

Product Environmental Aspects Declaration



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

imageRUNNER ADVANCE C9280 PRO

No.AD-13-E266-A

Date of publication

May/30/2013



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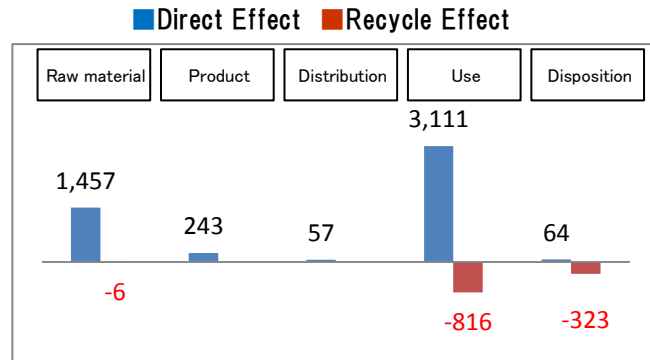
Environmental load of the Use stage is based on the supposition that the product prints 3,840,000 images for five years. Environmental impact by copypaper is not included.

- 1) EP Printing 2) CL Print Speed: 70ppm 3) BW Print Speed: 80ppm (A4)
4) Paper size: A3 maximum 5) Standardized automatic duplexing

Consumption and discharge in a life cycle	All the stage sum totals
Global warming (CO ₂ equivalent)	4.93t (3.79t)
Acidification (SO ₂ equivalent)	7.56kg (5.50kg)
Energy resources (crude oil equivalent)	98.1GJ (77.2GJ)

※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.

This declaration was produced using Product Category Rule intended for a product model sold in the Japanese market and using the qualitative and quantitative data collected in Japan.

[Supplemental environmental information]

Certified Environmental Standards: Japan Eco Mark, International Energy Star Program, EU RoHS.

This product and its main components are produced in our factories certified to ISO14001 management system standard.

PCR review was conducted by: PCR Deliberation Committee, Jan. 1st, 2008,

Name of representative: Youji Uchiyama, University of Tsukuba, Graduate School

Independent verification of the declaration and data, according to ISO14025 internal external

Third party verifier: Hiroyuki Uchida

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

In the case of a business entity certified as an Ecoleaf-data-collection system, the names of certification auditors are written. The EcoLeaf is an environmental labeling program that belongs to the ISO-Type III category.

Product Environmental Information Data Sheet (PEIDS)



Document control no.	F-02B-03
Product vendor	Canon Inc.
EcoLeaf registration no.	AD-13-E266-A

Unit Function DB version	v 2.1
Characterization Factor DB version	v 2.1

PCR name	EP and IJ printer	Product type	imageRUNNER ADVANCE C9280 PRO				
PCR ID	AD-04	Product weight (kg)	274	Package (kg)	65	Weight total (kg)	339

In/Out items	Life Cycle Stage	Unit	Production		Distribution	Use	Disposition	Recycle effect			
			Raw material	Product							
Energy Consumption			MJ	2.44E+04	4.66E+03	7.68E+02	6.80E+04	2.37E+02	-2.10E+04		
			Mcal	5.84E+03	1.11E+03	1.83E+02	1.63E+04	5.65E+01	-5.01E+03		
Inventory analyses	Resource Consumption from the environment	Energy	Coal	kg	2.39E+02	3.07E+01	1.79E-03	3.90E+02	1.17E+00	-2.51E+02	
			Crude oil (as a fuel)	kg	2.16E+02	3.48E+01	1.68E+01	5.69E+02	2.66E+00	-1.35E+02	
			Natural Gas	kg	4.73E+01	1.63E+01	2.59E-01	1.61E+02	6.08E-01	-3.03E+01	
			Uranium ore	kg	4.52E-03	2.08E-03	1.22E-07	1.40E-02	7.92E-05	-8.45E-04	
		Material	Crude oil (as an ingredients)	kg	6.35E+01	0	0	2.27E+02	0	-1.10E+02	
			Iron ore	kg	1.87E+02	0	0	1.78E+02	0	-2.42E+02	
			Copper ore	kg	2.94E+00	0	0	4.58E-01	0	-8.18E-01	
			Bauxite	kg	6.76E+00	0	0	1.53E+01	0	-1.79E+01	
			Nickel ore	kg	3.89E-01	0	0	1.73E-01	0	-3.25E-01	
			Chromium ore	kg	5.91E-01	0	0	2.96E-01	0	-5.23E-01	
			manganese ore	kg	1.05E+00	0	0	9.74E-01	0	-2.56E-01	
			Plumbous ore	kg	2.39E-01	0	0	3.72E-02	0	-6.64E-02	
			Tin ore	kg	0	0	0	0	0	0	
			Zinc ore	kg	2.35E+00	0	0	3.66E-01	0	-6.53E-01	
			Gold ore	kg	0	0	0	0	0	0	
			Silver ore	kg	0	0	0	0	0	0	
			Silica ore	kg	7.50E+00	0	0	2.54E+00	0	-2.56E+00	
			Rock salt	kg	5.05E+01	0	0	3.93E+01	1.06E-01	-5.51E+01	
			Limestone	kg	4.14E+01	0	0	3.75E+01	9.38E-01	-4.13E+01	
			Natural soda ash	kg	5.07E-01	0	0	3.53E-02	0	-8.92E-02	
Renewable resources	Wood	kg	8.10E+01	0	0	1.36E+02	0	-1.13E+02			
	Water	kg	1.16E+05	2.33E+04	1.36E+00	3.02E+05	9.45E+02	-5.42E+04			
Emission/Discharge to the environment	to Atmosphere	CO ₂	kg	1.43E+03	2.41E+02	5.45E+01	3.05E+03	6.43E+01	-1.12E+03		
		SO _x	kg	9.96E-01	1.82E-01	3.26E-02	2.33E+00	5.77E-02	-1.03E+00		
		NO _x	kg	1.59E+00	1.49E-01	2.46E-01	3.52E+00	1.55E-01	-1.47E+00		
		N ₂ O	kg	1.08E-01	6.05E-03	9.30E-03	2.35E-01	2.86E-04	-9.72E-02		
		CH ₄	kg	1.20E-02	5.55E-03	3.25E-07	3.72E-02	2.12E-04	-1.93E-03		
		CO	kg	2.30E-01	3.57E-02	6.31E-02	5.66E-01	3.74E-02	-2.53E-01		
		NM VOC	kg	2.34E-02	1.09E-02	6.37E-07	7.28E-02	4.15E-04	-3.79E-03		
		C _x H _y	kg	5.32E-02	1.12E-03	7.63E-03	9.92E-02	1.27E-03	-4.85E-02		
		dust	kg	1.90E-01	7.81E-03	2.41E-02	3.38E-01	9.67E-03	-1.95E-01		
		to Water system	BOD	kg	-	-	-	-	-	-	
	COD		kg	-	-	-	-	-	-		
	N total		kg	-	-	-	-	-	-		
	P total		kg	-	-	-	-	-	-		
	SS		kg	-	-	-	-	-	-		
	to Soil system	Unspecified solid waste	kg	1.01E+01	0	0	2.45E+01	1.35E+02	-1.53E+01		
		Slag	kg	6.44E+01	0	0	5.52E+01	0	-7.42E+01		
		Sludge	kg	1.45E+01	0	0	3.27E+01	0	-3.85E+01		
		Low emission radioactive waste	kg	3.17E-03	1.45E-03	8.50E-08	9.77E-03	5.53E-05	-5.91E-04		
	Impact assessment	by Resource Consumption	Exhaustible resources	Energy resources (crude oil equivalent)	kg	4.63E+02	9.11E+01	1.71E+01	1.13E+03	4.79E+00	-3.40E+02
				Mineral resources (Iron ore equivalent)	kg	1.45E+03	0	0	6.36E+02	0	-8.61E+02
by Emission/Discharge to the environment		to Atmosphere	Global warming (CO ₂ equivalent)	kg	1.46E+03	2.43E+02	5.71E+01	3.11E+03	6.43E+01	-1.15E+03	
			Acidification (SO ₂ equivalent)	kg	2.11E+00	2.86E-01	2.05E-01	4.79E+00	1.66E-01	-2.06E+00	
		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]

1. "Raw material" in Production:

This product uses carrier (electrographic developer) in the image development process.

2. "Product" in Producton:

3. Distribution:

Distance of domestic transportation is regarded as 100km according to PCR(AD-04).

4. Use:

- Based on the PCR, energy consumption and print volume are calculated from TEC method.

3,840,000 sheets are printed during the use period of 5 years.

- Environmental load of "producing" and "disposal and recycling" of consumable goods are allocated to this stage.

- The coverage on the paper is 5%(A4) by using standard chart.

- Distance of domestic transportation of consumable goods is regarded as 100km according to PCR.

- Color print ratio is equal to black-and-white print ratio.

5. Disposal and recycle:

6. Others:

This declaration was produced using Product Category Rule intended for a product model sold in the Japanese market and using the qualitative and quantitative data collected in Japan.

Product data sheet

(Input data and parameters for LCA)



Document control no.	F-03-03
Product vendor	Canon Inc.
EcoLeaf registration no.	AD-13-E266-A

PCR name	EP and IJ printer (PCR-ID:AD-04)	Product type	imageRUNNER ADVANCE C9280 PRO				
LCA/LCIA in units of:	1	Product weight (kg)	274	Package (kg)	65	Weight total (kg)	339

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

Product	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)
Product	Ordinary steel	1.79E+02	Glass	2.66E+00	Press molding Iron	1.80E+02	Parts assembly	2.66E+02
	Stainless steel	2.44E+00	Paper	2.37E+01	Press molding Nonferrous metal	1.09E+01		
	Aluminium	6.39E+00	PCB	1.14E+01	Injection molding	6.92E+01		
	Other metals	4.53E+00	Wood	3.04E+01				
	Thermoplastic resin	7.26E+01	Recycled plastic	3.90E+00	Glass molding	2.66E+00		
	Thermosetting resin	0.00E+00						
	Rubber	1.43E+00						
	Subtotal	2.67E+02	Subtotal	7.21E+01				
Total				3.39E+02	Subtotal	2.63E+02	Subtotal	2.66E+02

[Note]

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	Consumption	Consumption	Consumption	Consumption	Consumption			
	Distribution	Electricity(kWh)	Furnace urban gas(m ³)	Industrial water(kg)	Clean water(kg)	Groundwater(kg)			
Consumption	Quantity	1.99E+02	1.27E+00	8.00E+01	4.21E-01	3.06E+01			
	Note								
Emission/Discharge	Classification								
	Distribution								
	Quantity								
	Note								

[Note]

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

Distribution	Means of transportation	Diesel truck:4ton	Diesel truck:15ton	Freight by ship					
	Conditions	Load (kg·km)	Load (kg·km)	Load (kg·km)					
Distribution	Quantity	3.33E+04	9.33E+04	8.60E+05					
	Note								

[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)	Electricity(kWh)	Furnace urban gas(m ³)	Industrial water(kg)	Clean water(kg)	Groundwater(kg)		
Product	Quantity	1.27E+03	1.39E+03	1.27E+01	8.00E+02	4.21E+00	1.24E+03		
	Note								
Product	Classification <th>Consumption</th> <th>Consumption</th> <th>Consumption</th> <th>Consumption</th> <th>Consumption</th> <th>Consumption</th> <th>Consumption</th> <th>Consumption</th>	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption
	Distribution	Ordinary steel(kg)	Stainless steel(kg)	Aluminium(kg)	Other metal(kg)	Glass(kg)	Thermoplastic resin(kg)	Wood(kg)	
Product	Quantity	1.72E+02	1.07E+00	1.44E+01	9.06E-01	2.45E-02	3.06E+02	6.67E+00	
	Note								
Product	Classification <th>Consumption</th> <th>Consumption</th> <th>Consumption</th> <th>Consumption</th> <th>Consumption</th> <th>Consumption</th> <th>Consumption</th> <th>Consumption</th>	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption
	Distribution	Paper(kg)	Rubber(kg)	PCB(kg)					
Product	Quantity	6.09E+01	1.45E-02	1.34E+00					
	Note								
Product	Classification <th>Consumption</th> <th>Consumption</th> <th>Consumption</th> <th>Consumption</th> <th>Consumption</th> <th>Consumption</th> <th>Consumption</th> <th>Consumption</th>	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption
	Distribution	Press molding Iron(kg)	Press molding Nonferrous metal(kg)	Injection molding(kg)	Parts assembly(kg)	Diesel truck:4ton(kg·km)	Diesel truck:10ton(kg·km)	Diesel truck:15ton(kg·km)	Freight by ship(kg·km)
Product	Quantity	1.64E+02	1.53E+01	1.19E+02	2.88E+02	2.74E+04	6.84E+04	5.90E+04	5.36E+05
	Note								

[Note]

4.2 Disposition/Recycle information on consumables and replacement parts

Consumables	Classification	Process	Process	Process	Process	Process	Process	Process	Process
	Distribution	Shredding(kg)	eration to landfill (as aseration: Industrial waste)	Biomass incineration(kg)	Landfill:general waste(kg)	andfill:Industrial waste(kg)	Electricity (kWh)		
Consumables	Quantity	3.52E+01	3.51E+01	1.58E+01	3.63E+01	3.01E+00	2.22E+00	9.54E+00	
	Note								
Consumables	Classification <th>Process</th> <th>Process</th> <th>Process</th> <th>Process</th> <th>Process</th> <th>Process</th> <th>Process</th> <th>Process</th>	Process	Process	Process	Process	Process	Process	Process	Process
	Distribution	Shredding(kg)	Sorting Iron	Sorting other metal	Sorting Plastics	Recycle to Ordinary steel	Recycle to copper plate	Recycle to aluminum plate	Recycle to Thermoplastic resin
Consumables	Quantity	2.79E+02	2.62E+02	1.01E+02	9.78E+01	1.64E+02	9.02E-01	1.44E+01	9.53E+01
	Note								
Consumables	Classification <th>Process</th> <th>Process</th> <th>Deduction</th> <th>Deduction</th> <th>Deduction</th> <th>Deduction</th> <th></th> <th></th>	Process	Process	Deduction	Deduction	Deduction	Deduction		
	Distribution	Recycle to corrugated board	Recycle to Paper	Ordinary steel(kg)	Stainless steel(kg)	Aluminium(kg)	Other metal(kg)		
Consumables	Quantity	3.07E+01	8.25E-02	-1.63E+02	-1.06E+00	-1.44E+01	-9.02E-01		
	Note								
Consumables	Classification <th>Deduction</th> <th>Deduction</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>	Deduction	Deduction						
	Distribution	Thermoplastic resin(kg)	Paper(kg)						
Consumables	Quantity	-9.53E+01	-3.08E+01						
	Note								

[Note]

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

Scenario	Classification	Process	Process	Process	Process	Process	Process	Process	Process
	Distribution	Diesel truck:4ton(kg*km)	Diesel truck:10ton(kg*km)	Electricity (kWh)	Shredding(kg)	Incineration to landfill (as ash)(kg)	Incineration: Industrial waste (kg)	Biomass incineration(kg)	Landfill:general waste(kg)
	Quantity	1.61E+04	2.72E+04	7.28E+00	1.65E+02	3.89E+01	6.62E-01	3.16E+01	1.26E+02
	Note								
	Classification	Process	Process	Process	Process	Process	Process	Process	Process
	Distribution	Landfill:Industrial waste(kg)	Shredding(kg)	Sorting Iron	Sorting other metal	Sorting Plastics	Recycle to Ordinary steel	Recycle to copper plate	Recycle to aluminum plate
	Quantity	3.10E+00	1.29E+02	9.75E+01	3.12E+01	3.05E+01	7.16E+01	1.81E+00	2.55E+00
	Note								
	Classification	Process	Process	Process	Process	Deduction	Deduction	Deduction	
	Distribution	Recycle to Thermoplastic resin	Recycle to corrugated board	Recycle to Paper	Recycle to Glass	Ordinary steel(kg)	Stainless steel(kg)	Aluminium(kg)	
Quantity	3.23E+01	2.20E+01	3.83E-01	1.06E+00	-7.06E+01	-9.67E-01	-2.55E+00		
Note									
Classification	Deduction	Deduction	Deduction	Deduction	Deduction				
Distribution	Other metal(kg)	Glass(kg)	Thermoplastic resin(kg)	Paper(kg)	Rubber(kg)				
Quantity	-1.81E+00	-1.06E+00	-3.23E+01	-2.24E+01	-5.71E-01				
Note									

[Note]

6. Others:

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Basic units used in this declaration are listed below:

Material Production (Metal)

Cold-Rolled Steel Plate, Sustainless Steel Plate, Copper Plate, Aluminum Plate

Material Production (Inorganic Chemistry)

Glass

Material Production (Synthetic Resin)

ABS, High Density Polyethylene, Low Density Polyethylene, PET, Polypropylene, Polystyrene, Polycarbonate, Polycarbonate-ABS (70/30), POM (Polyacetal), PBT, AS resin, MMA resin, PA66(Polyamide 66), PVC

Material Production (Rubber)

Styrene-Butadiene Rubber (SBR)

Material Production (Wood and Paper)

Corrugated Cardboard, Paper (Western Style), Raw Wood (Imported)

Parts Production (General)

Assembled Circuit Board

Processing

Press Molding: Iron, Press Molding: Nonferrous Metal, Injection Molding, Glass Molding

Assembly

Parts Assembly

Disposal and Recycling (Crushing and Sorting)

Shredding, Sorting: Iron (by magnetic force), Sorting Nonferrous metal (by eddy current with wind force), Sorting: Plastics (by relative density difference in water)

Disposal and Recycling (Regeneration)

Recycle: to Thermoplastic Pellet, Recycle: to Ordinary Steel, Recycle: to Copper Plate, Recycle: to Aluminum Plate, Recycle: to Corrugated board, Recycle: to Paper, Recycle: to Glass

Electric Power and Fuel

Electricity, Furnace urban gas (13A)

Utility (Water)

Industrial Water, Clean Water (kg)

Transportation

Diesel truck: 4 ton, Diesel truck: 10 ton, Diesel truck: 15 ton, Freight by ship

Disposal and Recycling (Incineration and Landfill)

Incineration to landfill (as ash), Incineration: Industrial waste, Incineration: Biomass (paper), Landfill: General waste, Landfill: Industrial waste

These Basic Units are obtained from Ecoleaf Environmental Label LCI Common Basic Unit List (V.2.1). URL is listed below.

http://www.ecoleaf-jemai.jp/application/data/basicunit_en20150601.pdf