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 c654

Marking technologies Electrophotographic Printer (EP)

Printing speed 65 prints-per-minute, 60 prints-per-minute(color)

Maximum copy paper A3

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

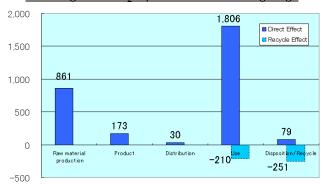
Document feeding ADF with Auto-document reversing function equipped

Life Cycle Impact

Consumption and discharge in a life cycle	All the stage sum totals									
Global warming (CO ₂ equivalent):kg	2,949 (2,488)									
Acidification (SO ₂ equivalent):kg	4.6 (3.8)									
Energy resources (crude oil	54,652									
equivalent):MJ	(46,637)									

% 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
- 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, University of Tsukuba, Graduate School

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

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

^{*} 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	Unit Function DB version	v2.1
Product vendor	KONICA MINOLTA, INC.	Characterization Factor DB version	v2.1
Ecol eaf registration no.	AD-12-181		



					1						
	PCF	R name	EP and IJ print	er	Product type			bizhub C654			
	PC	R-ID	AD-04		Product weight[kg]	221.0	Package[kg]	38.6	Weight total[kg]	259.6	
							· acroge[rig]		[1.9]		
	_		Life Cycle Stage	Unit	Produ	ıction	Distribution	Use	Disposal	Recycle	
In/O	ut ite	ms		0	Raw material	Product	Distribution	USE	Disposai	Recycle	
		_		MJ	1.41E+04	3.37E+03	3.98E+02	3.66E+04	1.78E+02	-8.02E+03	
		Energy (Consumption	Mcal	3.37E+03	8.05E+02	9.50E+01	8.74E+03	4.25E+01	-1.91E+03	
			Coal	kg	1.67E+02	2.21E+01	9.30E-04	2.14E+02	8.76E-01	-9.73E+01	
		Energy	Crude oil (as a fuel)	kg	1.08E+02	2.50E+01	8.69E+00	2.66E+02	1.94E+00	-5.38E+01	
			Natural Gas	kg	2.20E+01	1.12E+01	1.34E-01	7.93E+01	4.55E-01	-1.06E+01	
			Uranium ore	mg	2.00E-03	1.50E-03	6.30E-08	8.08E-03	5.92E-05	-4.29E-04	
			Crude oil (as an	li-e	4.00E+01	^	0	1.475±00			
			ingredients)	kg	4.90E+01	0	0	1.47E+02	0	-4.18E+01	
			Iron ore	kg	1.63E+02	0	0	7.80E+01	0	-9.64E+01	
			Copper ore	kg	3.76E+00	0	0	8.10E-01	0	-1.65E+00	
	t t		Bauxite	kg	3.29E+00	0	0	1.16E+01	0	-5.96E+00	
	nen	ses	Nickel ore	kg	2.48E-01	0	0	1.13E+00	0	-5.51E-01	
	sur	onic	Chromium ore	kg	3.88E-01	0	0	1.56E+00	0	−7.78E−01	
	Sori	Exhaustible resources	Manganese ore	kg	8.48E-01	0	0	5.73E-01	0	-1.31E-01	
	rce	Material	Plumbous ore	kg	1.43E-01	0	0	0	0	-4.72E-02	
	Resource Consumption from the environment		Tin ore	kg	0	0	0	0	0	0	
	Re T		Zinc ore		1.41E+00	0	0	0	0	-4.64E-01	
				kg							
			Gold ore	kg	0	0	0	0	0	0	
			Silver ore	kg	0	0	0	0	0	0	
			Silica sand	kg	5.73E+00	0	0	8.67E-01	0	-1.85E+00	
			Rock salt	kg	3.21E+01	3.58E-03	0	1.51E+01	8.93E-02	-1.83E+01	
Se Se			Limestone	kg	3.22E+01	0	0	1.54E+01	7.40E-01	-1.55E+01	
Inventory analyses			Natural soda ash			0	0	0.00E+00	0		
au				kg	3.93E-01					-1.32E-01	
ton		Renewable	Wood	kg	5.23E+01	0	0	8.06E+01	0	-5.31E+01	
JVer		resources	Water	kg	4.67E+04	1.80E+04	7.02E-01	1.19E+05	7.07E+02	−2.01E+04	
=			CO2	kg	8.45E+02	1.72E+02	2.82E+01	1.77E+03	7.88E+01	-4.51E+02	
			SOx	kg	5.15E-01	1.31E-01	1.71E-02	1.48E+00	4.31E-02	-3.86E-01	
			NOx	kg	8.75E-01	1.05E-01	1.31E-01	2.29E+00	1.13E-01	-5.90E-01	
			N2O								
		la Atmanahara		kg	5.94E-02	2.26E-03	4.77E-03	1.28E-01	1.75E-04	-3.93E-02	
		to Atmosphere	CH4	kg	5.30E-03	4.00E-03	1.68E-07	2.14E-02	1.58E-04	-1.04E-03	
			СО	kg	1.26E-01	2.55E-02	3.39E-02	4.00E-01	2.62E-02	-9.18E-02	
			NMVOC	kg	1.04E-02	7.85E-03	3.30E-07	4.19E-02	3.10E-04	-2.04E-03	
	e +		СхНу	kg	3.07E-02	4.71E-04	4.00E-03	5.68E-02	8.33E-04	-1.97E-02	
	narg		dust	kg	1.12E-01	5.63E-03	1.27E-02	2.18E-01	6.87E-03	-7.76E-02	
	Discl		BOD		1.12L 01	J.UJL UJ	1.27L 02	2.10L 01	0.07L 03	1.10L 02	
	on/L env			kg	_		_	_	_	_	
	Emission/Discharge to the environment		COD	kg	-	-	-	-	-	-	
	ન ઇ	to Water system	N total	kg	-	-	-	-	-	-	
			P total	kg	_	_	_	_	_	_	
			SS	kg	_	_	_	-	_	-	
			Unspecified solid waste	kg	4.61E+00	2.62E-02	0	7.15E+01	1.11E+02	-4.01E+00	
			Slag	kg	5.09E+01	0	0	2.32E+01	0	-2.81E+01	
		to Soil system	Sludge	kg	5.15E+00	0	0	2.42E+01	0	−1.18E+01	
			Low emission		4 405 55	4.055.00	4.40= 00	E 0.45	4.405 05		
			radioactive waste	kg	1.40E-03	1.05E-03	4.40E-08	5.64E-03	4.13E-05	-3.00E-04	
	E		1							0.00L 07	
	mptic		Energy resources	kg	2.58E+02	6.49E+01	8.85E+00	5.64E+02	3.54E+00	-1.32E+02	
	by Resource Consumption	Exhaustible	(crude oil equivalent)								
	ပို့ စ	resources	Mineral resources	le m	1.17E+02	0	0	1.19E+03	0	-8.72E+02	
=	sour	looduices	(Iron ore equivalent)	kg	1.17E+03	0	0	1.195+03	0	-0.72E+UZ	
Je.	y Re										
S	٦		Clobal								
SSe	tio		Global warming (CO2 equivalent)	kg	8.61E+02	1.73E+02	2.95E+01	1.81E+03	7.88E+01	-4.61E+02	
Impact assesment	Emision Consumption	to	Acidification								
aci	nsı	Atmospher	e (SO2 equivalent)	kg	1.13E+00	2.04E-01	1.09E-01	3.08E+00	1.22E-01	−7.99E−01	
g.	Ö										
=	n C	to Water									
	isic	system									
	_										
	ᇤ	to Soil									
	by En	to Soil system									

[Notes for readers: EcoLeaf common rules]

- I. Stage related
- 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)
- "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 of the printer and the toner cartridge enclosed in the printer. The environmental impacts are calculated using the eco-leaf basic unit DB for calculations.
- B. "Product" in "production" includes environmental impacts of processing of the parts (injection, blow-, press- and glass-molding).
- The environmental impacts from the parts assembly plant which is different from the main body assembly plant (such parts are clacified in "parts C") are calculated using the eco-leaf basic unit DB for calculations.
- The impacts from the main body assembly plant are calculated using the quantitative data on environmental impacts in our assembly plant.
- C. Regarding the basis and the basic units for calculations during distribution stages

 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. Regarding the basis and the basic units for calculations during use and consumption stage
- The power consumption is measured by the TEC test procedure according to PCR (AD-04). 2,535,000 sheets are printed in total during the use period of five
 - 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 loads and the collection & recycling impacts of the toner cartridges used over the five years are included in this 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).
- The impacts are calculated with the remaining 60% following the disposal senario as general wastes.
- F. The impacts of material production of recycled materials are included in the values with minus as a recycling effect.

Product data sheet (Input data and parameters for LCA)

	(input data and parameters for Le
Document control no.	F-03-03
Product vendor	KONICA MINOLTA, INC.
EcoLeaf registration no.	AD-12-181



PCR name	EP and IJ printer (PCR-ID:	Product type	bizhub C654				
LCA/LCIA in units of:	1	Product weight[kg	221.0	Package[kg]	38.6	Weight total[kg]	259.6

1. Product information (per unit): parts etc. by material and by process/assembly method

	Breakdown	of primary materials		Math breakdown of par	ts, which need to apply	Processing / Assembly I	Base Units (Parts B, C)
Material name	Weight (kg)	Material name	Weight (kg)	Process name	Weight (kg)	Process name	Weight (kg)
Ordinary steel	1.57E+02	Paper	1.74E+01	Press molding:Iron	1.47E+02	Parts assembly	4.94E+00
Stainless steel	1.55E+00	Rubber	tubber 4.24E-01		5.40E+00		
Aluminium	2.27E+00	Semiconductor circuit board	3.83E+00	Injection molding	5.19E+01		
Other metals	4.10E+00			Blow molding	1.54E-01		
Glass	3.55E+00			Glass molding	3.55E+00		
Thermoplastic resin	5.46E+01						
Thermosetting resin	0						
Wood	1.53E+01						
Subtotal	Subtotal 2.38E+02 Subtotal		2.16E+01				
	Total		2.60E+02	Subtotal	2.08E+02	Subtotal	4.94E+00

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.

Ę	Classification	Energy	Energy	Energy	Energy	Material	Material	
nption	Distribution	Electricity	Heavy oil as	Diesel oil as	Furnace	Industrial	Groundwater	
5		(kWh)	fuel(kg)	fuel(kg)	urban gas	water(kg)	(kg)	
Cons	Quantity	1.64E+02	0.00E+00	2.07E-03	1.40E-01	6.94E+02	5.03E+02	
O	Note							
	Classification	To Water						
on/ rge	Classification	system						
Emission/ Discharge	Distribution	Sewage(kg)						
Err Dis	Quantity	6.18E+02						
	Note							

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

		Means of transportation	Freight by ship	Diesel truck	Diesel truck			
	tion			:20ton	:2ton			
	힅	Conditions	Load(kg·km)	Load(kg·km)	Load(kg·km)			
	Distr	Quantity	4.41E+05	8.12E+04	1.50E+03			
		Note						

Use stage (per unit): use condition (mode, term) including active mode, standby mode and maintenance.
 1 Product and accessories subject to this analysis

	Classification	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption
ಕ	Distribution	Electricity	Heavy oil as	Diesel oil as	Gasoline as	Furnace	Industrial	Groundwater	Ordinary
Product	Distribution	(kWh)	fuel(kg)	fuel(kg)	fuel(kg)	urban gas	water(kg)	(kg)	steel(kg)
ᇫ	Quantity	1.81E+03	0.00E+00	1.25E-03	5.40E+00	5.30E+00	4.19E+02	1.05E+04	7.28E+01
	Note								
	Classification	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption
Product	Distribution	Stainless steel(kg)	Aluminium (kg)	Copper(kg)	Glass(kg)	Thermoplastic resin(kg)	Wood(kg)	Paper(kg)	Rubber(kg)
ď.	Quantity	7.15E+00	1.07E+01	1.26E-01	0.00E+00	1.50E+02	8.21E+00	3.40E+01	1.66E+00
	Note								
	Classification	Consumption	Processing	Processing	Processing	Processing	Processing	Assembly	To Water system
Product	Distribution	Semiconductor circuit	Press:Iron (kg)	Press: Nonferrous(kg)	Injection molding(kg)	Blow molding (kg)	Glass molding(kg)	Parts assembly	Sewage(kg)
ш	Quantity	0.00E+00	1.10E+02	4.09E+00	2.38E+01	0.00E+00	0.00E+00	0.00E+00	3.06E+03
	Note								
	Classification	Distribution	Distribution	Distribution					
Product	Distribution	Freight by ship (kg·km)	Diesel truck: 20ton (kg•km)	Diesel truck: 10ton (kg•km)					
	Quantity	4.22E+05	2.10E+05	2.79E+04					
	Note								

4.2 Dis	2 Disposition/Recycle information on consumables and replacement parts											
SS	Classification	Consumption	Consumption	Treatment	Treatment	Treatment	Treatment	Treatment	Treatment			
Consumables	Distribution	Electricity	Kerosene(kg)	Recycle: to	Recycle: to	Recycle: to	Recycle: to	Recycle: to	Recycle: to			
Ę	Distribution	(kWh)	Reloselle(kg)	iron(kg)	Aluminum(kg)	copper(kg)	Glass(kg)	plastics(kg)	Paper(kg)			
Suc	Quantity	5.37E+00	7.00E-02	3.19E+01	4.27E+00	5.04E-02	0.00E+00	2.46E+01	1.69E+01			
٥	Note											
	Classification	Treatment	Treatment	Treatment	Treatment	Treatment	Deduction	Deduction	Deduction			
Consumables	Distribution	Recycle: to Assembled circuit board(kg)	Industrial waste destruction by fire(kg)	Industrial waste inning(kg)	Waste destruction by fire(kg)	Waste inning(kg)	Iron(kg)	Aluminum(kg)	Copper(kg)			
Ö	Quantity	0.00E+00	6.63E-01	2.95E-01	6.35E+01	5.45E+01	-3.19E+01	-4.27E+00	-5.04E-02			
_	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	0.00E+00	-2.46E+01	-1.69E+01	0.00E+00	9.44E+03	1.14E+04					
	Note											

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

5. Disposition/Recycle stage information (per product), process method and scenarios											
S	Classification	Consumption	Consumption	Treatment	Treatment	Treatment	Treatment	Treatment	Treatment		
Consumables	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)		
ons	Quantity	7.09E+00	9.24E-02	6.31E+01	9.09E-01	2.16E+00	1.42E+00	2.16E+01	1.36E+01		
0	Note										
	Classification	Treatment	Treatment	Treatment	Treatment	Treatment	Deduction	Deduction	Deduction		
Consumables	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)		
Ī	Quantity	5.20E-01	1.10E+00	4.16E-01	5.26E+01	1.02E+02	-6.31E+01	-9.09E-01	-2.16E+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)				
S	Quantity	-1.42E+00	-2.16E+01	-1.36E+01	-5.20E-01	1.25E+04	1.51E+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 3,375,000 sheets printed during the use period according to the PCR (AD-04).

D-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:

Dispussance-year sage monimum.

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.