Product Environmental Aspects Declaration

EP and IJ printer (PCR-ID:AD-04)



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http://konicaminolta.jp

Please direct any inquiries or comments to e-mail: bt-environ@pub.konicaminolta.jp



Total of 2,535,000 sheets on the assumption of five years usage.

Environmental impact by copypaper is not included

bizhub 654e

Marking technologies Electrophotographic Printer (EP)

Printing speed 65 prints-per-minute(B/W)

Maximum copy paper A3

<u>Duplex copying</u> Non-stack ADU equipped

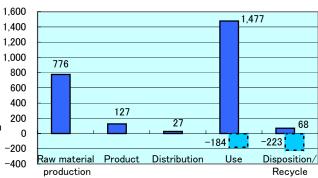
Document feeding ADF with Auto-document reversing function equipped

Life Cycle Impact

Consumption and discharge in a life cycle	All the stage sum totals
Global warming(CO ₂ equivalent):kg	2,475 (2,068)
Acidification(SO ₂ equivalent):kg	3.7 (3.1)
Energy resources(crude oil equivalent):MJ	44,633 (37,244)

**Figures in () indicated environmental impact including recycle effect *note3

Warming load CO₂ equivalent of each stage(kg)



Notes:

- 1. Original LCA data is available on PEIDS: Product Environmental Information Declaration Sheet, and Product Data Sheet.
- 2. Unified rules and requirements for EcoLeaf LCA, for intended product category, are available as a PCR: Product Category Rule. Visit EcoLeaf website under JEMAI homepage at http://www.ecoleaf-jemai.jp/eng/ for details.
- 3. Recycle Effect illustrates an indirect influence to other products/services.
- 4. Basic Units used for calculations are based on Japan domestic data at this time, due to a lack of base data to establish localized Basic Unit for overseas locations adequately.

[Supplemental environmental information]



- Certified Environmental Standards
 - Japan Eco Mark

University of Tsukuba, Graduate School

- Japan Eco Mark
 International Energy Star Program
- Conforming to Japanese Law on Promoting Green Purchasing

PCR review was conducted by : PCR Deliberation Committee, January 01,2008, Name of reprentative : Youji Uchiyama,

Independent verification of the declaration and data, according to ISO14025 □internal ■external Third party verifier: The third party verifier * : Shozo Nakamuta

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 $Programme\ operator:\ Japan\ Environmental\ Management\ Association\ for\ Industry,\ ecoleaf@jemai.or.jp$

^{*} In the case of an business entity certified as an Ecoleaf-data-collection system, the names of certification auditors are written.

Product Environmental Information Data Sheet (PEIDS)

Document control no.	F-02B-03	
Product vendor	KONICAMINOLTA,INC.	Chai
EcoLeaf registration no.	AD-12-298	1

Unit Function DB version 2.1
haracterization Factor DB version 2.1



		R name	EP and IJ print	er	Product type			bizhub 654e	•	
	PC	R-ID	AD-04		Product weight[kg]	201.0	Package[kg]	33.5	Weight total[kg]	234.5
	_	_	Life Cycle Stage		Produ	ıction				
In/O	ut ite	ms		Unit	Raw material	Product	Distribution	Use	Disposal	Recycle
				MJ	1.26E+04	2.37E+03	3.67E+02	2.92E+04	1.37E+02	-7.39E+03
		Energy C	onsumption	Mcal	3.01E+03	5.66E+02	8.76E+01	6.96E+03	3.28E+01	-1.76E+03
	1		Coal							
				kg	1.53E+02	1.60E+01	8.57E-04	1.61E+02	6.59E-01	-8.13E+01
		Energy	Crude oil (as a fuel)	kg	9.67E+01	1.81E+01	8.01E+00	2.05E+02	1.58E+00	-4.91E+01
			Natural Gas	kg	1.94E+01	8.54E+00	1.24E-01	7.79E+01	3.44E-01	-8.86E+00
			Uranium ore	mg	1.86E-03	1.08E-03	5.80E-08	6.26E-03	4.46E-05	-3.73E-04
			Crude oil (as an	kg	4.11E+01	0	0	1.22E+02	0	
			ingredients)	IVB	4.112.01		· ·	1.222.02	U	−4.67E+01
			Iron ore	kg	1.53E+02	0	0	5.41E+01	0	−8.26E+01
			Copper ore	kg	3.13E+00	0	0	9.85E-01	0	-1.48E+00
			Bauxite	kg	1.81E+00	0	0	7.44E+00	0	-3.69E+00
	otion	ss se	Nickel ore	kg	1.46E-01	0	0	1.99E+00	0	-8.54E-01
	muo	austi	Chromium ore	kg	2.46E-01	0	0	2.71E+00	0	-1.18E+00
	Con	Exh	Manganese ore	kg	7.79E-01	0	0	5.80E-01	0	-1.61E-01
	urce the	Material	Plumbous ore	kg	1.01E-01	0	0	0.002 01	0	-3.10E-02
	esou	Exhaustible resources Material	Tin ore	kg	0	0	0	0	0	0.102 02
	~ ~		Zinc ore	kg	9.97E-01	0	0	0	0	−3.05E−01
			Gold ore				0	_		
				kg	0	0		0	0	0
			Silver ore	kg	0	0	0	0	0	0
			Silica sand	kg	5.33E+00	0	0	5.86E-01	0	-1.65E+00
s.			Rock salt	kg	2.93E+01	2.15E-03	0	4.20E+00	8.21E-02	-1.29E+01
alyse			Limestone	kg	3.01E+01	0	0	1.06E+01	6.52E-01	-1.31E+01
/ ans			Natural soda ash	kg	3.77E-01	0	0	1.98E-03	0	−1.27E−01
Inventory analyses		Renewable	Wood	kg	4.79E+01	0	0	7.57E+01	0	-4.94E+01
Inve		resources	Water	kg	4.12E+04	1.26E+04	6.46E-01	9.07E+04	5.38E+02	−1.51E+04
			CO2	kg	7.62E+02	1.26E+02	2.60E+01	1.44E+03	6.81E+01	-3.97E+02
			SOx	kg	4.20E-01	9.47E-02	1.60E-02	1.13E+00	3.72E-02	−2.98E−01
			NOx	kg	7.53E-01	7.90E-02	1.27E-01	1.87E+00	9.90E-02	-5.25E-01
			N2O	kg	5.09E-02	3.23E-03	4.32E-03	1.53E-01	1.46E-04	-3.65E-02
		to Atmosphere	CH4	kg	4.96E-03	2.89E-03	1.55E-07	1.66E-02	1.19E-04	-9.31E-04
			CO	kg	1.06E-01	1.86E-02	3.38E-02	2.74E-01	2.33E-02	-7.19E-02
			NMVOC	kg	9.70E-03	5.66E-03	3.04E-07	3.25E-02	2.34E-04	-1.82E-03
	t 76		СхНу	kg	2.69E-02	5.97E-04	3.77E-03	4.99E-02	7.50E-04	-1.83E-02
	tharg		dust	kg	9.76E-02	4.07E-03	1.21E-02	1.60E-01	6.06E-03	-6.94E-02
	Disc		BOD		9.702-02	4.07E-03	1.21E-UZ	1.00E-01	0.002-03	U.87E UZ
	sion/			kg	_		_	_	_	_
	Emission/Discharge to the environment	4- 10/-4-	COD	kg	-		_	_	_	_
	ш +	to Water system	N total	kg	-		_	_	-	-
			P total	kg	-		-	-	-	-
			SS	kg	_		-	_	-	_
			Unspecified solid waste	kg	3.88E+00	1.42E-02	0	5.69E+01	1.02E+02	-2.98E+00
			Slag	kg	4.64E+01	0	0	1.63E+01	0	−2.39E+01
		to Soil system	Sludge	kg	2.09E+00	0	0	1.51E+01	0	-6.86E+00
			Low emission	le :-	1 205 02	7.EEC 04	4.0EF 00	4 265 02	2115 05	
			radioactive waste	kg	1.30E-03	7.55E-04	4.05E-08	4.36E-03	3.11E-05	-2.61E-04
	tion		Energy resources		0.005.00	4 755 . 64	0.405.00	4.505.00	0.705.00	
	sumption		(crude oil equivalent)	kg	2.33E+02	4.75E+01	8.16E+00	4.53E+02	2.79E+00	−1.15E+02
	by Resource Cons	Exhaustible	Mineral resources				_		_	
	ource	resources	(Iron ore equivalent)	kg	9.06E+02	0	0	1.84E+03	0	-1.04E+03
en	y Res		, ,							
Sm			Global warming							
sse	tio		(CO2 equivalent)	kg	7.76E+02	1.27E+02	2.72E+01	1.48E+03	6.81E+01	-4.07E+02
Impact assesment	Emision Consumption	to Atmosphore	Acidification	kg	9.47E-01	1.50E-01	1.05E-01	2.44E+00	1.06E-01	-6.66E-01
ac	nsu	Atmosphere	(SO2 equivalent)							.
E G	ပိ									
	on	to Water								
	nisi	system								
	Ē	to Soil								
	by	system								

[Notes for readers: EcoLeaf common rules]

I. Stage related

- A. "Production" stage is intended for two sub-stages listed below.
 - (1) "Raw material" production: consists of mining, transportation and raw material production.
 - (2) "Product" production: consists of the parts processing, assembly and installation.
- B. "Distribution" stage is intended for transportation of produced product. Transportation of consumables and maintenance goods (e.g. replacement parts)
- C. "Use" stage is intended for use of the product (active mode, standby mode, etc.) and production, transportation to disposal/recycle of consumables D. "Disposition/Recycle" stage is intended for environmental impacts by product disposition/recycle, and deduction by recycling
- E. "Recycle Effect" illustrates an indirect environmental influences to other products/services by use of reclaimed materials/parts, and/or by supply of
- Case 1: Use of reclaimed materials/parts: Sum of increase of environmental impact by collection activities of used materials/parts, and decrease Case 2: Supply of used products to other businesses for material reclaim/parts reuse: Sum of increase of environmental impact by materials/parts

II. Inventory analyses

- A. Data of mineral ore on "Exhaustible resources" are presented in weight of pure ingredients (e.g. iron, aluminum) in the ore.

 B. Data on energy resources are presented based on origin in calorific value. e.g. Data on uranium ore presents weight of uranium concentrate,
- C. Data of discharge to water system are in actual figure (not calculated using unit function in inventory analyses).

III Impact analyses

Result of the "Impact analyses" is found in converting results of inventory analyses into total amount of a reference material (e.g. CO2 in case of "Global Warming").

A. Impact "by resource consumption" represents magnitude of impacts to resource depletion.

- B. Impact "by emission/discharge to environment" represents magnitude of impacts to Atmosphere, Water and Soil system.

- IV Data entry format

 A. Exponential notation, after the decimal point to two, should be used.
- B. Indicate "0" instead exponential notation, if the result of calculation or estimation is considered as "zero" or negligible in comparison to related results.
- C. Indicate "-" if calculation nor estimation can not be done, in order to differentiate to indicate "zero".
 - (BGD for material production are for production from mineral ore. Those data do not include reclaiming processes like recovery from scrap.)

[Notes for readers: Target product specific]

- A."Raw material" in "Production" includes environmental impacts generated during mining transportation material production phases of the main body
- B. " Product" in "production" includes environmental impacts of processing of the parts (injection, blow-, press- and glass-molding).
- C. Regarding the basis and the basic units for calculations during distribution stages
 D. Regarding the basis and the basic units for calculations during use and consumption stage
- E. The recycling impacts are calculated assuming that 40% of the end-of-life printers are recovered from users according to PCR (AD-04).
- F. The impacts of materilal production of recycled materials are included in the values with minus as a recycling effect.

Product data sheet

	(input data and parameters for LCA
Document control no.	F-03-03
Product vendor	KONICAMINOLTA,INC.
EcoLeaf registration no.	AD-13-298



PCR name LCA/LCIA in units of: bizhub 654e
33.5 Weight total[kg] EP and IJ printer (PCR-ID:AD-04) Product type 201.0

1. Product information (per unit): parts e	tc. by material and by process/assembly method
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	Breakdown of primar	y materials		Math breakdown of pa	rts, which need to appl	ly Processing / Assembly	Base Units (Parts B, C)
Material name	Weight (kg)	Material name	Weight (kg)	Process name	Weight (kg)	Process name	Weight (kg)
Ordinary steel	1.47E+02	Rubber	4.40E-01	Press molding:lron	1.38E+02	Parts assembly	8.22E-01
Stainless steel	9.04E-01	Semiconductor circuit board	3.67E+00	Press molding:Nonfer rous metal	2.45E+00		
Aluminium	9.21E-01			Injection molding	4.49E+01		
Other metals	2.46E+00			Blow molding	2.80E-03		
Glass	3.41E+00			Glass molding	3.41E+00		
Thermoplastic resin	4.58E+01						
Wood	1.47E+01						
Paper	1.56E+01						
Subtotal	2.30E+02	Subtotal	4.11E+00				
	Total		2.34E+02	Subtotal	1.88E+02	Subtotal	8.22E-01

2. Production site information (per unit): Consumption and discharge/emission for production/processing/assembly within the site. SOx and NOx should be indicated in SO2, NO2 equivalent.

c	Classification	Energy	Energy	Energy	Material	Material		
umptio	Distribution	Electricity	Diesel oil as	Furnace urban	Industrial	Groundwater		
	Distribution	(kWh)	fuel(kg)	gas (m³)	water(kg)	(kg)		
Si Si	Quantity	7.44E+01	4.96E-04	6.95E-01	3.76E+02	1.32E+02		
Ŏ	Note							
Emission/ Discharge	Classification	To Water system						
rissi	Distribution	Sewage(kg)						
En	Quantity	3.71E+02						
	Note							

3. Distribution stage information (per unit): means, distance, loading ratio, consumptions and emissions/discharges.

Distribution	Means of transportation	Freight by ship	Diesel truck :20ton	Diesel truck :2ton			
릝	Conditions	Load(kg·km)	Load(kg·km)	Load(kg·km)			
Dist	Quantity	3.99E+05	8.12E+04	1.50E+03			
	Note						

4. Use stage (per unit): use condition (mode, term) including active mode, standby mode and maintenance.

4.1 Product and accessories subject to this analysis

	Classification	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption
털	Distribution	Electricity	Diesel oil as	Gasoline as	Furnace urban	Industrial	Groundwater	Ordinary steel	Stainless steel
Product	Distribution	(kWh)	fuel(kg)	fuel(kg)	gas (m³)	water(kg)	(kg)	(kg)	(kg)
<u>~</u>	Quantity	1.31E+03	2.74E-04	6.07E+00	2.46E+01	2.08E+02	3.67E+03	4.80E+01	1.26E+01
	Note								
	Classification	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption	Processing
Product	Distribution	Aluminium (kg)	Copper(kg)	Thermoplastic resin(kg)	Wood(kg)	Paper(kg)	Rubber(kg)	Semiconductor circuit board(kg)	Press:Iron(kg)
<u>~</u>	Quantity	6.64E+00	1.26E-01	1.24E+02	3.20E+00	3.40E+01	1.60E+00	8.00E-02	6.11E+01
	Note								
	Classification	Processing	Processing	Processing	Assembly	To Water system			
Product	Distribution	Press: Nonferrous(kg)	Injection molding(kg)	Blow molding (kg)	Parts assembly (kg)	Sewage(kg)			
_	Quantity	1.80E+00	5.00E+01	5.18E+01	5.18E+01	2.78E+03			
	Note								
	Classification	Distribution	Distribution	Distribution					
Product	Distribution	Freight by ship (kg·km)	Diesel truck: 20ton (kg•km)	Diesel truck: 10ton (kg•km)					
_	Quantity	8.27E+04	4.70E+04	2.19E+04					
	Note								

les	Classification	Consumption	Consumption	Treatment	Treatment	Treatment	Treatment	Treatment	Treatment
m ab	Distribution	Electricity (kWh)	Kerosene(kg)	Recycle: to iron(kg)	Recycle: to Aluminum(kg)	Recycle: to copper(kg)	Recycle: to plastics(kg)	Recycle: to Paper(kg)	Recycle: to Assembled circuit board(kg)
Const	Quantity	3.31E+00	5.05E-02	2.42E+01	2.66E+00	6.13E-02	3.20E+01	1.49E+01	1.09E-02
0	Note								
	Classification	Treatment	Treatment	Treatment	Treatment	Deduction	Deduction	Deduction	Deduction
nsumables	Distribution	Industrial waste destruction by fire(kg)	Industrial waste inning(kg)	Waste destruction by fire(kg)	Waste inning(kg)	Iron(kg)	Aluminum(kg)	Copper(kg)	Plastics(kg)
Cons	Quantity	6.58E-01	3.81E-01	7.17E+01	4.04E+01	-2.42E+01	-2.66E+00	-6.13E-02	-3.20E+01
	Note								
	Classification	Deduction	Deduction	Distribution	Distribution				
Consumables	Distribution	Paper(kg)	Recycle: to Assembled circuit board(kg)	Diesel truck: 10ton (kg•km)	Diesel truck: 4ton (kg•km)				
Col	Quantity	-1.49E+01	-1.09E-02	8.97E+03	1.09E+04				
	Note								

5. Disposition/Recycle stage information (per product): process method and scenarios

s.	Classification	Consumption	Consumption	Treatment	Treatment	Treatment	Treatment	Treatment	Treatment
umables	Distribution	Electricity (kWh)	Kerosene(kg)	Recycle: to iron(kg)	Recycle: to Aluminum(kg)	Recycle: to copper(kg)	Recycle: to Glass(kg)	Recycle: to plastics(kg)	Recycle: to Paper(kg)
Consul	Quantity	4.15E+00	6.33E-02	5.89E+01	3.68E-01	1.48E+00	1.36E+00	1.81E+01	1.26E+01
O	Note								
	Classification	Treatment	Treatment	Treatment	Treatment	Treatment	Deduction	Deduction	Deduction
onsumables	Distribution	Recycle: to Assembled circuit board(kg)	Incineration: Industrial waste(kg)	Landfill: Industrial waste(kg)	Incineration to landfill (as ash)(kg)	Landfill: General waste(kg)	Iron(kg)	Aluminium (kg)	copper(kg)
ပိ	Quantity	4.99E-01	1.07E+00	3.71E-01	4.59E+01	9.43E+01	-5.89E+01	-3.68E-01	-1.48E+00
	Note								
	Classification	Deduction	Deduction	Deduction	Deduction	Distribution	Distribution		
Consumables	Distribution	Glass(kg)	Plastics(kg)	Paper(kg)	Recycle: to Assembled circuit board(kg)	Diesel truck: 10ton (kg•km)	Diesel truck: 4ton (kg•km)		
Š	Quantity	-1.36E+00	-1.81E+01	-1.26E+01	-4.99E-01	1.13E+04	1.36E+04		
	Note								

6. Others

A.Product information:

All the parts mass per unit sorted by materials and by processes/assembly are included. The motor mass is included in ordinary steel.

B.Production site information:

 $The \ energy \ consumption \ \& \ material \ use \ during \ the \ main \ body \ assemby \ and \ cartridge \ \& \ toner \ shipment \ are \ included.$

The environmental impacts that are exhausted from the production site in the atmosphere and the water system are included.

C.Distribution stage information:

The total distance of the transportation in Japan of 100km is used according to PCR (AD-04) and the transportation overseas includes the transportation by track in China and by ship between China and Japan.

D. Product and accessories subject to this analysis:

The power consumption is calculated assuming the use period of five years and 2,535,000 sheets printed during the use period according to the PCR (AD-04).

The toner consumption is summed up over the five years from the toner consumption data per sheet using our print pattern with 5% coverage.

The production impacts of the cartridges and toner used during the use period of five years are included.

The impacts of the maintenance parts used and the transportation impacts of the maintenace during the use period of five years are included in this stage.

E. Disposal/Recycle information on the consumables and the maintenance parts during use stage:

The recycling information of the toner, the developer, the drums and the maintainance parts used during the use period of five years are included .

The recycling processing impacts are included as plus and the production impacts of the recycled materials are included as minus.

F.Disposal/Recycle stage information:

The information on the products recovered from users is included.

The recycling processing impacts are included as plus and the production impacts of the recycled materials are included as minus.