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



Marking technologies Electrophotographic Printer (EP)

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

Maximum copy paper АЗ

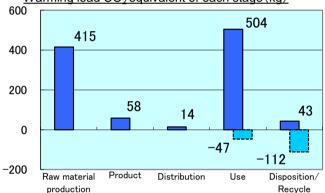
Non-stack ADU equipped Duplex copying

Life C	Cycle	Impa	act
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Consumption and discharge in a life cycle	All the stage sum totals
Global warming(CO ₂ equivalent):kg	1,035 (876)
Acidification(SO ₂ equivalent):kg	1.6 (1.3)
Energy resources(crude oil equivalent):MJ	18,650 (15,861)

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

Warming load CO₂ equivalent of each stage (kg)



of five years usage. Environmental impact by copypaper is not

Total of 1,215,000 sheets on the assumption

*Paper feed Cabinet (550 × 2) is optional.

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





- International Energy Star Program
- Conforming to Japanese Law on Promoting Green Purchasing
- In this product, PCR materials are used by over 25% in weight ratio of resin. * PCR material (Post-Consumer Recycled material): materials recovered and recycled from consumers.

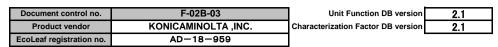
PCR review was conducted by : PCR Deliberation Committee, January 01, 2008, Name of reprentative : Youji Uchiyama, University of Tsukuba, Graduate School

Independent verification of the declaration and data, according to ISO14025 ☐internal ■external Third party verifier: The third party verifier * : Kazuo Naito

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)





	PCF	R nam	ie	EP and IJ print	er	Product type			bizhub 458e				
	PC	R-ID)	AD-04		Product weight[kg]	96.0	Package[kg]	15.7	Weight total[kg]	111.7		
				Life Cycle Stage	Unit	Produ		Distribution	Use	Disposal	Recycle		
In/O	ut ite	ms				Raw material	Product				,		
		Energy Consumption			MJ	7.00E+03	1.09E+03	1.92E+02	1.03E+04	7.72E+01	−2.79E+03		
				·	Mcal	1.67E+03	2.60E+02	4.59E+01	2.46E+03	1.84E+01	-6.66E+02		
				Coal	kg	6.66E+01	7.36E+00	4.49E-04	6.37E+01	3.80E-01	−3.24E+01		
		F	Energy	Crude oil (as a fuel)	kg	6.23E+01	8.33E+00	4.19E+00	6.76E+01	8.86E-01	−2.02E+01		
			_norgy	Natural Gas	kg	1.28E+01	3.87E+00	6.47E-02	2.90E+01	1.98E-01	-3.70E+00		
				Uranium ore	mg	1.15E-03	4.98E-04	3.04E-08	2.53E-03	2.57E-05	-1.84E-04		
				Crude oil (as an ingredients)	kg	2.28E+01	0	0	3.19E+01	0	1 205 101		
				Iron ore	kg	5.56E+01	0	0	2.64E+01	0	-1.38E+01 -3.27E+01		
				Copper ore	kg	2.10E+00	0	0	3.10E-03	0	-7.26E-01		
				Bauxite	kg	2.63E+00	0	0	1.87E+00	0	-1.79E+00		
	io t	<u>e</u> «		Nickel ore	kg	9.34E-02	0	0	6.93E-02	Ö	-6.51E-02		
	nme	Exhaustible resources		Chromium ore			0	0		0			
	onsu	xhau			kg	1.44E-01			1.03E-01		-9.86E-02		
	Resource Consumption from the environment	ш-		Manganese ore	kg	2.78E-01	0	0	1.51E-01	0	-2.32E-02		
	m th	N	Material	Plumbous ore	kg	8.18E-02	0	0	0	0	-2.46E-02		
	Res			Tin ore	kg	0	0	0	0	0	0		
				Zinc ore	kg	8.04E-01	0	0	0	0	-2.42E-01		
						Gold ore	kg	0	0	0	0	0	0
				Silver ore	kg	0	0	0	0	0	0		
				Silica sand	kg	3.11E+00	0	0	4.18E-01	0	-1.04E+00		
						Rock salt	kg	1.12E+01	1.22E-03	0	1.88E+00	3.52E-02	-4.87E+00
ses				Limestone	kg	1.13E+01	0	0	5.42E+00	4.34E-01	-5.39E+00		
naly				Natural soda ash	kg	2.55E-01	0	0	1.23E-02	0	-8.88E-02		
ory a		Renewable		Wood	kg	2.33E+01	0	0	1.69E+01	0	-1.61E+01		
Inventory analyses		resource		Water		3.04E+04	5.84E+03	3.38E-01	3.41E+04	3.12E+02	-7.91E+03		
Ē				CO2	kg								
					kg	4.06E+02	5.77E+01	1.36E+01	4.91E+02	4.33E+01	-1.55E+02		
				SOx	kg	3.00E-01	4.36E-02	9.14E-03	3.57E-01	2.32E-02	-1.23E-01		
				NOx	kg	5.09E-01	3.56E-02	7.91E-02	5.40E-01	5.83E-02	-2.07E-01		
				N2O	kg	3.23E-02	1.29E-03	2.08E-03	4.85E-02	8.12E-05	-1.30E-02		
		to Atmos	sphere	CH4	kg	3.04E-03	1.33E-03	8.12E-08	6.73E-03	6.87E-05	-4.61E-04		
				СО	kg	7.67E-02	8.55E-03	2.35E-02	8.75E-02	1.27E-02	-3.42E-02		
				NMVOC	kg	5.94E-03	2.61E-03	1.59E-07	1.32E-02	1.35E-04	-9.01E-04		
	rge	:		СхНу	kg	1.64E-02	2.43E-04	2.17E-03	1.46E-02	3.66E-04	-6.91E-03		
	scha			dust	kg	5.82E-02	1.87E-03	7.25E-03	4.48E-02	3.42E-03	-2.63E-02		
	/Dis			BOD	kg	_	-	-	-	-	_		
	Emission/Discharge to the environment			COD	kg	_	_	_	_	_	_		
	Emi: to th	to Water	r system	N total	kg	_	_	_	_	_	_		
				P total	kg	_	_	_	_	_	_		
				SS	kg	_	_	_		-	_		
				Unspecified solid waste		2 065 : 00	0.155.00				-1.415.00		
					kg	2.86E+00	9.15E-03	0	2.16E+01	4.31E+01	-1.41E+00		
				Slag	kg	1.77E+01	0	0	8.03E+00	0	-9.41E+00		
		to Soil s	ystem	Sludge	kg	4.60E+00	0	0	4.01E+00	0	−3.45E+00		
				Low emission radioactive waste	kg	8.05E-04	3.48E-04	2.12E-08	1.77E-03	1.79E-05	-1.28E-04		
	Consumption			Energy resources (crude oil equivalent)	kg	1.30E+02	2.18E+01	4.27E+00	1.64E+02	1.58E+00	-4.69E+01		
t	by Resource Consu		ustible urces	Mineral resources (Iron ore equivalent)	kg	5.82E+02	0	0	1.07E+02	0	-2.37E+02		
en	y Res			,									
ssm				Global warming		4.155.00	E 01F : 01	1.405.01	E 045 : 00	4 225 : 01	1 505:00		
1556	ptio	te	0	(CO2 equivalent) Acidification	kg	4.15E+02	5.81E+01	1.42E+01	5.04E+02	4.33E+01	-1.58E+02		
Impact assesment	Consumption		sphere	(SO2 equivalent)	kg	6.56E-01	6.85E-02	6.45E-02	7.34E-01	6.40E-02	-2.68E-01		
Imp	on Co		Vater										
	Emision	sys	tem										
	by En		Soil stem										
		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) for use of the product are included into "Use" stage.
- C. "Use" stage is intended for use of the product (active mode, standby mode, etc.) and production, transportation to disposal/recycle of consumables
- /maintenance goods (e.g. replacement parts).

 D. "Disposition/Recycle" stage is intended for environmental impacts by product disposition/recycle, and deduction by recycling
- (e.g. impact reduction of raw material production).

 E. "Recycle Effect" illustrates an indirect environmental influences to other products/services by use of reclaimed materials/parts, and/or by supply of used products to other businesses for material reclaim/parts reuse.
- Case 1: Use of reclaimed materials/parts: Sum of increase of environmental impact by collection activities of used materials/parts, and decrease by volume reduction of used materials/parts.
- Case 2: Supply of used products to other businesses for material reclaim/parts reuse: Sum of increase of environmental impact by materials/parts reclaiming process, and decrease by volume reduction of new materials/parts production.

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, which is available for use as an atomic fuel.
- 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").

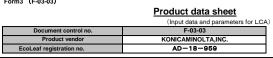
- A. Impact "by resource consumption" represents magnitude of impacts to resource depletion.
- B. Impact "by emission/discharge to environment" represents magnitude of impacts to Atmosphere, Water and Soil system.

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). 1,215,000 sheets are printed in total during the use period
- 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.





PCR name	EP and IJ printer (PCR-ID:AD-04)	1	Product type	bizhub 458e			
LCA/LCIA in units of:	1	Product weight[kg]	96.0	Package[kg]	15.7	Weight total[kg]	111.7

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

	Breakdown of primar	y 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	5.32E+01	5.32E+01 Rubber		Press molding:Iron	4.71E+01		
Stainless steel	5.85E-01	Semiconductor circuit board	2.76E+00	Press molding:Nonfe rrous metal	4.11E+00		
Aluminium	2.03E+00			Injection molding	3.33E+01		
Other metals	2.08E+00						
Glass	2.23E+00						
Thermoplastic resin	3.39E+01						
Wood	6.50E+00						
Paper	7.87E+00						
Subtotal	1.08E+02	Subtotal	3.31E+00				
	Total		1.12E+02	Subtotal	8.45E+01	Subtotal	

2. Production site information (per unit): Consumption and discharge/emission for production/processing/assembly within the site.

30x and	NOx should be indicated in SO2, NO2	oquivalorit.							
S	Classification	Energy	Energy	Material	Material				
Emission/ Discharge	Distribution	Electricity	Furnace urban	Industrial	Groundwater				
	Distribution	(kWh)	gas (m³)	water(kg)	(kg)				
ű	Quantity	3.50E+01	2.45E-01	2.43E+02	1.57E+01				
0	Note								
inge	Classification	To Water system							
iss cha	Distribution	Sewage (kg)							
Em	Quantity	2.11E+02							
	Note								
2 Diotrib		\							
3. DISTRIB	ution stage information (per unit): means, distan	ice, loading ratio	, consumptions	and emissions/	discharges.			
S. DISTIDI	Means of transportation	Freight by ship	Freight by ship	Freight by ship	Freight by ship	Diesel truck :20ton	Diesel truck :20ton	Diesel truck :20ton	Diesel truck :20ton
3. Distrib		Freight by	Freight by	Freight by	Freight by	Diesel truck			
	Means of transportation	Freight by ship	Freight by ship	Freight by ship	Freight by ship Loading	Diesel truck :20ton	:20ton	:20ton	:20ton Loading
	Means of transportation Conditions	Freight by ship Load(kg•km)	Freight by ship Weight (kg)	Freight by ship Distance (km)	Freight by ship Loading Ratio(%w)	Diesel truck :20ton Load(kg*km)	:20ton Weight (kg)	:20ton Distance (km)	:20ton Loading Ratio(%w)
	Means of transportation Conditions Quantity	Freight by ship Load(kg•km)	Freight by ship Weight (kg)	Freight by ship Distance (km)	Freight by ship Loading Ratio(%w)	Diesel truck :20ton Load(kg*km)	:20ton Weight (kg)	:20ton Distance (km)	:20ton Loading Ratio(%w)
	Means of transportation Conditions Quantity Note	Freight by ship Load(kg*km) 1.90E+05 Diesel truck	Freight by ship Weight (kg) 1.12E+02 Diesel truck	Freight by ship Distance (km) 1.70E+03 Diesel truck	Freight by ship Loading Ratio(%w) 1.0E+02 Diesel truck	Diesel truck :20ton Load(kg*km)	:20ton Weight (kg)	:20ton Distance (km)	:20ton Loading Ratio(%w)
	Means of transportation Conditions Quantity Note Means of transportation	Freight by ship Load(kg•km) 1.90E+05 Diesel truck :2ton	Freight by ship Weight (kg) 1.12E+02 Diesel truck :2ton	Freight by ship Distance (km) 1.70E+03 Diesel truck :2ton	Freight by ship Loading Ratio(%w) 1.0E+02 Diesel truck :2ton Loading	Diesel truck :20ton Load(kg*km)	:20ton Weight (kg)	:20ton Distance (km)	:20ton Loading Ratio(%w)

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

4.1 FIOUL	uct and accessories subject to the	iis anaiysis							
	Classification	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption
t	Distribution	Electricity	Gasoline as	Furnace urban	Industrial	Groundwater	Ordinary steel	Stainless steel	Aluminium
Product	Distributori	(kWh)	fuel(kg)	gas (m³)	water(kg)	(kg)	(kg)	(kg)	(kg)
₫.	Quantity	5.85E+02	3.61E-01	9.53E+00	7.41E+01	1.20E+03	2.53E+01	4.35E-01	1.77E+00
	Note								
	Classification	Consumption	Consumption	Consumption	Consumption	Processing	Processing	Processing	Processing
ğ	Distribution	Glass(kg)	Thermoplastic	Paper(kg)	Rubber(kg)	Press:Iron	Press:	Injection	Blow molding
Product		, 0,	resin(kg)		. •	(kg)	Nonferrous(kg)	molding(kg)	(kg)
_	Quantity	1.40E-01	3.27E+01	7.93E+00	3.52E-01	2.90E+01	4.64E-01	1.97E+00	1.22E+01
	Note								
	Classification	Assembly	To Water						
+=		71000111519	system						
Product	Distribution	Parts	Sewage (kg)						
€.		assembly (kg)							
	Quantity	1.22E+01	9.53E+02						
	Note								
	Classification	Distribution	Distribution	Distribution					
-			Diesel truck:	Diesel truck:					
월	Distribution	Freight by ship (kg·km)	20ton	10ton					
Product		(Kg-Kill)	(kg•km)	(kg•km)					
_	Quantity	1.50E+04	9.14E+03	6.57E+03					
	Note								

4.2 DISPC	sition/Recycle information on c								
	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 plastics(kg)	Recycle: to Paper(kg)	Industrial waste destruction by fire(kg)	Industrial waste inning(kg)
8	Quantity	9.76E-01	3.47E-02	1.03E+01	7.07E-01	5.55E+00	3.17E+00	2.54E-01	5.65E-02
	Note								
	Classification	Treatment	Treatment	Deduction	Deduction	Deduction	Deduction		
nsumables	Distribution	Waste destruction by fire(kg)	Waste inning(kg)	Iron(kg)	Aluminum(kg)	Plastics(kg)	Paper(kg)		
Const	Quantity	1.34E+01	1.82E+01	-1.03E+01	-7.07E-01	-5.55E+00	-3.17E+00		
	Note								
	Classification	Distribution	Distribution						
nsumables	Distribution	Diesel truck: 10ton (kg•km)	Diesel truck: 4ton (kg•km)						
So	Quantity	2.53E+03	2.90E+03						
	Note								

25	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)
ous	Quantity	2.10E+00	7.47E-02	2.20E+01	8.12E-01	1.21E+00	8.90E-01	1.34E+01	6.13E+00
O	Note								
	Classification	Treatment	Treatment	Treatment	Treatment	Deduction	Deduction	Deduction	Deduction
Consumables	Distribution	Incineration: Industrial waste(kg)	Landfill: Industrial waste(kg)	Incineration to landfill (as ash)(kg)	Landfill: General waste(kg)	Iron(kg)	Aluminium (kg)	copper(kg)	Glass(kg)
Ö	Quantity	9.54E-01	2.57E-01	2.93E+01	3.83E+01	-2.20E+01	-8.12E-01	-1.21E+00	-8.90E-01
	Note								
	Classification	Deduction	Deduction	Distribution	Distribution				
Consumables	Distribution	Plastics(kg)	Paper(kg)	Diesel truck: 10ton (kg•km)	Diesel truck: 4ton (kg•km)				
S	Quantity	-1.34E+01	-6.13E+00	5.43E+03	6.57E+03				
	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.

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:

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 1,815,000 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 maintenance 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.

Treatment of copper and deduction of copper include copper of " assembled circuit board" . Incineration of assembled circuit board is included "Incineration: Industrial waste".

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. Treatment of copper and deduction of copper include copper of " assembled circuit board". Incineration of assembled circuit board is included "Incineration: Industrial waste".