe plant
	Kurobe Makino plant
	Kurobe Ekko plant
	Kurobe Ogyu plant
Namerikawa plant	
Toyama Mizuhashi plant	
Hokkaido plant	
Tohoku plant	
Shikoku plant	
Kyushu plant	
② YKK AP Inc. domestic production plants	
Namerikawa plant	
③ Research center	
YKK Sendai Institute of Material Science and Technology	

④ Office/distribution	
Head office	
R & D center	
YKK AP branch	
Distribution	

⑤ Building materials/machining plant / machining companies	
YKK AP Nigata plant	
YKK AP Keiyo plant	
YKK AP Ochiai plant	
YKK AP Yamaguchi plant	
Tohoku YKK AP Industries Co., Ltd.	
Kanto YKK AP Industries Co., Ltd.	
Chubu YKK AP Industries Co., Ltd.	
Hyogo YKK AP Industries Co., Ltd.	
Kyushu YKK AP Industries Co., Ltd.	

⑥ Related companies	
16 Group Companies	

⑦ Main overseas production bases	
(Plants that have already obtained ISO14001 certification)	
Shanghai YKK Zipper	
YKK Hong Kong	
YKK Germany	
YKK U.K.	
YKK Indonesia	
Indonesia YKK Zipper	
YKK Singapore Pte.	
YKK Zipco Indonesia	
YKK Alumico Indonesia	
Dairen YKK Zipper	
YKK Taiwan	
YKK Spain	
YKK Egypt	
YKK India	
YKK Brazil	
YKK Italy	

◆ Applicable range of contents of 2002 environmental report : ①②③④⑤⑥⑦ ◆ Applicable range of environmental performance data Energy, water, general waste : ①②③④⑤⑥
 ◆ Applicable range of environmental accounting : ①②③④
 Chemical substances, industrial waste : ①②③

■ : Building materials company/plant ■ : Fastening products company/plant □ : Multiple operations, other

II • Environmental pledge and system

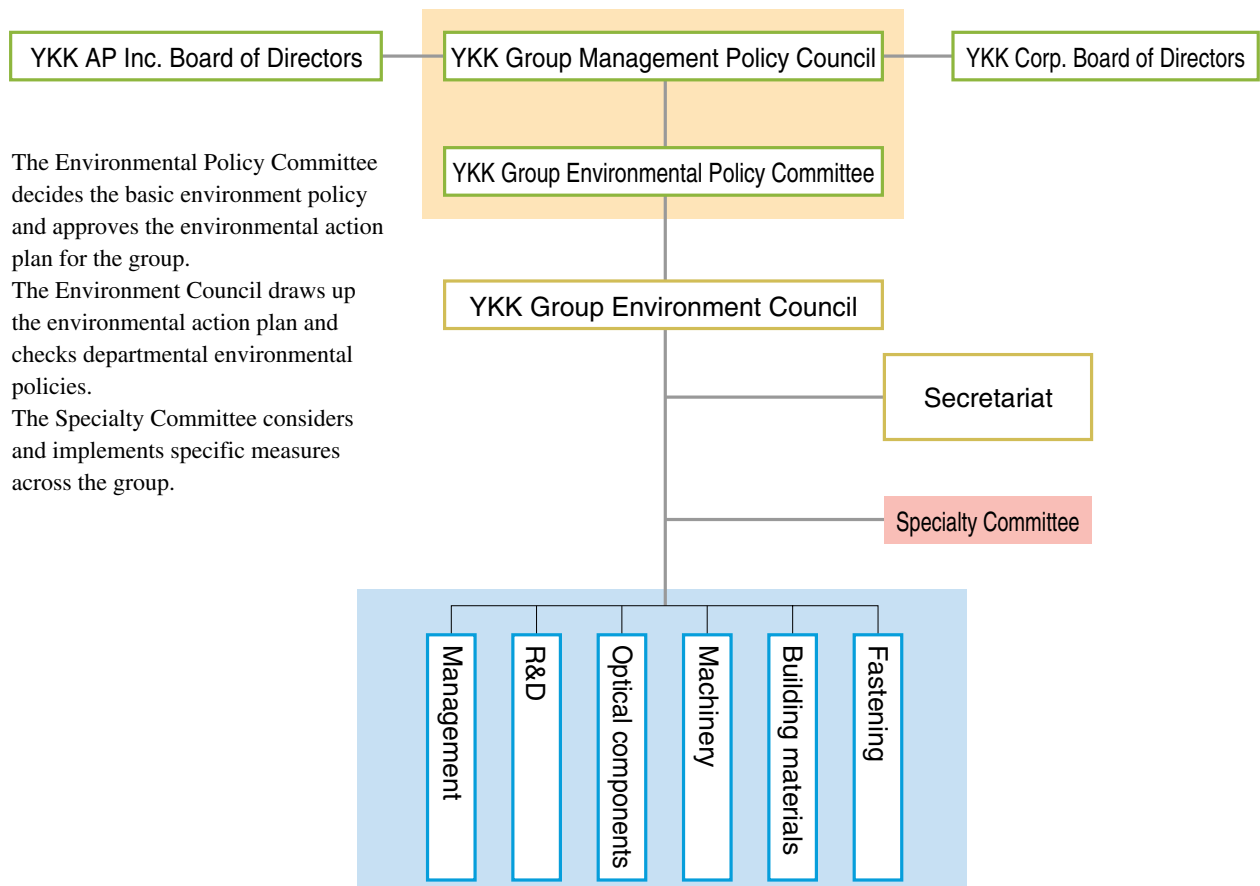
YKK Group environmental pledge Our fundamental understanding of the global environmental issue

It is recognized today as being a most important duty for all humankind that we preserve the abundantly endowed global environment and that we transfer it to the next generation in sound condition.

Striving to be an earth friendly company, YKK Group proclaims that we will address and promote "harmony with the environment" as the highest priority of our business activity.

September 20, 1994
Tadahiro Yoshida, YKK Group

Organizational chart for YKK Group Environmental Policy Committee



III • Relationship of YKK Group business with the environment

Helping to build a recycling-oriented society

In order to contribute to building a recycling-oriented society, the YKK Group is carrying out global activities with the following four items as the intermediate environmental management policy:

1. Promotion of development and provision of eco products

The four keywords "save energy," "save resources," "recycle," and "ecosystem-friendly" as a basic concept, we began to execute environmental product assessment at the design stage. Furthermore in fiscal 2001, we began to work on Life Cycle Assessment (LCA) of our main products so the products environmental contribution could be reliably assessed.

2. Make operations even more efficient to reduce stress on the environment

We have also engaged in sorting and recovering our packaging and packaging materials from customers and have planned for expansion of service to recycle at reuse or recycling plants.

3. Build and use a global environmental management system

Obtaining ISO 14001 certification is more or less

going according to plan.

4. Promotion of environmental communication

We published the "ECO MESSAGE 2002" catalog of environment-friendly products to help government, local communities, businesses and consumers select at the time of green purchasing.

Along with promoting the plan to complete our lineup of environment-friendly products, obtain YKK Group domestic integrated ISO 14001 certification, use the environmental accounting system and improve environmental efficiency, we plan to publish environmental information and improve communication.

The results of our initiatives for fiscal 2001, examples and future initiative are given below. We'd be happy to hear zny comments you have.

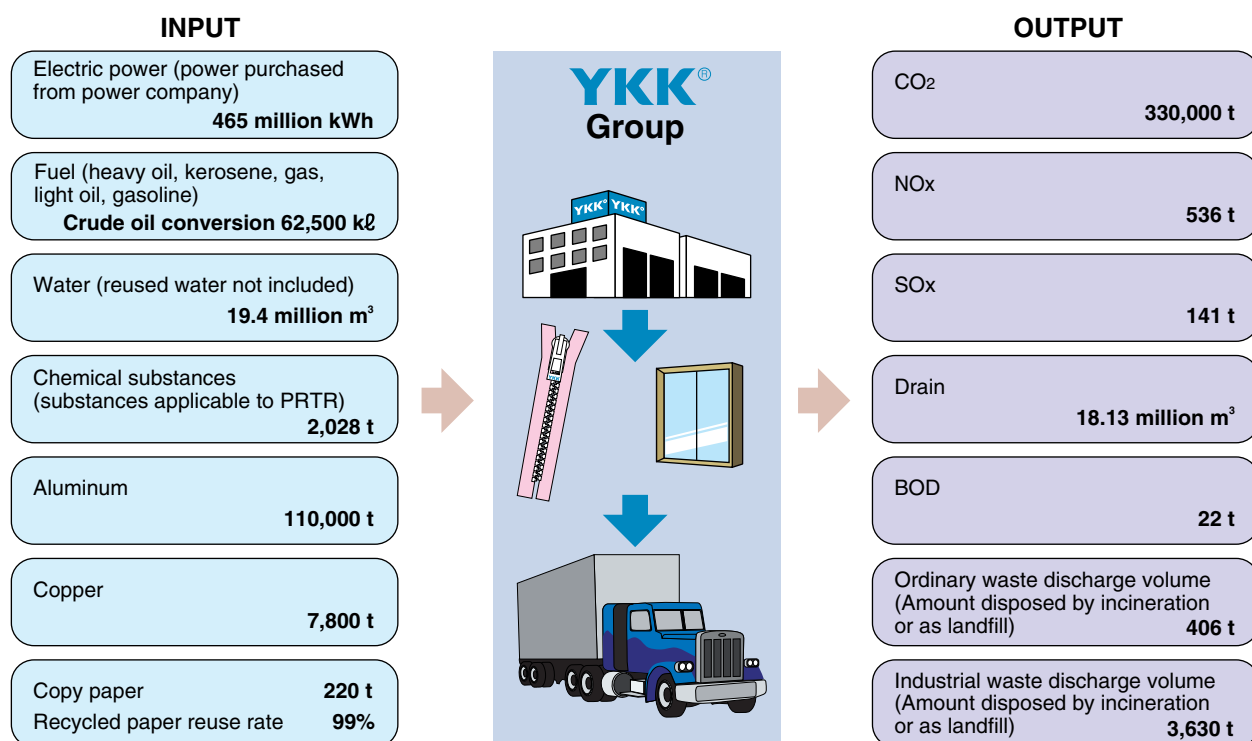
Thank you very much.



YKK Group
Chairman,
Environmental Policy Committee
Director, YKK Corp.
Yasuo Morino

Environmental action targets		
Promotion of development and provision of eco products	1) Development and provision of environment-friendly products and services for green procurement / purchasing of government, local communities, businesses and consumers	<ul style="list-style-type: none"> •Preparation of environment-friendly voluntary standards based on Law on Promoting Green Purchasing and recycling laws •Preparation of catalog of environment-friendly products •LCA execution
	2) Promotion of green purchasing	<ul style="list-style-type: none"> •Determination of green purchasing and green procurement standards •Procurement of environment-friendly materials manufactured at plants that place minimal stress on the environment
	3) Reduction of volume and facilitation of recycling of packaging and packaging materials	<ul style="list-style-type: none"> •7% reduction fiscal 1998 level of basic packaging materials unit requirement by end of fiscal 2003 •Packaging and packaging material recycling achieved by end of fiscal 2005
Make operations even more efficient to reduce stress on the environment	1) Countermeasures against global warming	<ul style="list-style-type: none"> •10.4% reduction of fiscal 1999 level of energy unit requirement at main domestic plants by end of fiscal 2005 •10.1% reduction of fiscal 1999 level of energy consumption at main domestic plants by end of fiscal 2005 •13.8% reduction of 1990 level of CO₂ discharge at main domestic plants by end of fiscal 2005 •Introduction of green energy
	2) Zero emission	<ul style="list-style-type: none"> •Achievement of zero emission of ordinary waste at main domestic plants by end of fiscal 2002 •Aim to achieve zero emission at main bases throughout the world by end of fiscal 2005 •10% reduction of fiscal 1998 level of amount of copy paper purchased by end of fiscal 2003 •Promotion of garbage recycling
	3) Reduced risk of chemical substances	<ul style="list-style-type: none"> •CFC-11 for refrigerant (use discontinued by end of fiscal 2003) •HCFC-141b for refrigerant (use discontinued by end of fiscal 2002) •HCFC-225 for refrigerant (use discontinued by end of fiscal 2010) •HCFC-22 for refrigerant (promotion of recovery of refrigerant when air conditioners upgraded or removed) •Promotion of chemical substance reduction plan by use of PRTR system •Environmental impact assessment conducted at site (environmental assessment) •Pollution control regulations when purchasing property (established based on preparation of law)
	4) Enhancement of transportation efficiency	<ul style="list-style-type: none"> •Promotion of modal shift •Promotion of use of regional ports
Build and use of a global environmental management system	1) ISO 14001 certification obtained as main sales, service, office and development bases and main production bases	<ul style="list-style-type: none"> •Acquisition of ISO 14001 certification at all domestic YKK Group by the end of fiscal 2003 •Acquisition of ISO 14001 certification completed at major production bases of the world by the end of fiscal 2003 •Implementation of YKK Group internal environmental inspection at all major production bases of the world
	2) Introduction of environmental accounting system	<ul style="list-style-type: none"> •Application and utilization of environmental accounting system •Establishment of environmental efficiency index
Promotion of environmental communication	Publication of environmental data	<ul style="list-style-type: none"> •Continued publication of environmental report •Entry in environmental exhibitions •Use of environmental label •Preparation of environmental education system
	Symbiotic relationship with global society	<ul style="list-style-type: none"> •Promotion of social activities

Environmental stress mass-balance of YKK Group domestic plants/offices



Fiscal 2001 targets	Fiscal 2001 achievements	Page
<ul style="list-style-type: none"> •Preparation of environment-friendly products catalog for building materials business •LCA implemented for main products 	<ul style="list-style-type: none"> •ECO MESSAGE published 2002 (Jan. 2002) •LCA implemented for main building material products 	29 20-21
<ul style="list-style-type: none"> •Full line of green purchase products •Awareness education •4% reduction fiscal 1998 level of basic packaging materials unit requirement for main domestic plants •Recovery of packaging materials, expansion of recycling area 	<ul style="list-style-type: none"> •New registration of 100 items •Questionnaire survey concerning green purchasing conducted for employees •19% reduction of previous year level; 19% reduction of 1998 level •Expansion of recycling area 	10 18-19
<ul style="list-style-type: none"> •6% reduction of fiscal 1999 level of energy unit requirement at main domestic plants •7% reduction of fiscal 1999 level of energy consumption at main domestic plants •8% reduction of 1990 level of CO₂ discharge at main domestic plants 	<ul style="list-style-type: none"> •1.5% reduction of previous year level; 3.7% reduction of 1990 level •7.1% reduction of previous year level; 13.5% reduction of 1990 level •6.4% reduction of previous year level; 24.5% reduction of 1990 level 	12-13
<ul style="list-style-type: none"> •60% reduction of 1990 level of industrial waste unit requirement at main domestic plants •Used paper recovery rate to 88% at main domestic plants •Study of changing garbage to fertilizer 	<ul style="list-style-type: none"> •30% reduction of previous year level; 57% reduction of 1990 level •7% improvement over previous year level (0.6% improvement of recovery rate), used paper recovery rate 85.2% •Fertilizer experiment started 	14-15
<ul style="list-style-type: none"> •Preparation of foundation for reduction of toxic substances •Collection of data on soil study 	<ul style="list-style-type: none"> •Impact assessment, reduction plan preparation, establishment of promotion system 	11 16-17
<ul style="list-style-type: none"> •Total joint transport implemented for factories, distribution and management •Improvement of truck loading efficiency for transport to customers 	<ul style="list-style-type: none"> •Joint transport completed •Transport truck loading efficiency improved 10% 	17
<ul style="list-style-type: none"> •YKK Singapore Pte. Ltd. •Zipco Indonesia •YKK Alumico Indonesia Tangerang plant •Dairen YKK Zipper Co., Ltd. •YKK Spain •YKK Taiwan (F) •YKK India •YKK Egypt •YKK Italy •YKK Brazil (F) •YKK AP Manufacturing Group (total 17 plants): Certification range expanded •YKK Corporation Kurobe plant Machinery Engineering Group: Certification range expanded 	<ul style="list-style-type: none"> •Obtained June 2001 •Obtained June 2001 •Obtained July 2001 •Obtained July 2001 •Obtained November 2001 •Obtained November 2001 •Obtained December 2001 •Obtained December 2001 •Obtained March 2002 •Obtained March 2002 •Expansion approved May 2001 / January 2002 •Expansion approved October 2001 	6-7
<ul style="list-style-type: none"> •Application and utilization of environmental accounting system 	<ul style="list-style-type: none"> •Utilized as segment accounting 	8-9
<ul style="list-style-type: none"> •Publication of environmental report •Entry in environmental exhibitions 	<ul style="list-style-type: none"> •Publication of YKK Group 2001 environmental report (August 2001) •Items entered in Eco Products 2001 (Dec. 2001) and Toyama Fair (Oct. 2001) 	28-29
<ul style="list-style-type: none"> •Promotion of social activities 	<ul style="list-style-type: none"> •Cleanup activities implemented in various areas 	

IV • Environmental management system

Acquisition and utilization of ISO 14001 certification

ISO 14001 (environmental management system) is something a multinational company cannot do without. ISO 14001 certification is pursued by more reliably carrying out environment improvement activities for various business activities in order to achieve targets.

Environmental action targets

- Acquisition of ISO 14001 certification at all domestic YKK Group companies by the end of fiscal 2003
- Acquisition of ISO 14001 certification completed at major production bases of the world by the end of fiscal 2003

○ Achievements for fiscal 2001

Certification was obtained for ten more bases overseas in fiscal 2001 (total of 25 bases). Range in which certification has been obtained domestically was expanded by two sites. At sites that have obtained certification, employee's awareness of the environment has been enhanced, and positive environmental performance improvement has progressed due to participation of all employees. We also able to achieve good communication by increasing communication with government and business partners.

○ Future initiatives

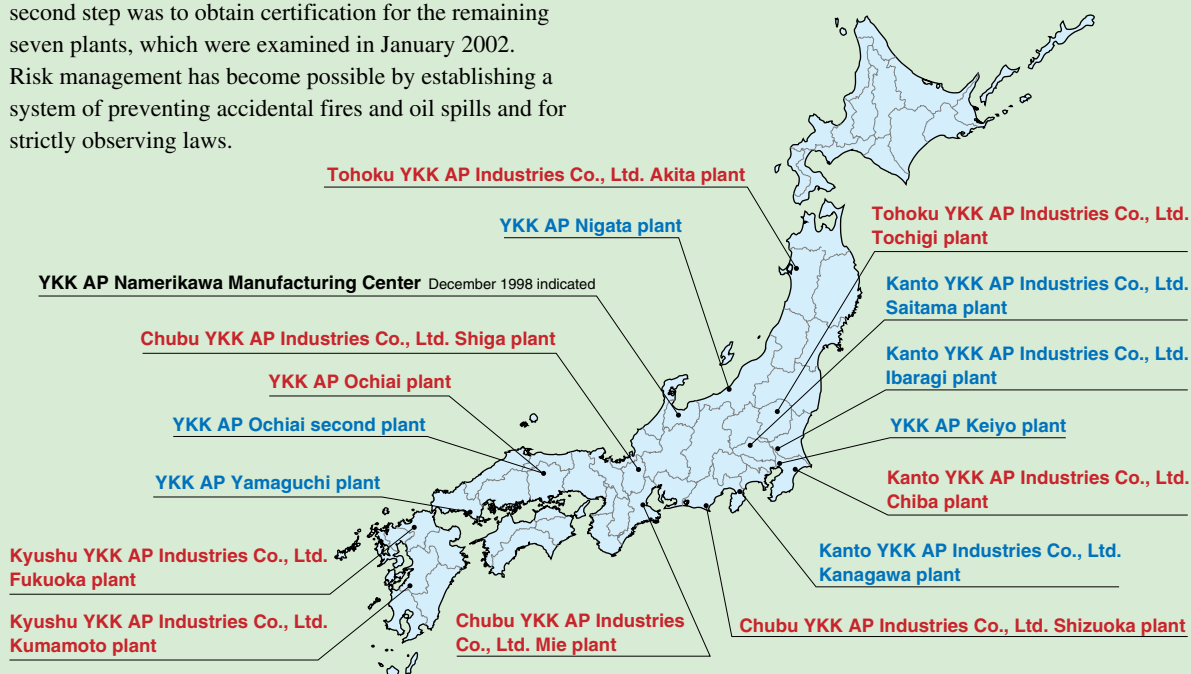
We are in the process of obtaining certification for sites that have not yet obtained certification, primarily sales offices in Japan, and will obtain certification for entire group area by the end of fiscal 2003. We will also work on integrating the environmental management system in order to more reliably carry out environmental activities as a group. We are pursuing certification overseas in accordance with our plan for obtaining certification.

○ ISO 14001 certification obtained for all 17 plants of YKK AP Manufacturing Group

The YKK AP Manufacturing Group has worked on expanding its range of ISO 14001 certification to all 17 manufacturing group plants (see figure) with certification for the YKK AP Namerikawa division.

The first step was to expand to ten plants in June 2001. The second step was to obtain certification for the remaining seven plants, which were examined in January 2002. Risk management has become possible by establishing a system of preventing accidental fires and oil spills and for strictly observing laws.

Sites obtaining certification in June 2001 indicated in **red**
Sites obtaining certification in January 2002 indicated in **blue**



YKK AP Industries Co., Ltd., merged with YKK AP Inc. on August 1, 2002.

Group internal environmental inspection

YKK Group internal environmental inspection conducted by an in-house expert who provides advice, guidance and support for reinforcing the system of observing laws and regulations and enhancing environmental performance of the entire group

Environmental action targets

- Internal environmental inspection at all major bases the world over

○ Achievements for fiscal 2001

YKK Group internal environmental inspection has been conducted since 1994. At various plants and other places of business, voluntary internal environmental inspection is conducted based on independent group internal environmental inspection items and inspection base on the environmental management system.

Internal environmental inspection has been conducted at our overseas plants as well since 1997 in order to enhance environmental performance for the entire group including overseas operations.

Internal environmental inspection was conducted at 4 domestic plants and 3 overseas plants in fiscal 2001.

Although positive environment improvement activities were conducted in general, ISO 14001 certification has yet to be obtained. Systematic environmental management is thought to be necessary.

These results have been reported to the Environmental Policy Committee and are being used for reexamination of group environmental activities.

○ Future initiatives

Together with integrated domestic ISO 14001 certification, internal environmental inspection is to be conducted in all domestic areas including office, development and sales facilities.

Internal environmental inspection has been conducted at 14 plants in 10 countries: Indonesia, Germany, America, China, Italy, Taiwan, Spain, Turkey, England and France.

Reliable environmental performance improvement is planned for the whole group by continuing to conduct internal environmental inspection at bases throughout the world.

○ Overseas internal environmental inspection

Overseas internal environmental inspection was conducted at 3 plants in 2 countries, England and France, in June in fiscal 2001. With our fastening business, a system that respects local culture and thinking was constructed at overseas companies as well, and environmental conservation activities are conducted according to the Group's policy.

Thus, inspections were conducted for the following objectives:

- (1) Provide advice and support for constructing and utilizing an ISO 14001 environmental management system.
- (2) Provide advice, guidance and support for enhancement of environmental performance, reinforcement of law observance system and avoiding environmental risk through inspection results and preparation for environmental inspection.

Actual inspection was conducted in accordance with the following procedure:

- Summary of previous on-site inspection points based on document examination
- Point check by on-site interview and patrol and corrective advice

- Quantitative assessment of document examination and environmental facilities walk-through inspection results, report by graphs/photographs
- Pointing out points that need improvement and preparation and implementation of corrective plan
- Report to top management, advice to overseas company, follow up at site

We now have the opportunity to reconsider our system of observing laws and regulations. We were also able to check how all employees work for technological and economic improvement from the perspective of the environment for energy saving activities, waste countermeasures, management of toxic substances and environmental risk countermeasures.



Internal environmental inspection at plant in England

Environmental accounting

Along with clarifying money invested in environmental activities and utilizing it for environmental management decision in order to conduct environmental investment more efficiently and effectively, we publish environmental accounting data as material that reveals our corporate posture to the public.

Environmental action targets

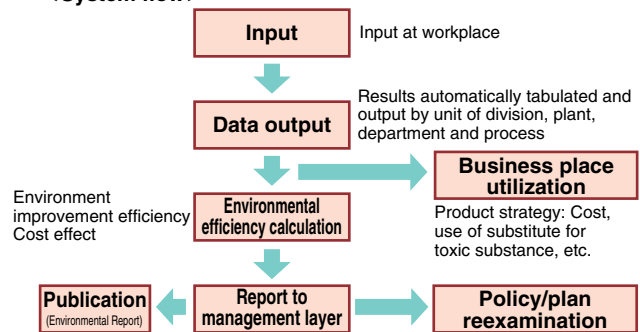
- Environmental accounting system

Results for fiscal 2001

Environmental equipment investment, environmental conservation cost and short-term effect have been calculated. Environmental accounting standards conform to Guidelines for Implementing and Environmental Accounting System [2002 version] put out by the Japanese Ministry of the Environment, March 2002.

Environmental accounting system overview

<System flow>



Results of environmental accounting for fiscal 2001 (April 2001 - March 2002)

◆ Fiscal 2001 environmental conservation cost (limited to domestic YKK Group)

(Unit: ¥ 1 million/year)

Item	Contents and effect of main initiatives	Equipment investment	Cost
Cost within business area	Prevention of pollution	Special measures against dioxins exhaust cooling equipment (waste heat boiler) exchange	118 / 773
	Conservation of the global environment	CFCs equipment survey and management, energy saving measures	292 / 358
	Recycling of resources	Establishment of Kurobe Recycling Center, industrial water piping modification, Ni recovery/ concentration equipment	129 / 635
Work area internal cost total		539	1,766
Upstream/downstream cost	Return waste sash disassembly cost	0	66
Management activities cost	ISO 14001 maintenance/management cost, environmental exhibition, environmental report, environmental analysis, tree planting	22	673
R&D cost	Development of environment-friendly products	14	776
Social activities cost		0	0
Environmental damage cost	Inspection and management of fire extinguishing equipment	0	0
Other costs		17	36
Total		592	3,317
		Fiscal 2000	1,345 / 4,030

	Environmental equipment investment			Environmental expenses		Sales (Unit: ¥100 million)	Total equipment investment (Unit: ¥100 million)
	(Unit: ¥100 million)	Sales ratio (%)	Equipment investment ratio (%)	(Unit: ¥100 million)	Sales ratio (%)		
Fiscal 2001	5.9	0.2	2.7	33.2	0.9	3,852	218
Fiscal 2000	13.5	0.3	4.4	40.3	1.0	4,056	307

Examples of segment environmental accounting by measure (expected effect of introducing high-efficiency, compact once through boiler)

As the equipment at our Fastening Products Division ages, we are considering replacing the heavy oil-burning water tube boiler. We did a comparison study that sets conditions for the new equipment as heat recovery of drain water and blow water, cleaning of exhaust and an energy-saving type that uses dyed warm soft water (60°C). We found the amount of CO₂ discharged and recovery period of investment cost to differ largely according to the type of fuel used. As a result of taking stress of the process that uses steam into account, as the combination with the best environment improvement efficiency, we decided to introduce 12 low-sulfur A heavy oil-burning (0.04% sulfur) and 6 kerosene-burning high-efficiency compact once through boiler, and distributed it among the various buildings of the plant.

Equipment investment cost (¥100 million)	Effective sum (¥100 million/year)	Cost recovery (Years)	Environmental conservation effect (t-CO ₂ /year)	Environmental performance improvement efficiency (t-CO ₂ /¥100 million)
1.3	0.35	3.7	2,394	1,842



We also considered reduction of SO_x

○ Effect

◆ Substantial effect of major environmental activities for fiscal 2001 (range: Domestic YKK Group)

Environmental-investment items	Environmental investment (unit: ¥1 million)	Effective amount (unit: ¥1 million/year)	Description (Countermeasures, comparison with current status, calculated effect, etc.)
Energy conservation	279	93	Effect of introduction of high-efficiency equipment, modification of production process
Used paper collection	4	13	Used paper storage facilities, etc. Effect is profit from selling off and reduction of cost of incineration by recovery.
Measures for coping with waste	48	35	Construction of recycling wing, introduction of compactor, etc. Effect is reduction of cost of disposal as landfill.
Transportation measures	0	48	Shift from transportation by truck to train (even for transporting less than 800 km)
Reduction of packaging materials	33	39	Effect of wire skids and improvement of packaging method for homemakers.

◆ Effect of environmental conservation for fiscal 2001

Items	Stress on the environment					Environmental performance improvement rate (EE value) *2 (tons/¥100 million)		
	Results for 2000 (tons/year)	2001 conversion *1 (tons/year)	Results for 2001 (tons/year)	Amount of reduction	Increase/decrease rate (%)			
Effect on investment resource	CO ₂	325,747	309,363	305,164	4,199	1.4	126.600	
	Amount of water used	21,579,000	20,493,666	19,250,000	1,243,666	6.1	37,494.140	
	Materials	Aluminum bullion	116,649	110,782	109,750	1,032	0.9	31.114
		Electrolytic copper	7,622	7,239	7,820	-581	-8.0	-17.527
Effect on discharged waste, environment stress	NO _x	418	397	536	-139	-35.0	-4.191	
	SO _x	173	165	141	24	14.4	0.714	
	BOD	50	47	41	6	13.7	0.196	
	COD	21	20	25	-5	-25.4	-0.152	
	Amount of waste disposed of as landfill or by incineration	5,734	5,446	4,036	1,410	25.9	42.497	
	PRTR applicable substances	2,026	1,924	2,028	-104	-5.4	-3.132	
Effect on transport	Transport(CO ₂)	20,147	19,134	20,081	-947	-5.0	-28.560	

*1. 2001 conversion:

Calculated by taking sales results of fiscal 2000 and 2001 into account based on results of stress placed on the environment for fiscal 2000.

2001 conversion = results of stress placed on the environment for fiscal 2000 multiplied by sales results of fiscal 2001 divided by sales results of fiscal 2000.

*2. Environmental performance improvement rate (EE value):

Expresses whether or not stress placed on the environment is reduced (or increased) per¥100 million of environmental conservation cost.

EE value = amount of reduction / environmental conservation cost (¥3.3 billion for fiscal 2001)

The larger the numerical value is, the better the environment improving effect.

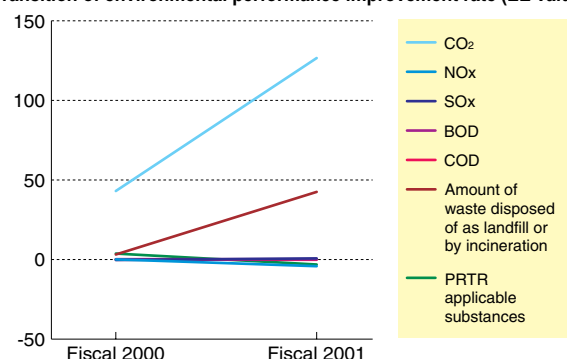
○ Future initiatives

The environmental accounting report has the following three features:

1. Effect of resource investment and transportation is incorporated into environmental conservation effect.
2. Gives examples of segment environmental accounting by measure.
3. Gives change in environmental performance improvement rate (EE value) over the years.

A possible theme for the future is the need to enhance convenience for environmental accounting data users in and outside the group including management and rank-and-file workers. We would therefore like to establish internal usage techniques, promote indexed management of environmental accounting data, accurately assess environmental accounting data users, and enhance comparison potential and reliability.

Transition of environmental performance improvement rate (EE value)



Efficiency of CO₂ and waste disposal reduction has been enhanced.

V • Green purchase

By purchasing environment-friendly materials and parts from environment-conscious companies (companies taking constructive initiatives concerning the environment), we can reduce environmental stress of our business activities as a whole, promote development/provision of products that facilitate resource recycling and contribute to a recycling-oriented society.

Environmental action targets

- Procurement of green purchasing products

○ Fiscal 2001 achievements

In fiscal 2001, we registered an additional 100 green purchase items to the product master and raised our green purchasing rate. In connection with environmental accounting, we got a good understanding of green purchasing results and were able to establish future action targets.

We operated a recycling system that takes environment-friendly product cycle into consideration for copy paper (recovery of copy paper at business place → toilet paper manufactured at paper manufacturing company → YKK purchase), and adopted the same recycling system for confidential documents.

We also check whether new suppliers have obtained ISO 14001 certification and tie it in with future assessment.

We teach our employees awareness of green purchasing through green purchasing sales promotion activities at our sales outlets in the plant (promote eco products, conduct questionnaire surveys of suggestions and desires, establish eco-product corner).

○ Future initiatives

To raise the green purchasing rate, we will recommend purchase of green products for new purchasing products, urge our suppliers to obtain ISO 14001 certification or engage in EMS construction, and provide support for doing so. We will expand the mechanism for getting an understanding of green

DATA SECURITY and RECYCLE SYSTEM



purchasing results to the entire group, and conduct it for purchasing of related parts as well.

We will plan to promote green purchasing activities and work to enhance employee awareness.



*We found that primarily housewives were interested in green purchasing.

VI • Management of chemicals

Management of chemicals

Along with batch managing use and discharge of chemical substances, we are working to reduce and develop alternatives to toxic chemicals.

Environmental action targets

- We will continue to reduce use of toxic chemicals at our major production bases the world over.

◆ Breakdown for substances applicable to PRTR (limited to domestic YKK Group plants)

Unit: t (Dioxins:mg-TEQ)

No.	CASNo.	Substance	Volume handled	Air	Water	Soil	Sewerage system	Consumption	Disposal	Transport volume	Recycle volume
1	—	Water soluble compounds of heavy lead	3.1	1.4	0.0	0.0	0.0	0.3	1.3	0.0	0.1
9	103-23-1	Adipic acid bis (2-ethylhexyl)	59.4	0.0	0.0	0.0	0.0	54.5	0.0	4.9	0.0
40	100-41-4	Ethylbenzene	2.1	1.6	0.0	0.0	0.0	0.0	0.5	0.0	0.0
43	107-21-1	Ethylene glycol	12.4	0.2	1.4	0.0	0.0	3.1	7.7	0.0	0.0
63	1330-20-7	Xylene	301.4	71.0	0.0	0.0	0.0	0.0	218.9	0.7	10.8
68	—	Chromium and trichromium compounds	3.5	2.3	0.0	0.0	0.0	1.2	0.0	0.0	0.0
100	—	Cobalt and cobalt compounds	14.1	0.0	1.9	0.0	0.0	9.0	0.0	3.0	0.2
102	108-05-4	Vinyl acetate	46.9	0.0	0.0	0.0	0.0	39.5	0.0	7.4	0.0
108	—	Inorganic cyanide compounds	19.9	0.1	0.0	0.0	0.0	0.0	17.8	2.0	0.0
132	1717-00-6	1, 1-Dichloro-1-fluoroethane	38.8	0.0	0.0	0.0	0.0	33.1	0.0	5.7	0.0
144	—	Dichloropenta-fluoropropane	1.9	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
145	75-09-2	Dichloromethane	72.7	59.2	0.0	0.0	0.0	0.0	0.0	13.5	0.0
176	7439-97-6	Organotin compounds	1.4	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.0
179	—	Dioxins	—	21.7	0.0	0.0	0.0	0.0	0.0	1.7	0.0
227	108-88-3	Toluene	107.7	76.3	0.0	0.0	0.0	0.0	5.0	1.1	25.3
230	—	Lead and lead compounds	40.1	0.0	0.0	0.0	0.0	31.8	0.0	8.3	0.0
231	7440-02-0	Nickel	5.0	0.0	0.1	0.0	0.0	4.8	0.0	0.0	0.1
232	10101-98-1	Nickel compounds	35.8	0.0	3.7	0.0	0.0	21.3	0.0	10.8	0.0
272	117-81-7	Bis-2-ethylhexyl phthalate	973.4	0.0	0.0	0.0	0.0	929.2	0.0	20.1	24.1
304	—	Boron and boron compounds	14.8	0.0	12.6	0.0	0.0	0.0	0.1	2.1	0.0
309	9016-45-9	Poly (oxyethelene) = nonylphenol ether	2.4	0.2	1.4	0.0	0.0	0.0	0.7	0.0	0.1
311	—	Manganese and manganese compounds	33.3	0.0	0.0	0.0	0.0	28.2	0.0	0.3	4.8
2-78	101-68-8	Methylene bis (4, 1-phenylene) = Disocyanate	234.6	0.0	0.0	0.0	0.0	223.6	0.0	11.0	0.0

*Data is given for substances handled in volume of 1 ton or more per year.

○ Results for fiscal 2001

In fiscal 2001, the YKK Group separated the impact of chemicals it used on the environment in terms of toxicity and discharge volume. The top-ranked chemical substances are classified as substances with priority for reduction, and an intermediate-long term reduction plan has been prepared and a system for reliably and continuously reducing them has been prepared.

○ Future initiatives

Along with continuing and perfecting the PRTR system and batch managing use and discharge of chemical substances used at main domestic production bases, we are promoting development of alternatives to toxic chemical substances. We will also establish techniques for assessing chemical substances from the perspective of risk communication.

○ Reduction of dichloromethane

We contribute to prevention of global warming by providing customers with high insulating materials. We use dichloromethane (PRTR applicable substance) to wash injection machines used in insulation injection, which is one of the steps in the manufacturing process, but are switching to non-chlorine solvents.

The switch was completed at our Shikoku plant and Kurobe building materials plant in fiscal 2001. By doing so, we have reduced 40% of the amount of dichloromethane used in comparison with the previous year. We will continue to reduce and find alternatives to toxic chemical substance in the future as well.



Insulation injection machine (using non-chlorine solvent)

Energy conservation (prevention of global warming)

We are introducing high-efficiency equipment when updating or installing new equipment at our plants, improving our processes for saving energy for handling production fluctuation, and are actively promoting energy saving activities such management standard maintenance for efficiently operating equipment.

Environmental action targets

- 10.4% reduction in energy unit requirement, 10.1% reduction in energy amount, and 13.8% reduction in CO₂ discharge compared with 1990 level at main bases in Japan by the end of 2005.

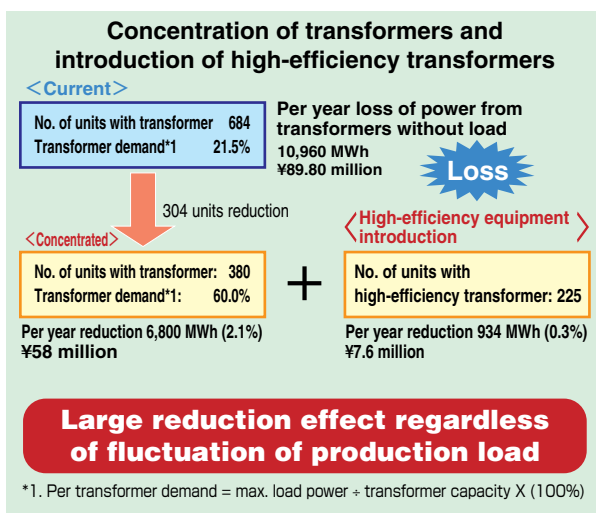
Targets and results for fiscal 2001

We are working on effective use of energy (CO₂ discharge control) in order to prevent global warming. As an index, we have established and are executing a target of energy unit requirement for sales. Due to depressed production activities in recent years, however, the effect of energy-saving equipment investment is affected by sales. The energy unit requirement for sales for fiscal 2001 has gone down 1.5% compared with the previous year, but we were unable to achieve our target of 6% reduction and 3.7% reduction in comparison with the fiscal 1990 level.

Future initiatives

Thinking it necessary to invest in energy-saving equipment for saving energy according to production volume (fixed part of energy made to fluctuate), we incorporate it into the intermediate-long term energy equipment plan/policy for various business places.

A specific initiative would be placing concentration of transformers and introduction of high-efficiency transformers in the intermediate-long term plan and carrying it out.

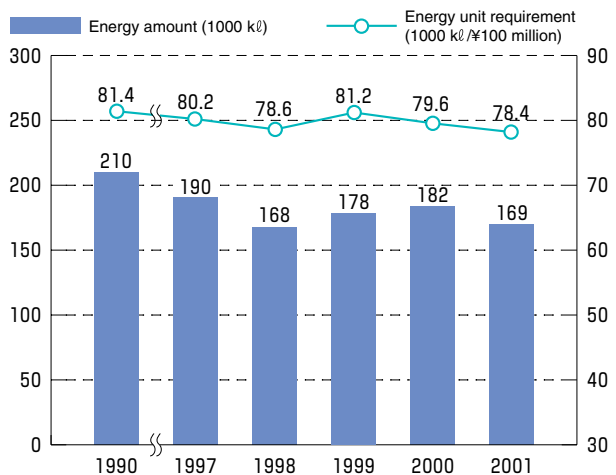


Thorough energy management is required for observing laws and promoting further energy management. To reliably apply management standards and enhance effect, the standards are incorporated into the ISO system so they can be thoroughly applied without checking by energy saving patrol.

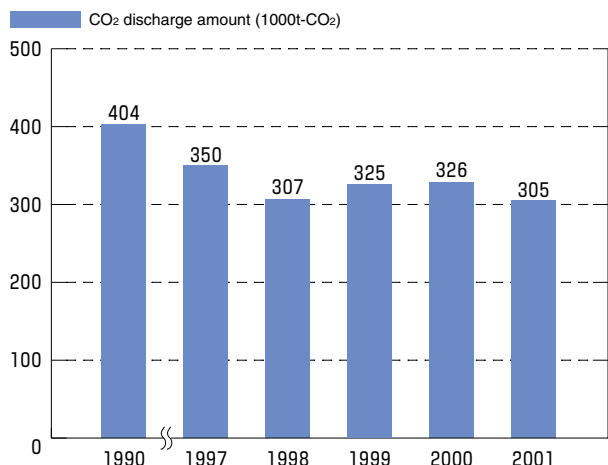
Main efforts of fiscal 2001

Production process improvements	Improvement of extrusion machine auxiliary pump operating method
	Reduction of power by automatic unit number control of compressor
	Reduction of power by central control of air conditioners
	Inverters used for fluorescent light stabilizers
	Inverters used for exhaust fans, air conditioner pumps, etc.
Introduction of high-efficiency equipment	Introduction of new type of coil chain molding machines
	Introduction of high-efficiency compressors
	Switch to 2.5t waste heat boilers

Transition of amount of energy used and energy consumption per unit of sales (Limited to major YKK Group domestic plants)



Transition of CO₂ discharge (Limited to major YKK Group domestic plants)



○ Energy saving by reduction of copper alloy hot rolling process

Metal wire for fasteners is manufactured at the Kurobe Makino plant. Electricity for heating for melting, molding, rolling and annealing accounts for approximately 40% of all power used at the plant. Because at 650kW, the capacity of our hot rolling machine is large, we incorporated a margin in our contact power to deal with fluctuation in production load. When manufacturing copper wire in the past, 8Φ material (rough drawing wire) was manufactured by hot rolling 20Φ molded material following induction heating. To eliminate the hot rolling process and directly manufacture 8Φ material molding speed must be six times faster and new molding solidification technology machining technology suitable for molding materials must be developed. Jacket structure has been improved, dice have been made thinner and molding motion has been improved to make this possible. Development of technology to directly manufacture this 8Φ material (high-speed molding technology for fine work) and cold rolling technology has enabled us to save energy by reducing the process.

The following improvements are made possible by eliminating the hot rolling process

1. Reduction of power for induction heating for hot rolling
2. Reduction of contract power
3. Environmental performance improvement (acid washing omitted, high-temperature work omitted)

Effect	Before improvement	After improvement	Annual power reduction (MWh/year)
	1,296	885	4,879

Transition of contract power

Year	Contract power
Fiscal 1997	12,500kW
Fiscal 1998	11,000kW
Fiscal 1999	10,500kW
Fiscal 2000	9,000kW
Fiscal 2001	9,000kW
Fiscal 2002	8,500kW

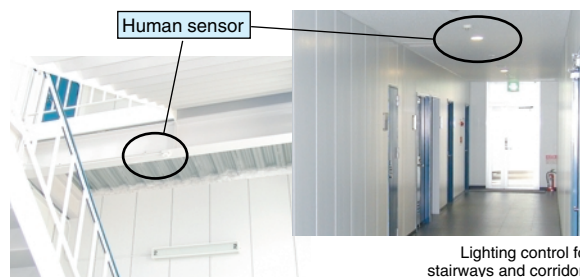


New molding line

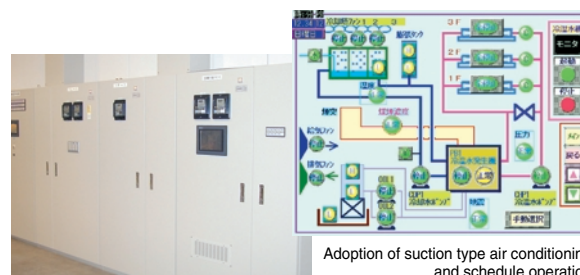
○ Energy saving measures for new plant construction

Because an increase in power consumption due to new equipment (kitchen, etc.) and fixed power consumption due to increase in area of new plant portion (12% increase), when planning new plant construction at our Machinery & Engineering Division, we incorporated power saving measures for lighting, air conditioning, etc., and carried out the plan. As a result, we were able to keep power consumption the same as before construction.

Item	Description of measure	Power saving effect
Motive power	① Adoption of vacuum suction sewage drainage motive power	160 kWh/month
Lighting	① Adoption of energy saving lighting	10,199 kWh/month
	② Adoption of human sensor control	1,972 kWh/month
	③ Adoption of timer control	172 kWh/month
	④ Toilet lighting/exhaust human sensor linked control	2,043 kWh/month
Air conditioning	① Adoption of suction type air conditioning	93,286 kWh/month
	② Adoption of large temperature differential suction type air conditioning	3,784 kWh/month
	③ Adoption of inverter cool water pump	1,716 kWh/month
	④ Reduction of air conditioner load by use of insulation	531 kWh/month
	⑤ Reduction of air conditioner load by introduction of heat exchanger	420 kWh/month
	⑥ Adoption of schedule operation control	434 kWh/month
Total		114,717 kWh/month



Lighting control for stairways and corridors



Adoption of suction type air conditioning and schedule operation

Reduction and recycling of waste (zero emission)

Considering waste to be a resource, we are working on recycling and achievement of zero emission.

Environmental action targets

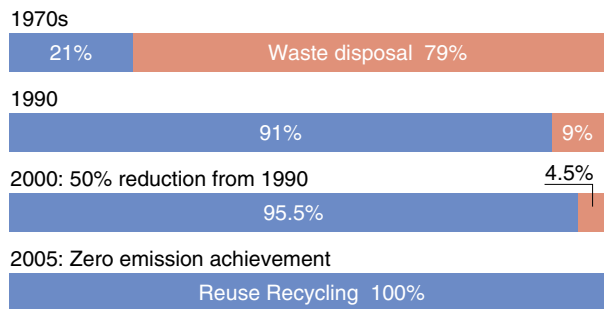
- Aiming to achieve zero emission* for world's main bases by the end of 2005.

*Zero emission of YKK Group: Elimination of waste disposed of as landfill.

Reduction and recycling of waste

Our efforts to recycle industrial waste began in the 1970s with recovery of aluminum hydroxide from waste alkalis from the alumite process. Since then we have had success with recycling sludge, reducing waste by recovering and recycling acids.

We hope to be able to recycle 100% by the end of fiscal 2005 to achieve "zero emission."



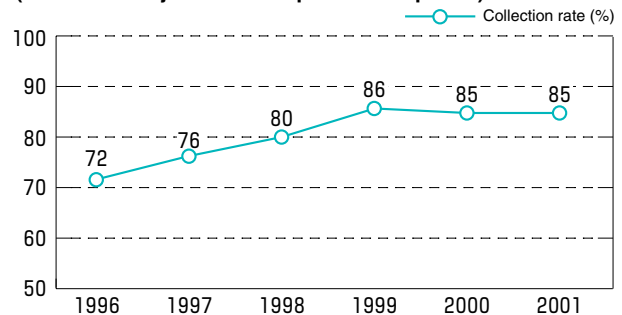
Results for fiscal 2001

We have promoted and expanded recycling of waste produced. We did a thorough job of sorting/recovering waste plastic and promoted material recycle and thermal recycle as cement fuel. We started recycling waste that is impossible to sort in a gasification fusion furnace.

We have promoted reuse of multilayer glass scraps produced at glass workshops as plate glass and roadway subgrade. Along with installing garbage disposal units at company lunchrooms, we started experimenting with turning the garbage from company lunchrooms into fertilizer.

The industrial waste sales unit requirement for fiscal 2001 was dramatically reduced by 28% compared with the previous year, but we were unable to achieve our target of 60% reduction and 57% reduction compared with the fiscal 1990 level.

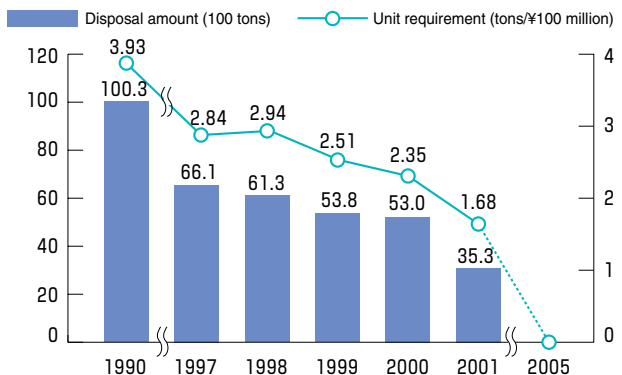
Transition of old paper collection rate (Limited to major YKK Group domestic plants)



Future initiatives

Along with expansion/promotion of waste plastic material recycle, conversion to cement fuel, recycle by gasification fusion furnace and conversion to sludge cement raw material, we are promoting recycle of waste alkaline, waste oil, brick scraps and ceramic scraps, and aim to achieve zero emission by the end of fiscal 2005.

Transition of industrial waste disposal amount and sales unit requirement (Limited to major YKK Group domestic plants)



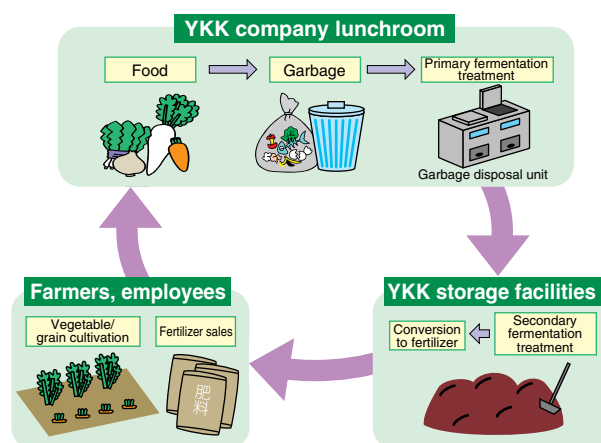
○ Conversion of garbage to fertilizer

We are working to convert the garbage from the company lunchroom at our Kurobe plant into fertilizer. Using two-stage treatment by garbage disposal unit and rice bran, we completely decompose and ferment the garbage to convert it to fertilizer.

In order to confirm the effect of the fertilizer, we are conducting a growth comparison test of fruit and vegetables at our company garden. As an extension of the experiment, about 100 people responded to our ad for an in-house fertilizer monitor. Utilizing the opinions of monitors, we aim to create high-quality fertilizer that is easy to use.

In the future we plan to establish a stable supply of high-quality fertilizer and construct a recycling of resources type system.

We are also working on converting mowed grass and pruned tree branches into compost.



○ Glass recycling

The YKK Group has plants and workshops that manufacture multilayer glass at five locations across the country. We have begun working on switching from disposing of the glass scraps discharged from these sites as landfill to recycling them.

Glass includes various types such as single layer plate glass, multilayer glass, Low-E and screen-reinforced glass. The glass is sorted into types and sent to recycling companies. Single layer plate glass is crushed and recycled as plate glass, roadway subgrade or as glass wool.



Front gate of Tohoku plant
(YKK waste glass used as roadway subgrade)

○ Recycling of waste solvent and waste lubricating oil

At Shanghai YKK Zipper Co., Ltd., with the permission of the Shanghai Environment Conservation Bureau, the waste solvent generated by the painting process (1000 kg/month) and waste lubricating oil generated by mechanical equipment (750 kg/month) was entrusted to contractor that disposes of it by incineration.

This treatment is permitted by Chinese environmental conservation laws. We however studied and verified neighboring companies to promote the YKK Group's target of zero emission (stop simple incineration and verify recycling). As a result, since May 2001, waste solvent has been distilled and sold to other companies mixed solvent to be used as a raw material, and waste lubricating oil has been filtered and sold to lubricating oil makers as foundation oil.



Recycling of waste solvent (distillation)

Recycling of waste lubricating oil (filtration)

Ozone layer protection

We have constructed and are operating a "CFCs recovery system" that reliably recovers CFCs when refrigerators and air conditioners are discarded.

Environmental action targets

- CFC-11 (for refrigerants) Must stop being used by the end of fiscal 2003
- HCFC-141b (for foaming) Must stop being used by the end of fiscal 2002
- HCFC-225 (for washing) Must stop being used by the end of fiscal 2010
- HCFC-22 (for refrigerants) Promotion of recovery of refrigerant when installing new air conditioning equipment and removing existing air conditioning equipment

The "CFCs Recovery and Destruction Law" has been in effect since April 2002. Applicable equipment includes commercial air conditioners and refrigerators. When air conditioners, etc., are discarded, the makers[RJS1] are obligated to recover and properly treat the CFCs.

The YKK Group was recovering CFCs even before the law went into effect. In fiscal 2001, we recovered CFCs from 17 air conditioning units. We have applied management stickers to applicable equipment currently in use such as air conditioners and are reinforcing management by recording in a registry.



Management sticker applied to outdoor air conditioner unit

Environmental conservation (prevention of pollution)

We have established voluntary standards for wastewater and sulfur oxides (SOx) and nitrogen oxides (NOx) in the exhaust from our plants and workshops that are even more severe than laws and agreements.

Environmental action targets

- More thorough environmental stress reduction management

● Prevention of air pollution

We have adopted low-sulfur fuels such as kerosene and LPG for fuel used in the production process when updating equipment. At the same time, concerning nitrogen oxides, we have adopted special low NOx burners for our melting furnaces and are suppressing generation of NOx.

At our Kurobe plant, aiming to control generation of sulfur oxides (SOx) and further improve energy efficiency rate, in June 2001 we upgraded from boilers that use C heavy oil for fuel to high-efficiency boilers that use low-sulfur A heavy oil (max. sulfur content of 0.1%).

Concerning our countermeasures against dioxins, generation of dioxins has been suppressed by maintaining incineration temperature of our incineration ovens at a minimum of 800(C and by quick-cooling exhaust. Having had regulations strengthened in recent years, we are phasing out incinerating furnaces, having abolished two of four applicable furnaces in fiscal 2000 and one in fiscal 2001.

● Prevention of water pollution

As the YKK Group's first initiative in fiscal 2001, we conducted as study of aquatic life in rivers in which wastewater from our Kurobe plant is discharged as an index for general water quality assessment.

Along with continuing the study, we will work on further improving the water quality



Aquatic life study

● Underground water conservation

Considering water to be an important resource, along with reducing the amount of water through effective use of cooling water in the manufacturing process, we contribute to underground water conservation by allowing rainwater to gradually seep underground.

By recovering and reusing used cooling water by introduction of a filtering unit at our Fastening Products Division, we were able to reduce use of industrial water by 70% to 749,000 m³ in fiscal 2001 compared with 2.422 million m³ used in fiscal 2000.



Reuse of industrial water by introduction of filtering unit

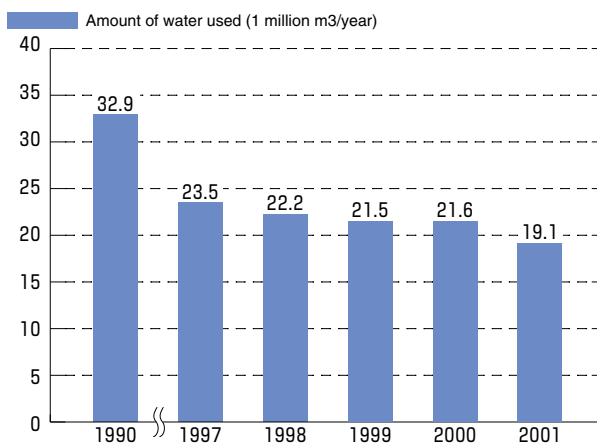
● Soil conservation

We have ranked soil contamination as one of the important management risks of the future and are working on the problem.

As a result of studying underground water at our main domestic plants, no heavy metals or volatile organic chlorine compounds were detected at any of the plants.

In May 2002, along with establishing the Soil Contamination Measures Law, we created the "YKK Group Soil Measures Regulations" and "YKK Group Soil Measures Guidelines" and plan to start a study of the YKK Group grounds based on the law.

Transition in amount of water used (limited to domestic YKK Group plants)



A possible procedure for the study method is (1) history study, (2) overview study, (3) detailed study and (4) cleanup. The various techniques and study standards have been promulgated by government ordinance and ministerial ordinance and the study is conducted in accordance with the ordinances.

We will also continue to conduct the underground water study currently conducted at our main domestic plants for preserving the local environment and to reduce management risk.

Transportation measures

By improving transportation efficiency, we aim for environmental-friendly transportation.

Environmental action targets

- Enhanced transportation efficiency
- Promotion of use of regional ports

- Promotion of modal shift

○ Results for fiscal 2001

Along with completely conducting joint transportation, we improved truck-loading efficiency from our distribution center to the customer by approximately 10%.

With promotion of modal shift, for products for which there is no rush in delivery to the distribution center, we have shifted from transportation by truck to railway even for distances less than 800 km.

○ Future initiatives

We have shifted from route transportation to mixed loading transportation method, and have further reduced the number of trucks to improve transportation efficiency. We are also planning to expand the range of shift change from truck to railway for distances within 800 km. Concerning import and export, we are also expanding use of ports with good transport efficiency.

Reduction of packaging materials

While maintaining product quality, we promote simplification of packaging and reuse of packaging materials.

Environmental action targets

- Basic packaging materials unit requirement to be reduced by 7% of fiscal 1998 level by the end of fiscal 2003
- Recycling of packaging and packaging materials to be achieved by the end of fiscal 2005

Results for fiscal 2001

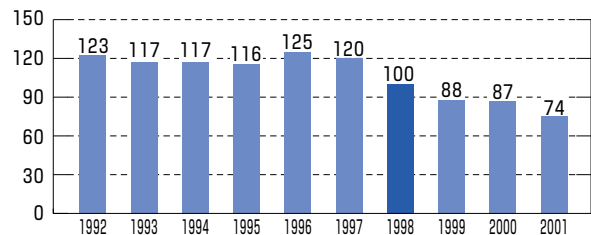
Seventy percent of the packaging materials we use consist of cardboard, paper and wood.

We have achieved our target for fiscal 2003 of reducing packaging materials unit requirement for sales of fiscal 2001 by 19% compared to the fiscal 1998 level.

Due to diversification of products and change in packaging form, the amount of plastic has tended to increase. By reconsidering our packaging method, we were able to dramatically reduce the amount of paper packaging materials.

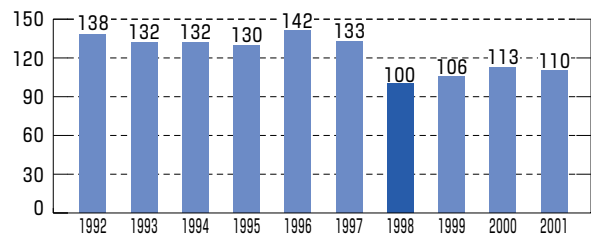
Cardboard, paper and wood packaging materials purchase results

Purchase amount (unit: %)



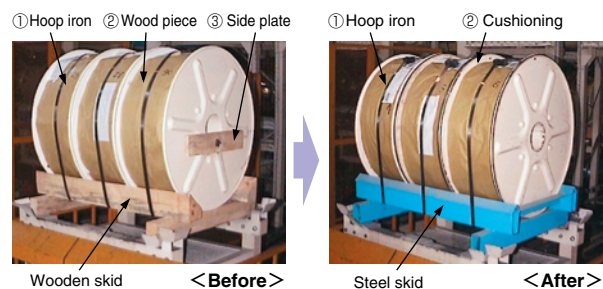
PE, PP foam styrene packaging materials purchase results

Purchase amount (unit: %)



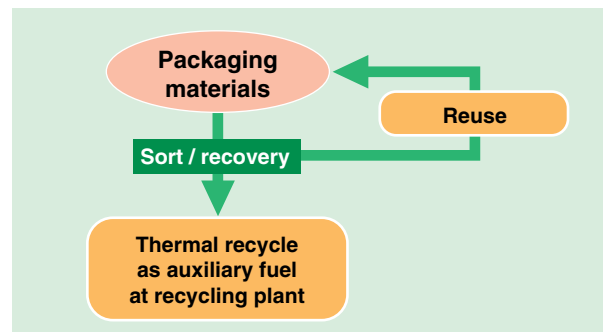
Packaging materials reduction by alteration of skid specifications

The Metal Materials Manufacturing Department of our Fastening Products Division provides wire for fastening products production bases throughout the world. We have begun making skids of steel instead of one-way wooden ones for preservation of forests, using returnable containers, reconsidering and simplifying parts to dramatically reduce packaging costs.



Expansion of recovery system of building materials packaging

In response to the wishes of our business partners, in fiscal 2000 we began recovering plastic and paper packaging materials used to package our products. The materials are reused or sent to recycling plants to be recycled as auxiliary fuel. In fiscal 2001 the area covered by the recovery system was expanded. In the future the system will contribute to reduction of amount of waste incinerated or disposed of as landfill.



○Development of returnable packaging with cushioning material and surface YKK fastener all in one

At our Kurobe Ogyu plant, we have improved our method of packaging of products delivered to house makers and have developed returnable packaging with cushioning material and surface YKK fastener all in one. This realizes zero packaging waste.

Before



We used to use packaging specifications such as shown in the photograph. The packaging consisted of various types of material such as polyethylene sheet and vinyl bags. YKK recovered the packaging materials and recycled them.

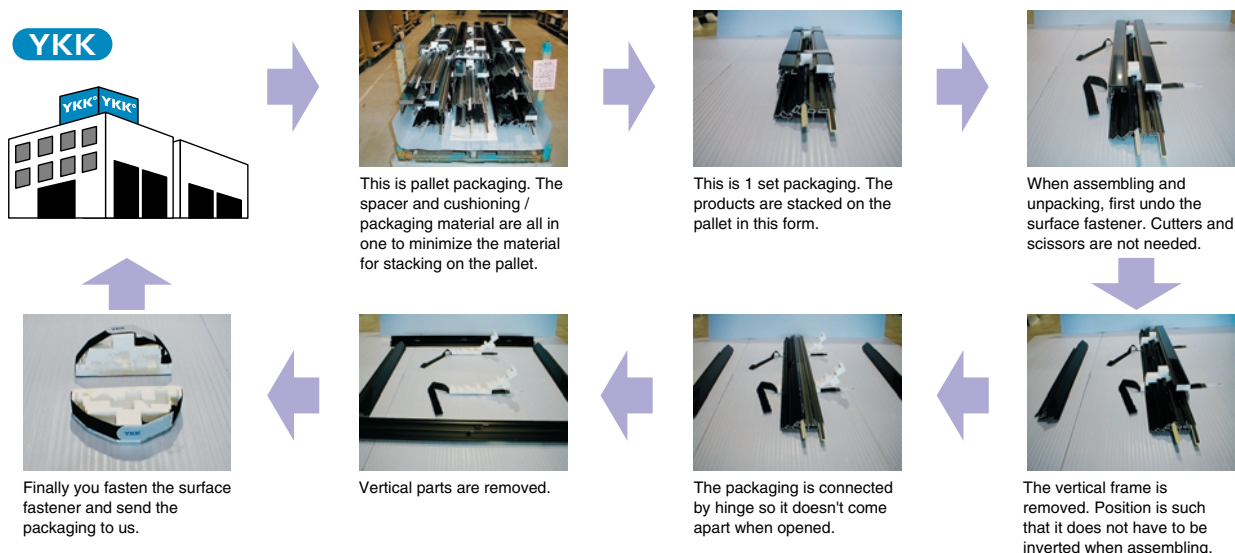


After



YKK has subsequently quit using all packaging materials. By using returnable packaging material of foam polyethylene and YKK surface fastener, we have realized zero packaging waste.

Flow of products and packaging material from YKK to house maker



Improvement of packaging methods such as the one shown above not only realizes zero packaging waste from the perspective of the environment, but also improves quality by reducing scratches and dents by contact with parts during transport. It is also connected with facilitating work for the customer by being preset, and has been well received by customers.

For inquiries concerning returnable packaging with cushioning material and surface YKK fastener all in one
Machinery and Engineering division
Production Machinery Manufacturing Department /
Technical Service Section
TEL : 0765-54-8352 FAX : 0765-54-8369

VII • Development of environment-friendly products

YKK Group's development of environment-friendly products

With the four keywords "save energy," "save resources," "recycle," and "ecosystem-friendly" as the basic concept, we contribute to building a recycling oriented society by incorporating that concept into product development and tying it into conservation of the global environment through life cycle that covers production, distribution, use and disposal.

Environmental action targets

- Develop and provide society with environment-friendly products
- Construction of product recycling system
- Execution of LCA

For LCA construction of building materials

At the Architectural Products division, we tried LCA assessment of our "APSWORD 100" insulated sash, which is one of our eco products. We divided the "APSWORD 100" into ordinary multilayer glass and LEMIG (low radiation multilayer glass) and made a trial calculation of how much CO₂ and how much stress "APSWORD 100" places on the environment throughout its life cycle.

Objectives and study range

Applicable products: APSWORD 100 double sliding window 1613 (ordinary multilayer and LEMIG)

Study objective: Conduct LCA study of CO₂ for aluminum + resin complex window

- (1) Grasp approximate discharge at each life stage
- (2) Grasp impact of discharge load by difference of boundary conditions for each usage stage
- (3) Acquisition of knowledge of future LCA

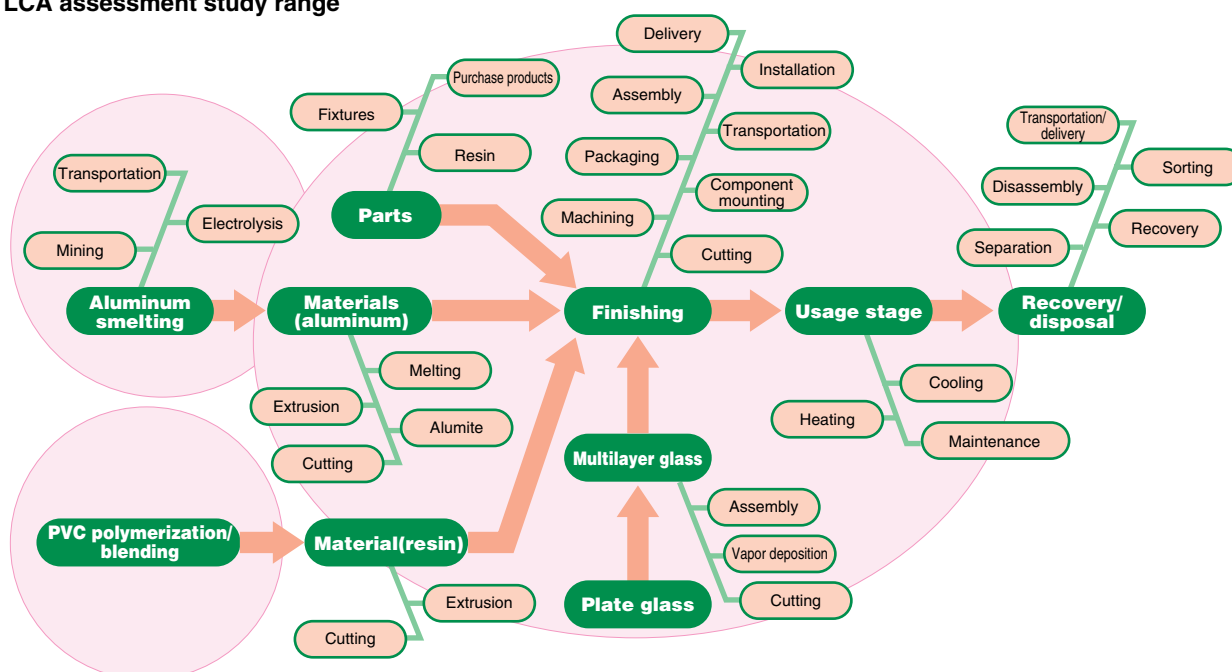
Study range: Discharge per set at manufacturing stage (raw materials - product finishing)

Discharge accompanying cooling/heat load per set at usage stage for 30 years

Applicable area: Sapporo (I) / Sendai (III) / Tokyo (IV)

Outside study range: Transportation stage, maintenance / disposal / recycle stage

LCA assessment study range

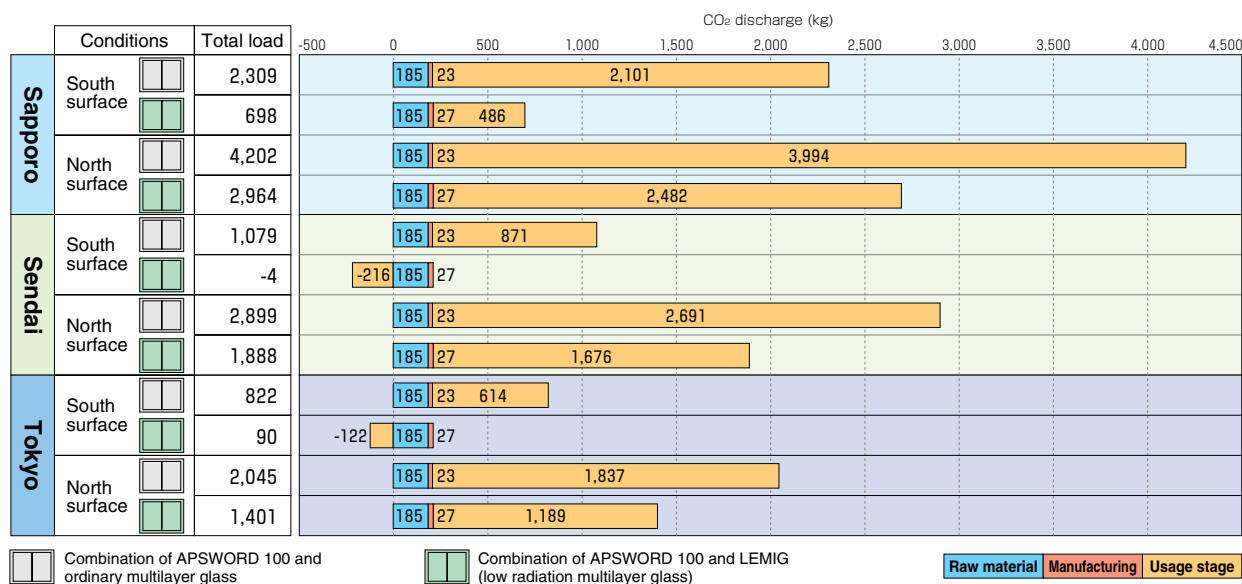


○ Inventory analysis results (raw material - usage stage)

The following table gives a summary of the results of inventory analysis. Concerning the usage stage, the values are the sum of cooling and

heating load.

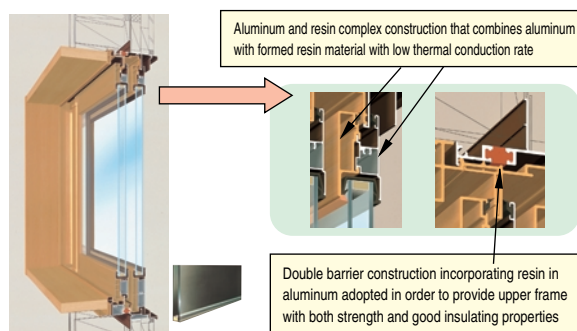
Negative values indicate reduction effect relative to load of one building.



○ Life cycle assessment

As a result of life cycle CO₂ assessment of “APSWORD 100”, we found that discharge at the usage stage accounted for the majority, and the effectiveness of using a sash with good insulating properties was confirmed. In the case where low radiation multilayer glass was used for the south surface, we found that cooling load was dramatically reduced by its sunlight blocking effect. Using this effect, we want to suggest customers use a combination of sash and glass suitable for each area and house orientation.

In the future we will recommend construction of a LCA system with disposal, recovery and recycling in its field of vision.



LCA assessment applicable products (APSWORD 100)

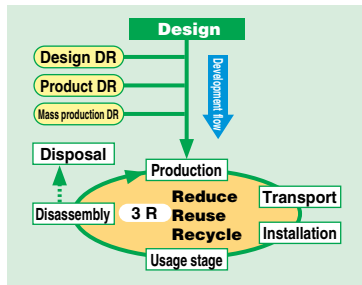
○ Inventory analysis (data source)

Life stage / item		Reference data source	
Raw material	Aluminum	Aluminum bullion	Japan Aluminum Association
	PVC	Crude oil drilling - polymerization	Plastic-treatment Promoting Association
	Parts	Parts material	Ministry of the Environment/National Institute for Environmental Studies/Global Environment Research Center/Graduate School of Kyoto University/Institute for Energy-science
	Glass	Glass plate production	Industrial Environment Management Association
Material	Aluminum	Aluminum material	YKK manufacturing plant fiscal 2000 results
	PVC	Compounding - extrusion	
Finishing	Parts	Parts finishing	YKK manufacturing plant fiscal 2000 results
	Glass	Multilayer glass finishing	
	Packaging	Cardboard	
	Finishing	APSWORD finishing	

Life stage / item		Reference data source
Usage stage	Annual heat load	YKK Corporation Building materials manufacturing Dept./Product development control Dept.
	Heat load calculation model	15th Thermo Symposium, 1985
	Simulation software	Architectural energy/energy conservation Organization
	Meteorological data	Architectural energy/energy conservation Organization
	Kerosene for heating	Ministry of the Environment/National Institute for Environmental Studies/Global Environment Research Center/Graduate School of Kyoto University/Institute for Energy-science
	Electric power mix	Hokkaido Electric Power Co., Inc./Tohoku Electric Power Co., Inc./Tokyo Electric Power Co., Inc. Central Institute for Electric Power

●Environmental product assessment

When conducting design review (design, product, trial mass production) during the development flow of building materials, the YKK Group uses an “environmental product assessment checklist” to check to what degree products are developed referring to “3R.” In fiscal 2001 we conducted environmental product assessment at the design stage for in-house-manufactured production machinery and fastening products.



●Environmental label

The YKK Group uses environmental labels for products that meet standards for products developed taking into account the four keywords of “save energy,” “save resources,” “recycle,” and “ecosystem-friendly” to have customers understand correctly.



●Design concept

Expressed with “eco” and “global” as the motif. Image of acting while thinking about “ecology” and softly enveloping the Earth. Green: Greenery, nature Blue: World, water, corporate color

Display/application standards according to environmental label type II self declaration

Save energy (reduction of CO2)	<ul style="list-style-type: none"> ●Thermal insulation product Next-generation energy saving standards, current energy saving standards (classifications I, II, III, IV, V) ●Thermal insulation product . . . Products that block sunlight to large degree ●Clean energy product Solar power generation ●Passive system product Products that use solar batteries, ventilation products
Save resources (efficient use of materials)	<ul style="list-style-type: none"> ●Reduction of material ●Reduction of number of parts
Recycle (reduction of waste)	<ul style="list-style-type: none"> ●Reduce High durability, long life, save resources ●Reuse Easy separation/disassembly, easy replacement, easy parts sorting ●Recycle Single material, material display, material selection, packaging materials
Ecosystem-friendly (friendly to people)	<ul style="list-style-type: none"> ●Ozone layer conservation Products that do not contain CFCs ●Sick house countermeasures Low formaldehyde, VOC suction products ●Atopy countermeasures Air conditioning, ventilation products ●Dioxin generation suppression Products that do not use PVC

Environment-friendly when used + Environment-friendly when discarded → Display and attachment of environmental label

●Identification display mark

Beginning in April 2003, manufacturers are obligated to display a mark to promote sorting/recovery of “PVC building materials” in accordance with the laws (Law for Promoting Effective Use of Resources) for promoting effective use of resources. YKK has been applying the “identification display mark” for products produced since February 2002. The mark that makers are obligated to display is “∞PVC” Other marks have been established as voluntary standard for the industry to facilitate future sorting and recovery.

PLAMAD III	∞PVC リサイクル可	∞PVC-W リサイクル可
APSWORD 70,100 (complex sash of aluminum and resin)	∞PVC,AL リサイクル可	∞PVC-W,AL リサイクル可
PLAMAD U TWIEL	∞PVC リサイクル可	

- ∞PVC : Sash of hard PVC
- ∞PVC-W : Sash of hard PVC containing wood powder
- ∞PVC,AL : Complex sash of hard PVC and aluminum
- ∞PVC-W,AL : Complex sash of hard PVC containing wood powder and aluminum

● Example of environment-friendly products developed by the Fastening Products division

At our Fastening Products Divisions, we have reduced industrial waste such as unnecessary waste material accompanying production activities.

We have promoted recycle development of waste plastic for the purpose of (zero emission).

○ Polyester single-material parts

Our recycled fastener NATULON® recycles polyester cuttings produced in the fastener manufacturing process by original recycling technology of solid phase polymerization and granulation (for recycling) technology. It maintains quality equal to that of products using conventional version materials in terms of both strength and function.

We have begun making parts used by apparel and bag makers such as fasteners, buttons, front hooks and plancer out of polyester resin so that the material can be recycled when discarded. By having our customers use these for environment-friendly products (green products) such as uniforms and bags, we can expand our product line to contribute to building a recycling-oriented society.



● Development of environment-friendly products for our Machinery and Engineering division

Our Machinery and Engineering division develops and manufactures high-performance machinery used at YKK Group plants, including those located overseas. Activities of the division include making machinery based on the

perspective of environmental conservation and environmental measures. We are promoting initiatives that aim for harmony with the environment such as longer life, modularized, common use, standardized parts as well as cost reduction.

○ Development of Waku-waku Line using new packaging method

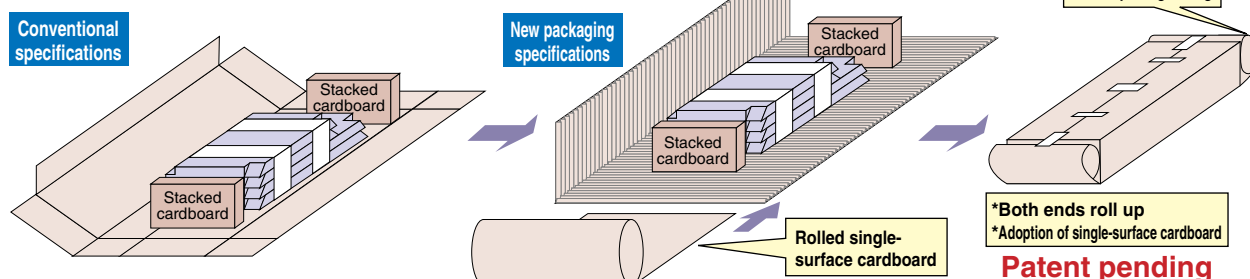
For our window frame cutting packaging line (commonly called “Waku-waku line”), we have adopted a new packaging method with a concept that is completely different from the conventional idea (single-surface cardboard small opening rolling type: patent pending) that realizes dramatic cost reduction of packaging materials (35% reduction of packaging materials cost) and completely free size of packaging. Characteristic of the method is the fact that rolling the small opening enhances the cushioning effect thereby reducing the amount of cushioning material. Adoption of single-surface cardboard enables cardboard to be supplied in rolls and all product widths can be handled with two widths of cardboard. Automatic positioning is conducted by adjusting the ruled roll with the product width. By cutting the

cardboard to fit the length of the product, a completely free size cardboard packaging machine is realized.



Waku-waku Line

Cardboard packaging according to product size



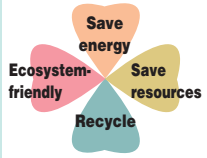
● Development of environment friendly products for architectural products

Now that the philosophy of coexistence with and concern for the environment has taken root, effective use of resources by recycling and reduction of industrial waste are important themes that makers must deal with.

With the four keywords “save energy,” “save resources,”

“recycle,” and “ecosystem-friendly” as the basic concept, the YKK Group contributes to building a recycling oriented society by developing environment-friendly architectural products and tying them into conservation of the global environment through life cycle that covers production, distribution, use and disposal.

○ Four keywords

1. Save energy (Reduction of CO ₂)	<ul style="list-style-type: none"> ● Thermal insulation products ● Thermal insulation products ● Clean energy products 	<p>We promote saving energy by developing clean-energy products using natural energy and products with superior insulating performance that raises cooling efficiency of the room.</p>	 <p>Each of the four keywords corresponding to the mark above are given to the products introduced on pages 24 and 25 of the environmental report.</p>
2. Save resources (Efficient use of materials)	<ul style="list-style-type: none"> ● Basic function of all products 	<p>Using materials so that loss is reduced is linked with the product development and production stages. We also hope to reduce the amount of raw materials used by making products and packaging slimmer.</p>	
3. Recycle (Reduction of waste)	<ul style="list-style-type: none"> ● Easy change ● Easy separation/disassembly ● High durability / longer life 	<p>We aim to reduce the amount of waste discarded by enhancing durability so products can be used as long as possible. This also ties into longer building life. The products are furthermore designed for easy separation and disassembly in order to facilitate recycling.</p>	
4. Ecosystem-friendly (Friendly to human beings)	<ul style="list-style-type: none"> ● Countermeasures against sick house ● Countermeasures against atopy ● Minimized dioxin 	<p>We are working to minimize generation of toxic substances. We are particularly working to support healthy living by suppressing generation of indoor air contaminants said to cause allergies such as atopy and sick house syndrome that have become a problem in recent years.</p>	

○ Insulated sashes and insulated doors for houses

Enhancing sealing and insulating properties of openings such as windows and doors improves the house environment and contributes to saving energy.

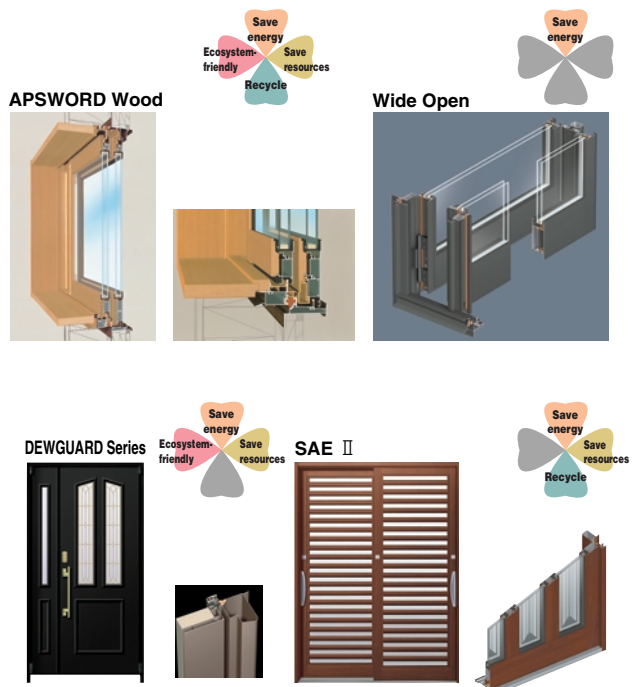
“APSWORD Wood” is a window with thermal insulating properties one rank higher by original insulating structure consisting of a combination of aluminum on the outside and natural wood on the inside.

We do not use wood of natural trees felled by lumbering, but rather cultivated trees. The product features sliding connection that enables aluminum and wood parts to be separated and recovered when discarded.

“Wide Open” has the concept of being “wide open.” In addition to its aesthetic design, Wide Open uses formed material insulated construction to secure superior insulating properties.

With 60mm door thickness, “DEWGUARD Series” offers superior insulating properties. The series uses colored steel plate laminated with non-PVC material for the surface material. Wood-grain olefin resin sheets are used for the indoor side.

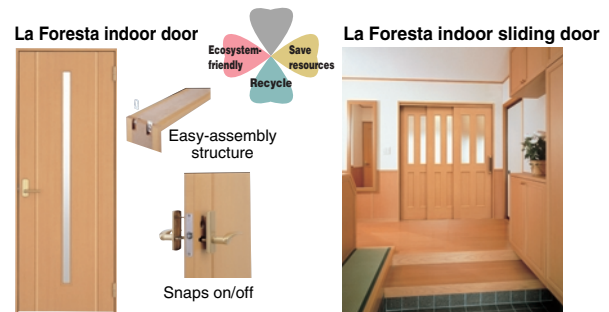
Insulated Entrance Door “SAE II” is a “sliding door” with superior insulating properties. The structure facilitates part changing, is durable enough for long-term use, and facilitates disassembly for discarding.



○ Wooden building materials

In order to prevent sick house syndrome that produces symptoms such as soreness of the eyes, headache, allergies, malaise due to chemical substances inside the house, since November 2001, all “La Foresta” products conform to low-formaldehyde standards (JIS E0/JAS Fc0). The products are finished with non-PVC material from surface sheets to moll/resin parts.

The structure facilitates part changing, is durable enough for

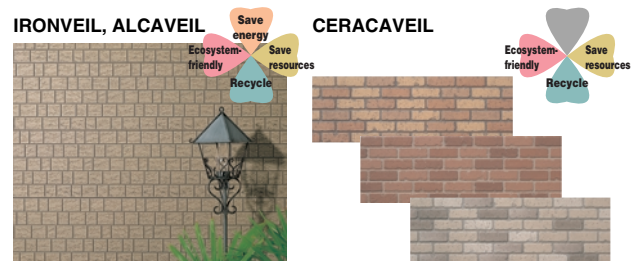


○ Exterior building materials

Exterior building materials with superior durability and insulating properties contribute to longer house life, reduction of waste and help save energy.

“IRONVEIL” and “ALCAVEIL” use urethane foam (completely free of CFCs) to save energy for residences by means of their superior insulating properties.

“CERACAVEIL” is a ceramic exterior building material that contains no asbestos at all. Dramatically extends life of exterior materials exposed to harsh conditions such as heat and ultraviolet rays by means of inorganic or acrylic urethane coatings.

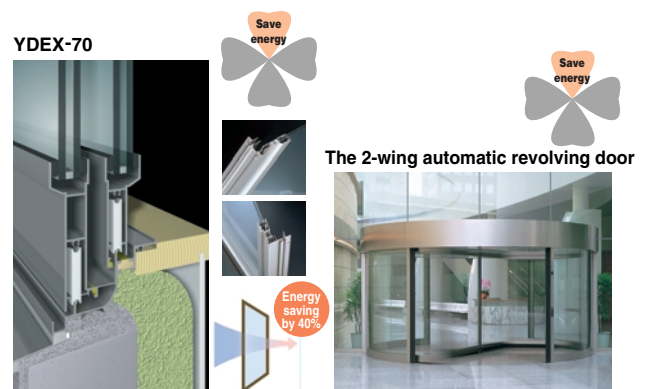


○ Insulated sash for buildings

Providing products that, in addition to basic performance such as fire prevention performance, offer performance that ties into long life and energy savings, contributes to realization of a green building that coexists with the environment.

“YDEX-70” offers high energy saving function by means of insulated frame structure and multilayer glass.

“The 2-wing automatic revolving door” is used for the main entrance of public facilities such as hospitals and office buildings. Because they revolve with the air contained, the revolving doors dramatically reduce flow of air from outside to minimize air-conditioning cost while maintaining the ideal air-conditioned environment indoors.



○ Exterior building materials

Exterior building materials and scenery products are directly exposed to wind and rain, so they require high weather resistance and durability.

Products that can be used for an extended period of time because of high durability are connected with reduction of waste and CO₂. Making replacement of parts easier facilitates maintenance, and further extends product life.

“Garden Club” and “Balcony ANHELO” use “Recycled Wood”.*1



○ Scenery products

“NECESS Landscape” consists of “Recycled Wood” and recyclable materials such as cast aluminum. The environment-friendly parts can be recycled when discarded.



○ Law on Promoting Green Purchasing

Insulated sashes and doors are specified for public projects by the Law on Promoting Green Purchasing.
[National law on promoting procurement of environment-friendly material, etc: Effective as of April 2001]

Insulated sash: Sash using multilayer glass or double sash are judgement criteria.

Insulated door: Doors with some means of thermal insulation are applicable. Includes flush doors and wooden doors.

List of applicable products (multilayer glass or double sash window)

For houses	
Insulated sashes	Insulated doors and sliding doors
insulated products	Entrance doors
PLAMADO III	La feel
RINATE	DEWGUARD TypeM
APSWORD WOOD	DEWGUARD TypeS
APSWORD 100	La feel TypeS
APSWORD 70	PRONTO Insulated type
TERMOA	VENATO Insulated type
TWIEL	Entrance sliding doors
TWICY	Zen
WINTEL	SAE II
WIDE OPEN	RENJU Insulated
FRAMING	Apartment entrance doors
FRAMING System Window	DEWGUARD
FRAMING Bow Window NDY200	2SD-II
MATIE	2FD
Barrier-free products	Service entrance doors and sliding doors
FRAMING ZUTTO	2KD(flush door)
TERMOA ZUTTO	AIRREFRE
	AIRCREA
	NHK
	Stores
	STORE FRONT DOOR DH=1835

For buildings	
Insulated sashes	
Ordinary/high performance products	Entrance products
EXIMA 70S T-1	YF-70
EXIMA 70S T-2	YF-100
EXIMA 70	YDF-100
EXIMA 100S T-1	The 2-wing automatic revolving door
EXIMA 100S T-2	Insulated door(flush door)
EXIMA 100	Ordinary products
YAT-100	EXIMA 70
YBS-100	EXIMA 100
Barrier-free products	Steel entrance doors
EXIMA 70SFL	MERUZE Series
EXIMA 100SFL	EKUSUDO Series
Energy saving products	MARIGE Series
YDEX-70	GRAPHICO Series
YDBS-100	LETECIA Series
YDS-100	PLAIN Series
YDP-100	ED Series
EXIMA 170S	SAGE Series
BL certified products	LETECIA DELIE
EXIMA 70S BL insulated 4 type 1	
EXIMA 70S BL insulated 4 type 2	
EXIMA 170S BL insulated S,1,2 type	

● Development of environment-friendly technologies for the Research and Development division

Development of environment-friendly technologies for the Research and Development division

The Research and Development division ranks "harmony with the environment" as an important research and development activity, and conducts technological development of application processes and research of new metal, resin and ceramics materials for all YKK Group operations.

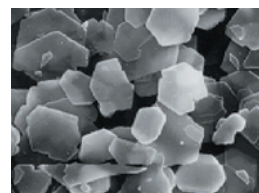
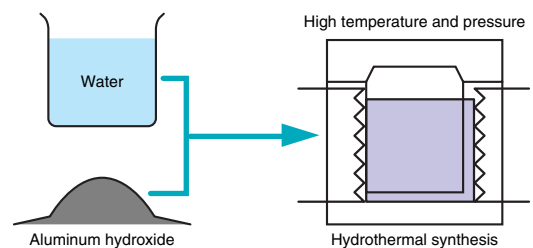
○ Sheet aluminum powder SERATH®

The representative example of technological development concerning the environment is taking note of produced in the alumite process and recycling resources.

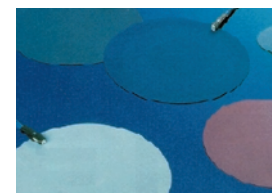
SERATH is a hexagonal flat alumina particle whereby particle shape and size are governed by hydrothermal synthesis that makes aluminum hydroxide acts with water under high temperature and pressure conditions.

Compares with ordinary alumina particles, a characteristic of this shape is that particles can be easily arranged in the same direction. Taking advantage of this feature, it is used for abrasive material, paint and ink pigment.

Thus, new materials with high added value are produced from aluminum hydroxide.



Photograph of SERATH under an electron microscope



Abrasive sheet used SEARTH

For inquiries about sheet alumina powder SERATH®
Research and Development Division,
Production Development Center
TEL:0765-54-8400 FAX:0765-54-8408

● Development of environment-friendly technologies for building materials

The YKK AP Inc. house parts construction method research center conducts multifaceted research/ analysis of house building based on the theme "what if the ideal house for environment and people" and is the department that provides valuable results for customers.

Concerning the problem of "sick house syndrome" caused by airtight sealing and poor ventilation in homes in recent years, the research center is studying and researching what measures should be taken using what materials to obtain a pleasant living environment from the perspective of concern for the environment.

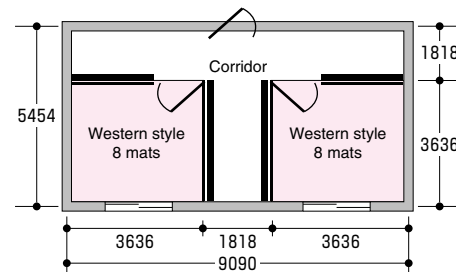
○ Verification of indoor air environment using actual size test room

Concerning the problem of indoor air contamination that causes "sick house syndrome," the research center is measuring and assessing the indoor air environment using an actual size test room in order to experimentally verify the effect of ventilation measures an building materials used. For the test rooms, two rooms of the same specifications were completed at the beginning of July 2001 as airtight insulated residence of conventional wood frame construction.

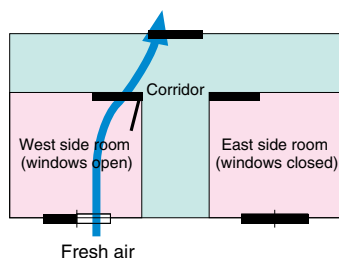
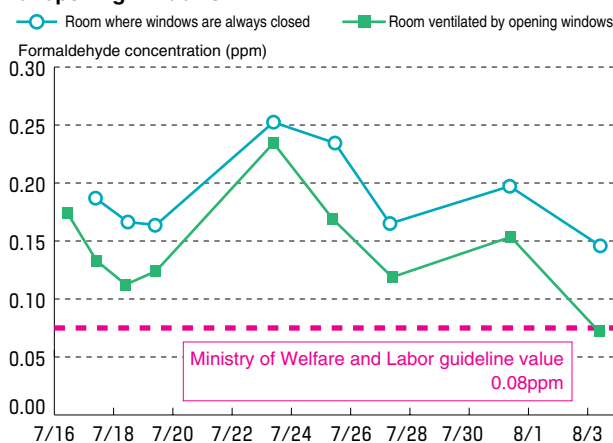
Below is an example of a test conducted to study the ventilating effect of opening the window of an actual sized room. As you can see, concentration of formaldehyde, an indoor air contaminant, was reduced by opening the window throughout the day. We can also predict from computer analysis conducted by YKK, the effect ventilation of such a window has on enhancing the environment. These research results are broadly published by presentations by the Japan Wood Association, technical seminars for construction companies and builders so as to have them create healthy, pleasant homes. In the future, by assessing the environmental impact of various building materials, the research center is conducting research that will enable us to propose a pleasant living environment to customers who actually purchase and use the products.



Actual size test room floor plan (dimensions: mm)

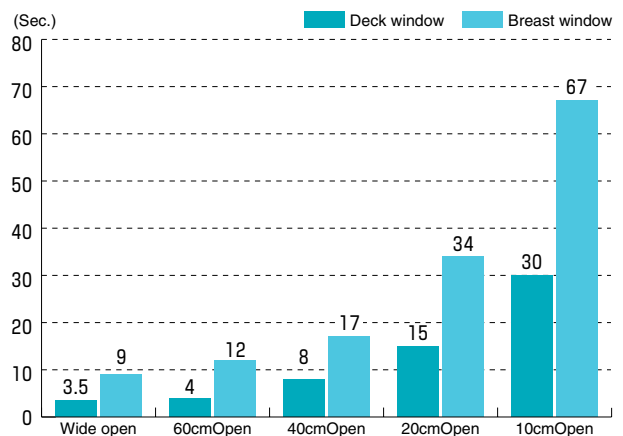


Indoor formaldehyde concentration reduction effect of opening windows



In many cases formaldehyde concentration is high for new construction no matter what you do (guideline value exceeded), and needs to be reduced to the guideline value as soon as possible. If the window is closed, the concentration does not go down, but you can quickly lower the concentration by opening the window (good ventilation effect).

Ventilation effect of window opening by computer analysis



Under conditions of 8-mat room in the winter, indoor temperature of 25(C and outdoor temperature of 5(C, we analyzed by computer how much time it takes to replace indoor air (contaminated air) with air from outside (fresh air), depending on how much the window is opened.

For inquiries concerning the problem of indoor air contamination:

House parts construction method research center(JUPAK)
TEL:03-5610-8108 FAX:03-5610-8110

Coexistence with local community

The YKK Group promotes employee's participation in environmental conservation activities and voluntary activities.



The Shikoku plant promotes cleaning of Bannoshima roads used for our daily activities and local beautification programs in connection with environment day each year.



Continuing from last year, our Shanghai plant has been praised for observing laws and regulations and actively cooperating local environmental conservation, and has received the Environmental Conservation Reliable Business Award from the Shanghai Environmental Conservation Bureau.



Our Namerikawa plant has been praised for having all employees participate in biannual cleanup of commuting roads, roads near the plant, dormitory and research center, main roads in the city and roads near the station, and has been awarded the Prefectural Land Beautification Promotion Laborer Chairman's Award by Toyama Prefecture.

Promoting environmental information

We make our environmental data widely available to the public so they can know about our environmental initiatives and the environment-friendly products the YKK Group can provide.

○ Participation in exhibitions

We exhibited "sorting" which is the key to recycling as a theme in the "Eco Product 2001" exhibition. At the exhibition, we introduced environment-friendliness of products from the development stage, such as configuration that facilitates disassembly for recycling after use and making products of the same material so they can be disassembled. We also established a study corner where children who will bear the burden of the next generation can learn the importance of sorting when recycling.

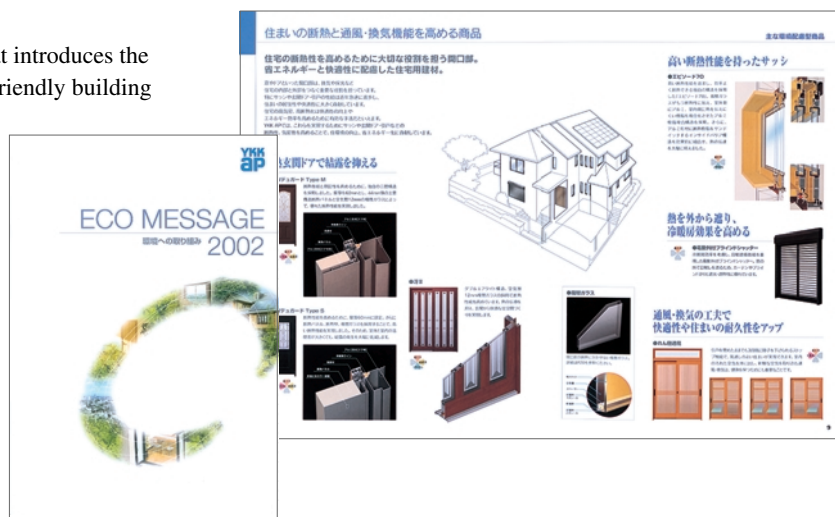


Eco Products 2001
December 13 - 15, 2001
Tokyo Big Site



○ Eco Message 2002

We published our eco products catalog that introduces the details of the YKK Group's environment-friendly building products in January 2002.



For inquiries concerning Eco Message 2002:
YKK AP Inc., Corporate Administration,
General Affairs Department
TEL:03-3864-2182 FAX:03-3864-2102

IX • Environmental stress data for each site

Kurobe plant

200 Yoshida Kurobe-city, Toyama 938-8601
Tel: 0765-54-8000

● Property area	1,017,000 m ²
● Total floor area of building	814,000 m ²
● Use district	Industrial area
● Type of business	Fastening products manufacturing, building material products manufacturing, manufacturing of precision machinery, equipment and dies
● No. of employees	4,548
● Energy management specified plant	Type I heat management, Type I electricity management
● Electrical power consumption	182,852,000 kWh/year
● Fuel consumption (crude conversion)	22,720 kℓ/year
● Water consumption	9,773,000 m ³ /year
● Wastewater discharge destination	River
● Leakage/outflow accidents	None

Kurobe Ekko plant

9425 Yoshida Kurobe-city, Toyama 938-8603
Tel: 0765-57-0815

● Property area	221,000 m ²
● Total floor area of building	154,000 m ²
● Use district	Industrial area
● Type of business	Manufacture of building material parts, Manufacture of rain shutters
● No. of employees	680
● Energy management specified plant	Type I heat management, Type I electricity management*1
● Electrical power consumption	30,851,000 kWh/year
● Fuel consumption (crude conversion)	933 kℓ/year
● Water consumption	719,000 m ³ /year
● Wastewater discharge destination	Sea
● Leakage/outflow accidents	None

*1: Based on Kurobe plant management, energy management designation plant designated as Kurobe plant because power received from Kurobe plant's power reception/transformer equipment.

Kurobe Makino plant

936 Makino Kurobe-city, Toyama 938-8602
Tel: 0765-54-1100

● Property area	104,000 m ²
● Total floor area of building	53,000 m ²
● Use district	Industrial area
● Type of business	Fastening products manufacturing, building material products extrusion die machining
● No. of employees	193
● Energy management specified plant	Type I electricity management
● Electrical power consumption	31,250,000 kWh/year
● Fuel consumption (crude conversion)	833 kℓ/year
● Water consumption	889,000 m ³ /year
● Wastewater discharge destination	River
● Leakage/outflow accidents	None

Kurobe Ogyu plant

1, Ogyu Kurobe-city, Toyama 938-8604
Tel: 0765-57-2051

● Property area	337,000 m ²
● Total floor area of building	126,000 m ²
● Use district	Not specified
● Type of business	Building material products machining/assembly
● No. of employees	685
● Energy management specified plant	Type I electricity management
● Electrical power consumption	12,125,000 kWh/year
● Fuel consumption (crude conversion)	402 kℓ/year
● Water consumption	206,000 m ³ /year
● Wastewater discharge destination	River
● Leakage/outflow accidents	None

Mini site report

In order to reduce discharge of volatile organic compounds (VOC), we introduced paint exhaust treatment equipment in November 2001. The equipment concentrates of 4 painting machines and burns organic compounds at a high temperature of 800(C.

Whereas exhaust capacity to the atmosphere is 20 mg-Nm³ (existing state law), our measurement value is 9.59 mg-Nm³, a good result.



YKK ITALIA SPA Vercelli plant

● Date of ISO14001 certification acquired	March 2002
● Property area	138,000 m ²
● Total floor area of building	53,000 m ²
● Type of business	Fastener manufacturing
● No. of employees	219
● Electrical power consumption	9,315,000 kWh/year
● Fuel consumption (crude conversion)	3,041 kℓ/year
● Water consumption	463,000 m ³ /year
● Wastewater discharge destination	Sewerage system
● Leakage/outflow accidents	None

Toyama Mizuhashi plant

15-21 Mizuhashiichidabukuro Toyama-city, Toyama 939-3555
Tel: 076-479-2110

● Property area	34,000 m ²
● Total floor area of building	20,000 m ²
● Use district	Semi-industrial area
● Type of business	Wooden building material products machining
● No. of employees	64
● Energy management specified plant	Does not apply
● Electrical power consumption	1,967,000 kWh/year
● Fuel consumption (crude conversion)	93 kℓ/year
● Water consumption	3,000 m ³ /year
● Wastewater discharge destination	Sewerage system
● Leakage/outflow accidents	None

YKK Sendai Institute of Material Science and Technology

9-5-1 Narita Tomiya-cho Kurokawa-gun, Miyagi 981-3341
Tel: 022-351-5500

● Property area	15,000 m ²
● Total floor area of building	4,000 m ²
● Use district	Industrial area
● Type of business	Research and development
● No. of employees	16
● Energy management specified plant	Does not apply
● Electrical power consumption	1,007,000 kWh/year
● Fuel consumption (crude conversion)	9 kℓ/year
● Water consumption	2,000 m ³ /year
● Wastewater discharge destination	Sewerage system
● Leakage/outflow accidents	None

Hokkaido plant

1-22-33 Shinko-minami Ishikari-city, Hokkaido 061-3296
Tel: 0133-64-4134

● Property area	63,000 m ²
● Total floor area of building	22,000 m ²
● Use district	Industrial area
● Type of business	Building material products
● No. of employees	141
● Energy management specified plant	Does not apply
● Electrical power consumption	3,079,000 kWh/year
● Fuel consumption (crude conversion)	160 kℓ/year
● Water consumption	8,000 m ³ /year
● Wastewater discharge destination	Sewerage system
● Leakage/outflow accidents	None

Tohoku plant

1, Sanbongiyoshida Sanbongi-cho Shida-gun, Miyagi 989-6392
Tel: 0229-52-3500

● Property area	729,000 m ²
● Total floor area of building	324,000 m ²
● Use district	Industrial area
● Type of business	Building material products
● No. of employees	1,438
● Energy management specified plant	Type I electricity management, Type I heat management
● Electrical power consumption	75,968,000 kWh/year
● Fuel consumption (crude conversion)	6,887 kℓ/year
● Water consumption	3,836,000 m ³ /year
● Wastewater discharge destination	River
● Leakage/outflow accidents	None

Mini site report

Approximately 95 percent of Egypt is desert. The population of approximately 70 million people are concentrated in the remaining 5 percent along the Nile River. The Egyptian government is actively promoting desert reclamation projects to distribute the population and increase production of food.

YKK Egypt is working on growing trees and plants on the plant grounds and is maintaining the green zone outside the plant provided by the municipal authorities and is giving a lot of attention to management. YKK Egypt is one of the plants in the Terrace of Ramadan Industrial Park with the most greenery.

The company will continue to plan tree-planting tours for employees so we can help out Egypt with its desert reclamation project.



YKK Egypt Terrace of Ramadan

● Date of ISO14001 certification acquired	December 2001
● Property area	17,000 m ²
● Total floor area of building	6,000 m ²
● Type of business	Faster manufacturing
● No. of employees	76
● Electrical power consumption	859,000 kWh/year
● Fuel consumption (crude conversion)	1,301 kℓ/year
● Water consumption	55,000 m ³ /year
● Wastewater discharge destination	Sewerage system
● Leakage/outflow accidents	None

Shikoku plant

4000 Yoshida Utazu-cho Ayauta-gun, Kagawa 769-0293

Tel: 0877-46-8014

●Property area	330,000 m ²
●Total floor area of building	152,000 m ²
●Use district	Industrial area
●Type of business	Building material products
●No. of employees	806
●Energy management specified plant	Type I electricity management, Type I heat management
●Electrical power consumption	57,246,000 kWh/year
●Fuel consumption (crude conversion)	12,103 kℓ/year
●Water consumption	1,485,000 m ³ /year
●Wastewater discharge destination	Sea
●Leakage/outflow accidents	None

Kyushu plant

1-10 Shinminato-cho Yatsushiro-city, Kumamoto 866-8511

Tel: 0965-37-1111

●Property area	342,000 m ²
●Total floor area of building	205,000 m ²
●Use district	Industrial area
●Type of business	Building material products
●No. of employees	927
●Energy management specified plant	Type I electricity management, Type I heat management
●Electrical power consumption	60,675,000 kWh/year
●Fuel consumption (crude conversion)	13,554 kℓ/year
●Water consumption	2,081,000 m ³ /year
●Wastewater discharge destination	Sea
●Leakage/outflow accidents	None

Namerikawa plant

TEL:076-477-2300

3003 Sugimoto Namerikawa-city,
Toyama 936-8520

YKK AP Namerikawa plant

TEL:076-477-2000

●Property area	667,000 m ²	●Property area	667,000 m ²
●Total floor area of building	189,000 m ²	●Total floor area of building	189,000 m ²
●Use district	Unspecified	●Use district	Unspecified
●Waste water discharge destination	River	●Waste water discharge destination	River
●Type of business	Building material product machining/assembly	●Type of business	Manufacturing group support management, order receiving management, building materials manufacturing
●No. of employee	350	●No. of employee	538
●Energy management specified plant	Type II electricity management	●Energy management specified plant	Type II electricity management
●Electric power consumption	8,457,000 kWh/year	●Electric power consumption	5,536,000 kWh/year
●Fuel consumption (crude conversion)	340 kℓ/year	●Fuel consumption (crude conversion)	390 kℓ/year
●Water consumption	123,000 m ³ /year	●Water consumption	130,000 m ³ /year
●Leakage /outflow accidents	None	●Leakage /outflow accidents	None

Mini site report

We have installed a new spray booth to prevent toxic substances (organic solvents) from contaminating the environment outside the booth.

Installation of oil pan in paint storage and mixing rooms

Introduction of exhaust equipment and antistatic floor treatment

Installation of control BOX via explosion-proof wall

Installation of thinner recovery equipment

These measures have been taken to avoid environmental risk, implement management

by voluntary standards stricter than the environmental regulations in effect in

Germany, and to improve the working environment for workers.



YKK Germany Wenkbach plant

●Date of ISO14001 certification acquired	January 2001
●Property area	56,000 m ²
●Total floor area of building	20,000 m ²
●Type of business	Faster manufacturing
●No. of employees	171
●Electrical power consumption	4,621,000 kWh/year
●Fuel consumption (crude conversion)	744 kℓ/year
●Water consumption	87,000 m ³ /year
●Wastewater discharge destination	Sewerage system
●Leakage/outflow accidents	None

History of environmental conservation efforts

YKK Group	Events
1970 ● Pollution Council established	1967 ● Basic Law Concerning Measures to Cope with Pollution
1972 ● Introduction of low-sulfur content fuel started Alkaline recovery equipment goes into operation	1971 ● Environment Agency established
1974 ● Sulfuric acid recovery equipment goes into operation Production of sulfuric acid banned from aluminum sludge started	1972 ● Club of Rome "The limit to point" published United Nations Conference on the Human Environment held (Stockholm) Declaration on the Human Environment adopted
1984 ● Award for plant with best energy management (Kurobe plant)	1987 ● Montreal Protocol (on Substances that Deplete the Ozone Layer) adopted
1988 ● Co-generation goes into operation	1988 ● Vienna Convention (for the Protection of the Ozone Layer) goes into effect in Japan
1991 ● Environmental department established	1989 ● Basel Convention (on the Control of Transboundary Movements of Hazardous Wastes and their Disposal) adopted
1992 ● Used paper collection started Yoshida Kogyo Co.,Ltd. environmental charter established Environment Council Seven working group established Production of PET banned from waste plastic started	1990 ● Action plan for prevention of global warming settled upon
1993 ● YKK environmental action plan study started Switch from certain CFCs and trichloroethane started Clean initiative started (cleanup around plant) YKK Group Environmental Facilities Committee established	1991 ● Keidanren Global Environment Charter settled upon Law for Promotion of Use and Recycling of Resources enacted
1994 ● YKK Group Environment Council established YKK Corporation internal environmental inspection started YKK Group Environmental Declaration (group charter established) YKK Group environmental action targets set	1992 ● The Earth Summit held (Rio de Janeiro)
1996 ● Voluntary plan submitted to the Ministry of International Trade and Industry	1993 ● The Basic Environment Law enacted
1997 ● Green purchase started Recycled slide fastener (NATULON®) "eco mark" acquired	1995 ● Containers and Packaging Recycling Law enacted The 1st Session of the United Nations Framework Convention on Climate Change Conference of the Parties (COP1, Berlin) held
1998 ● ISO14001 certification acquired	1996 ● ISO14000 series issued JISQ14000 series issued The 2nd Session of the United Nations Framework Convention on Climate Change Conference of the Parties (COP2, Geneva) held
1999 ● Name changed to YKK Group Environmental Policy Committee Environmental leaflet published ISO14001 certification acquired (2 domestic bases, 1 overseas base) Recyclable uniform "eco mark" acquired	1997 ● Waste Management Law revised The 3rd Session of the United Nations Framework Convention on Climate Change Conference of the Parties (COP3, Kyoto) held
2000 ● Environmental report published Building Materials Environmental Committee established ISO 14001 certification acquired (4 domestic bases, 1 range expansion base, 1 overseas base) Solar products (Street light) "eco mark" acquired Garbage recycling begun Product assessment carries out Environmental label established Environmental accounting system devised and implemented Kyushu plant achieves zero emission Shikoku plant achieves zero emission of ordinary waste	1998 ● Law Concerning the Rational Use of Energy revised Law for Recycling of Specified Kinds of Home Appliances enacted Law Concerning the Promotion of the Measures to Cope with Global Warming enacted The 4th Session of the United Nations Framework Convention on Climate Change Conference of the Parties (COP4, Buenos Aires) held
2001 ● Kurobe Manufacturing Center achieves zero emission of ordinary waste LCA assessment carried out ISO 14001 certification acquired (1 domestic base, 2 range expansion bases, 12 overseas bases)	1999 ● ISO/TC207 7th Seoul General Assembly Law Concerning Special Measures against Dioxins enacted Law Concerning Reporting, etc. of Releases to the Environment of Specific Chemical Substances and Promoting Improvements in Their Management (PRTR Law) enacted The 5th Session of the United Nations Framework Convention on Climate Change Conference of the Parties (COP5, Bonn) held
2002 ● Architectural Products division publishes "Eco Message 2002" PVC sash material label ISO14001 certification acquired (2 overseas bases)	2000 ● Range of application of Law for Promotion of Sorted Collection and Recycling of Containers and Packaging Law on Promoting Green Purchasing enacted Building Materials Recycling Law enacted Basic Law for Promoting Formation of Recycling-Oriented Society enacted Law for Promoting Effective Use of Resources (Revised Recycling Law) enacted Food Waste Recycling Law enacted The 6th Session of the United Nations Framework Convention on Climate Change Conference of the Parties (COP6, Hague) held Wastes Disposal Law revised
	2001 ● Ministry of the Environment inaugurated Sash Industry Voluntary Environmental Action Plan published CFCs Recovery and Destruction Law enacted PCB Law enacted The 7th Session of the United Nations Framework Convention on Climate Change Conference of the Parties (COP7, Marrakech) held
	2002 ● New global warming network decided

YKK Group Environmental Report 2002

Please answer the following questions and fax this paper to us at the following number.
Corporate Administration, Environment Department **FAX +81(765) 54 8190**

Q 1 What are your impressions of the environmental report?

1) Readability

Easy to understand Average readability Hard to understand

Why do you think so?

2) Contents

More than enough Average amount Not enough

Why do you think so?

3) What part of the report were you most interested in?

() Page (Item :)

Why ?

4) How do you assess YKK Group activities?

Superior Good Average Below average Complete failure

Why do you think so?

5) Please tell us in your own words what you think about the environment report and our environmental activities.

Write your comments here.

Q 2 From what standpoint did you read the environmental report?

Customer Supplier Government/administration Environmental NGO
News media Person involved in environmental matters at company Student
Resident of local community where YKK Group company is located
Finance/investment Other (Please explain :)

Q 3 How did you find out about this environmental report?

Newspaper/magazine Web site Exhibition YKK salesman
Other (Please explain :)

Please fill in the following information. Thank you very much for your cooperation.

Do you want us to send you a copy of our Environmental Report 2003? 1 . Yes 2 . No					
Name		Sex	1 . Male	2 . Female	Age
Address	〒				
Occupation / business address		Department / Job title			



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