Product Environmental Aspects Declaration

EP and IJ printer（PCR-ID:AD-04）

AD-19-1121
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KONICA MINOLTA

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bizhub C3320i

Marking technologies	Electrophotographic Printer (EP)
Printing speed	33 prints-per-minute(B/W) 33 prints-per-minute(color)
Maximum copy paper	A4
Duplex copying	Non-stack ADU equipped

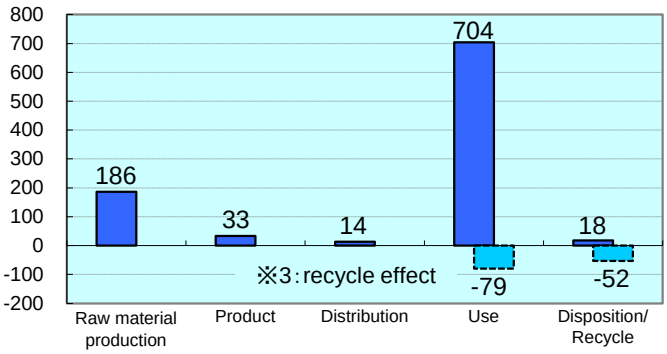
Total of 653,400 sheets on the assumption of five years usage.
Environmental impact by copypaper is not included.
※The picture is attached with options.

Life Cycle Impact

Consumption and discharge in a life cycle	All the stage sum totals
Global warming(CO_2equivalent):kg	955 (824)
Acidification(SO_2equivalent):kg	1.5 (1.3)
Energy resources(crude oil equivalent):MJ	18,206 (15,030)

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

Warming load CO_2 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: 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.

Form 2（F-02B-03）

Product Environmental Information Data Sheet (PEIDS)

Document control no.	F-02B-03
Product vendor	KONICAMINOLTA ,INC.
EcoLeaf registration no.	AD-19-1121

Unit Function DB version	2.1
Characterization Factor DB version	2.1

PCR name	EP and IJ printer	Product type	bizhub C3320i				
PCR－ID	AD-04	Product weight[kg]	38.4	Package[kg]	5.2	Weight total[kg]	43.6

In/Out items \ Life Cycle Stage					Unit	Production		Distribution	Use	Disposal	Recycle
						Raw material	Product				
Energy Consumption					MJ	3.36E+03	6.46E+02	1.83E+02	1.40E+04	3.56E+01	-3.18E+03
					Mcal	8.02E+02	1.54E+02	4.37E+01	3.34E+03	8.51E+00	-7.59E+02
Inventory analyses	Resource Consumption from the environment	Exhaustible resources	Energy	Coal	kg	2.66E+01	3.91E+00	4.27E-04	4.82E+01	1.81E-01	-1.38E+01
				Crude oil (as a fuel)	kg	3.01E+01	4.50E+00	4.00E+00	1.09E+02	3.83E-01	-2.63E+01
				Natural Gas	kg	6.35E+00	2.71E+00	6.17E-02	3.46E+01	9.38E-02	-3.55E+00
				Uranium ore	mg	5.27E-04	2.65E-04	2.90E-08	2.59E-03	1.22E-05	-1.67E-04
			Material	Crude oil (as an ingredients)	kg	1.41E+01	0	0	8.59E+01	0	-2.90E+01
				Iron ore	kg	1.91E+01	0	0	9.49E+00	0	-1.14E+01
				Copper ore	kg	5.66E-01	0	0	0.00E+00	0	-1.80E-01
				Bauxite	kg	1.58E+00	0	0	8.71E-01	0	-9.79E-01
				Nickel ore	kg	3.54E-02	0	0	3.39E-02	0	-2.77E-02
				Chromium ore	kg	5.40E-02	0	0	4.92E-02	0	-4.13E-02
				Manganese ore	kg	9.79E-02	0	0	5.58E-02	0	-1.01E-02
				Plumbous ore	kg	2.02E-02	0	0	0	0	-4.62E-03
				Tin ore	kg	0	0	0	0	0	0
				Zinc ore	kg	1.99E-01	0	0	0	0	-4.54E-02
				Gold ore	kg	0	0	0	0	0	0
				Silver ore	kg	0	0	0	0	0	0
				Silica sand	kg	1.60E+00	0	0	1.11E-01	0	-5.44E-01
				Rock salt	kg	8.98E+00	1.91E-03	0	1.96E+00	1.28E-02	-4.20E+00
				Limestone	kg	4.17E+00	0	0	2.87E+00	1.80E-01	-1.98E+00
				Natural soda ash	kg	1.52E-01	0	0	0.00E+00	0	-5.31E-02
		Renewable resources		Wood	kg	7.27E+00	0	0	1.31E+02	0	-5.53E+01
				Water	kg	1.41E+04	3.34E+03	3.24E-01	3.86E+04	1.48E+02	-6.27E+03
	Emission/Discharge to the environment	to Atmosphere		CO2	kg	1.82E+02	3.26E+01	1.30E+01	6.83E+02	1.84E+01	-1.28E+02
				SOx	kg	1.49E-01	2.32E-02	7.25E-03	3.92E-01	9.91E-03	-8.42E-02
				NOx	kg	2.36E-01	2.23E-02	5.02E-02	9.73E-01	2.41E-02	-2.13E-01
				N2O	kg	1.66E-02	2.93E-03	2.34E-03	7.67E-02	3.46E-05	-1.42E-02
				CH4	kg	1.38E-03	7.07E-04	7.74E-08	6.91E-03	3.28E-05	-4.31E-04
				CO	kg	3.10E-02	4.87E-03	1.09E-02	1.07E-01	5.14E-03	-1.81E-02
				NMVOC	kg	2.70E-03	1.39E-03	1.52E-07	1.35E-02	6.42E-05	-8.42E-04
				CxHy	kg	7.89E-03	4.91E-04	1.68E-03	2.46E-02	1.42E-04	-6.88E-03
				dust	kg	2.74E-02	1.00E-03	5.08E-03	6.54E-02	1.41E-03	-2.11E-02
		to Water system		BOD	kg	-	-	-	-	-	-
				COD	kg	-	-	-	-	-	-
				N total	kg	-	-	-	-	-	-
				P total	kg	-	-	-	-	-	-
				SS	kg	-	-	-	-	-	-
		to Soil system		Unspecified solid waste	kg	1.62E+00	1.19E-02	0	2.59E+01	1.57E+01	-2.00E+00
				Slag	kg	5.94E+00	0	0	2.89E+00	0	-3.28E+00
				Sludge	kg	3.09E+00	0	0	1.87E+00	0	-1.98E+00
				Low emission radioactive waste	kg	3.69E-04	1.85E-04	2.02E-08	1.81E-03	8.55E-06	-1.17E-04
Impact assesment	by Resource Consumption	Exhaustible resources		Energy resources (crude oil equivalent)	kg	5.91E+01	1.24E+01	4.07E+00	2.03E+02	7.12E-01	-4.08E+01
				Mineral resources (Iron ore equivalent)	kg	1.72E+02	0	0	8.67E+01	0	-8.35E+01
	by Emision Consumption	to Atmosphere		Global warming (CO2 equivalent)	kg	1.86E+02	3.34E+01	1.36E+01	7.04E+02	1.84E+01	-1.32E+02
				Acidification (SO2 equivalent)	kg	3.14E-01	3.88E-02	4.24E-02	1.07E+00	2.68E-02	-2.33E-01
		to Water system									
		to Soil 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).
   653,400 sheets are printed in total during the use period of five years.
   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 materilal production of recycled materials are included in the values with minus as a recycling effect.

Form3 （F-03-03）

Product data sheet

(Input data and parameters for LCA)

Document control no.	F-03-03
Product vendor	KONICAMINOLTA,INC.
EcoLeaf registration no.	AD-19-1121

PCR name	EP and IJ printer(PCR-ID:AD-04)		Product type	bizhub C3320i			
CA/LCIA in units o	1	Product weight[kg]	38.4	Package[kg]	5.2	Weight total[kg]	43.6

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

Breakdown of primary materials				Math breakdown of parts, which need to apply 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	1.83E+01	Rubber	1.22E-01	Press molding:Iron	1.65E+01		
Stainless steel	2.22E-01	Semiconductor circuit board	1.17E+00	Press molding:Nonferrous metal	1.65E+00		
Aluminium	1.36E+00			Injection molding	1.55E+01		
Other metals	2.89E-01						
Glass	1.46E+00						
Thermoplastic resin	1.58E+01						
Wood	2.70E+00						
Paper	2.14E+00						
Subtotal	4.23E+01	Subtotal	1.29E+00				
Total			4.36E+01	Subtotal	3.37E+01	Subtotal	

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.

Consumption	Classification	Energy	Energy	Material	Material			
	Distribution	Electricity (kWh)	Furnace urban gas (m^3)	Industrial water(kg)	Groundwater (kg)			
	Quantity	3.22E+01	9.63E-01	3.15E+02	4.96E+01			
	Note							
Emission/ Discharge	Classification	To Water system						
	Distribution	Sewage(kg)						
	Quantity	3.30E+02						
	Note							

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

Distribution	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
	Conditions	Load(kg･km)	Weight (kg)	Distance (km)	Loading Ratio(%w)	Load(kg･km)	Weight (kg)	Distance (km)	Loading Ratio(%w)
	Quantity	2.18E+05	4.36E+01	5.00E+03	1.00E+02	2.24E+04	4.36E+01	2.59E+02	5.04E+01
	Note								
	Means of transportation	Diesel truck :2ton	Diesel truck :2ton	Diesel truck :2ton	Diesel truck :2ton				
	Conditions	Load(kg･km)	Weight (kg)	Distance (km)	Loading Ratio(%w)				
	Quantity	1.50E+03	4.36E+01	7.50E-01	2.18E+00				
	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

Product	Classification	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption
	Distribution	Electricity (kWh)	Gasoline as fuel(kg)	Furnace urban gas (m^3)	Industrial water(kg)	Groundwater (kg)	Ordinary steel (kg)	Stainless steel (kg)	Aluminium (kg)
	Quantity	3.73E+02	2.75E-01	1.41E+01	1.67E+02	1.57E+03	9.09E+00	2.13E-01	8.24E-01
	Note								
Product	Classification	Consumption	Consumption	Consumption	Processing	Processing	Processing	Processing	
	Distribution	Thermoplastic resin(kg)	Paper(kg)	Rubber(kg)	Press:Iron(kg)	Press: Nonferrous(kg)	Injection molding(kg)	Blow molding (kg)	
	Quantity	8.71E+01	5.59E+01	5.28E-01	8.15E+00	9.73E-01	1.22E+01	1.09E+02	
	Note								
Product	Classification	Assembly	To Water system						
	Distribution	Parts assembly(kg)	Sewage(kg)						
	Quantity	1.09E+02	1.35E+03						
	Note								
Product	Classification	Distribution	Distribution	Distribution					
	Distribution	Freight by ship (kg･km)	Diesel truck: 20ton (kg･km)	Diesel truck: 10ton (kg･km)					
	Quantity	0.00E+00	0.00E+00	2.70E+04					
	Note								

4.2 Disposition/Recycle information on consumables and replacement parts

Consumables	Classification	Consumption	Consumption	Treatment	Treatment	Treatment	Treatment	Treatment	Treatment
	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)	Industrial waste destruction by fire(kg)
	Quantity	4.29E+00	1.00E-01	3.72E+00	3.29E-01	0.00E+00	2.42E+01	2.72E+01	2.11E-01
	Note								
Consumables	Classification	Treatment	Treatment	Treatment	Deduction	Deduction	Deduction	Deduction	Deduction
	Distribution	Industrial waste inning(kg)	Waste destruction by fire(kg)	Waste inning(kg)	Iron(kg)	Aluminum(kg)	Copper(kg)	Plastics(kg)	Paper(kg)
	Quantity	2.44E-01	7.78E+01	8.96E+00	-3.72E+00	-3.29E-01	0.00E+00	-2.42E+01	-2.72E+01
	Note								
Consumables	Classification	Distribution	Distribution						
	Distribution	Diesel truck: 10ton (kg･km)	Diesel truck: 4ton (kg･km)						
	Quantity	6.94E+03	8.39E+03						
	Note								

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

Consumables	Classification	Consumption	Consumption	Treatment	Treatment	Treatment	Treatment	Treatment	Treatment
	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)
	Quantity	1.30E+00	3.04E-02	7.45E+00	5.45E-01	2.75E-01	5.86E-01	6.27E+00	2.10E+00
	Note								
Consumables	Classification	Treatment	Treatment	Treatment	Treatment	Deduction	Deduction	Deduction	Deduction
	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)
	Quantity	3.35E-01	1.06E-01	1.25E+01	1.37E+01	-7.45E+00	-5.45E-01	-2.75E-01	-5.86E-01
	Note								
Consumables	Classification	Deduction	Deduction	Distribution	Distribution				
	Distribution	Plastics(kg)	Paper(kg)	Diesel truck: 10ton (kg･km)	Diesel truck: 4ton (kg･km)				
	Quantity	-6.27E+00	-2.10E+00	2.10E+03	2.54E+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.

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 653,400 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.

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".