Form 1(F-01s-02)

Product Environmental Aspects Declaration

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

No. AD-19-E1120
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SHARP

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SHARP CORPORATION
Business Solutions BU
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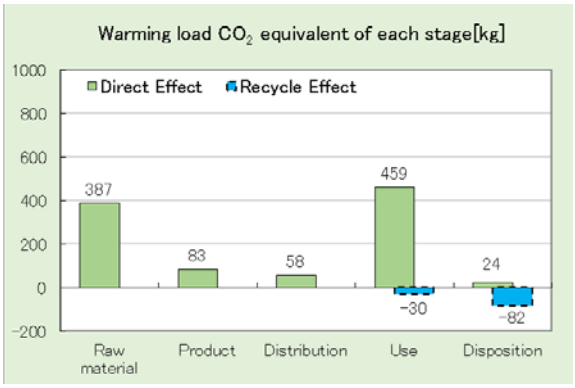
DIGITAL FULL COLOR MULTIFUNCTIONAL SYSTEM MX-2651

- Making Technology : Electrophotographic Printer (EP)
- Print Speed : Full-color 26 prints/minute (A4)
- Maximum Paper Size : SRA3
- Duplex copying : Standard

Consumption and discharge in a life cycle	All the stage sum totals
Global Warming (CO_2 equivalent)	1,010kg (898kg)
Acidification (SO_2 equivalent)	1.5kg (1.3kg)
Energy resources (crude oil equivalent)	19,843MJ (17,190MJ)

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



Environmental Impacts are calculated as follows:
Use stage: Printing 405,600 sheets in 5 years.
The picture is attached with options.
Environmental impact by copypaper is not included.

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 PSC: Product Specification Criteria. 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, EPEAT (IEEE 1680.2), EU RoHS,
- Manufactured at ISO14001 certified factories.
- Adopt biomass-based plastics (JBP No.134).

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 ISO14025:2006 ☐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.

Form 2-B(F-02Bs-02)

Product Environmental Information Data Sheet (PEIDS)

Document control no.	F-02Bs-02
Product vendor	Sharp Corporation Business Solutions BU
EcoLeaf registration no.	AD-19-E1120

Unit Function DB version	v2.1
Characterization Factor DB version	v2.1

PCR name	EP and IJ printer		Product type	MX-2651			
PCR code	AD-04	Product weight (kg)	78	Package (kg)	15	Weight total (kg)	93

In/Out items \ Life Cycle Stage					Unit	Production		Distribution	Use	Disposition	Recycle Effect
						Raw material	Product				
Energy Consumption					MJ	7.06E+03	1.58E+03	7.78E+02	1.04E+04	6.89E+01	-2.65E+03
					Mcal	1.69E+03	3.78E+02	1.86E+02	2.47E+03	1.65E+01	-6.34E+02
Inventory analyses	Impact by Resource Consumption	Exhaustible resources	Energy resources	Coal	kg	5.20E+01	1.04E+01	1.82E-03	4.78E+01	1.62E-01	-1.74E+01
				Crude oil (for fuel)	kg	6.72E+01	1.22E+01	1.70E+01	8.03E+01	1.21E+00	-2.28E+01
				LNG	kg	1.29E+01	5.38E+00	2.62E-01	2.58E+01	9.74E-02	-5.97E-01
				Uranium content of an ore	kg	1.26E-03	7.02E-04	1.23E-07	2.81E-03	1.10E-05	1.21E-05
			Mineral resources	Crude oil (for material)	kg	2.84E+01	8.61E-04	0	2.89E+01	0	-2.35E+01
				Iron content of an ore	kg	3.84E+01	0	0	5.45E+00	0	-2.05E+01
				Cu content of an ore	kg	1.67E+00	0	0	2.02E-02	0	-2.74E-01
				Al content of an ore	kg	7.61E-01	0	0	3.66E-01	0	-4.23E-01
				Ni content of an ore	kg	3.58E-01	0	0	1.95E-01	0	-4.18E-04
				C content of an ore	kg	4.97E-01	0	0	2.66E-01	0	-7.62E-03
				Mn content of an ore	kg	2.40E-01	0	0	6.04E-02	0	-1.78E-02
				Pb content of an ore	kg	7.80E-02	0	0	1.64E-03	0	-2.23E-02
				Sn content of an ore	kg	0	0	0	0	0	0
				Zn content of an ore	kg	7.78E-01	0	0	1.62E-02	0	-2.19E-01
				Au content of an ore	kg	0	0	0	0	0	0
				Ag content of an ore	kg	0	0	0	0	0	0
				Silica Sand	kg	2.85E+00	0	0	3.49E-01	0	-1.16E+00
				Halite	kg	2.35E+01	7.55E-04	0	1.74E+00	3.95E-02	-3.23E-01
				Limestone	kg	8.29E+00	0	0	1.56E+00	5.50E-01	-3.76E+00
				Natural soda ash	kg	2.49E-01	0	0	3.22E-02	0	-1.09E-01
				Wood	kg	2.08E+01	0	0	1.64E+01	0	0
				Water	kg	2.81E+04	8.00E+03	1.38E+00	3.39E+04	1.35E+02	-8.27E+02
	Impact by Emission/Discharge to the environment	to Atmosphere		CO2	kg	3.78E+02	8.25E+01	5.53E+01	4.50E+02	2.40E+01	-1.08E+02
				Sox	kg	2.43E-01	6.22E-02	2.70E-02	3.16E-01	1.47E-02	-5.48E-02
				Nox	kg	4.53E-01	5.23E-02	1.48E-01	4.87E-01	7.02E-02	-1.65E-01
				N2O	kg	3.29E-02	1.57E-03	1.09E-02	3.25E-02	1.00E-04	-1.44E-02
				CH4	kg	3.35E-03	1.88E-03	3.29E-07	7.51E-03	2.93E-05	4.09E-05
				CO	kg	5.13E-02	1.21E-02	1.61E-02	8.45E-02	2.13E-02	-1.49E-02
				NMVOC	kg	6.55E-03	3.68E-03	6.44E-07	1.47E-02	5.74E-05	7.95E-05
				CxHy	kg	1.60E-02	4.26E-04	6.11E-03	1.20E-02	9.58E-04	-7.60E-03
				Dust	kg	5.18E-02	2.95E-03	1.69E-02	3.93E-02	4.23E-03	-2.32E-02
		to Water system	to Water domain	BOD	kg	-	-	-	-	-	-
				COD	kg	-	-	-	-	-	-
				N total	kg	-	-	-	-	-	-
				P total	kg	-	-	-	-	-	-
				SS	kg	-	-	-	-	-	-
		to Soil system		Unspecified Solid Waste	kg	3.34E+00	2.14E-03	0	3.90E+01	4.39E+01	-2.85E+00
				Slag	kg	1.31E+01	0	0	1.83E+00	0	-6.45E+00
				Sludge	kg	9.36E-01	0	0	7.86E-01	0	-9.07E-01
				Low level radio-active waste	kg	8.80E-04	4.90E-04	8.60E-08	1.96E-03	7.66E-06	8.64E-06
Impact assessment	by Res			Energy resources (crude oil equivalent)	kg	1.26E+02	3.11E+01	1.73E+01	1.65E+02	1.52E+00	-3.45E+01
				Mineral resources (Iron ore equivalent)	kg	7.14E+02	4.74E-04	0	1.83E+02	0	-1.18E+02
	by Emission/Discharge to environment	to Atmosphere		Global Warming (CO2 equivalent)	kg	3.87E+02	8.30E+01	5.82E+01	4.59E+02	2.40E+01	-1.12E+02
				Acidification (SO2 equivalent)	kg	5.60E-01	9.88E-02	1.31E-01	6.57E-01	6.38E-02	-1.70E-01
				–	–	–	–	–	–	–	–
				–	–	–	–	–	–	–	–
				–	–	–	–	–	–	–	–

[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. CO_2 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]

Form 3(F-03s-02)

Product data sheet

(Input data and parameters for LCA)

Document control no.	F-03s-02
Product vendor	Sharp Corporation Business Solutions BU
EcoLEaf registration no.	AD-19-E1120

PCR name	EP and IJ printer	Product type	MX-2651				
LCA/LCIA in units of:	1	Product weight (kg)	78	Package (kg)	15	Weight total (kg)	93

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)
Product	Normal steel	3.25E+01	paper	5.94E+00	Press molding:Iron (kg)	3.18E+01	Parts assembly (kg)	9.20E+01
	Stainless steel	2.26E+00	semiconductor substrates	2.78E+00	Press molding:Nonferrous metal (kg)	1.86E+01		
	aluminum	4.13E−01	wood	8.15E+00	Injection molding (kg)	3.30E+01		
	other metals	1.86E+00	Medium−sized motor (kg)	3.68E+00	Glass molding (kg)	2.14E+00		
	thermoplastic resins	3.30E+01	Ink (kg)	4.44E−03				
	thermosetting resins	5.90E−04						
	rubber	1.30E−01						
	glass	2.14E+00						
	Subtotal	7.23E+01	Subtotal	2.06E+01				
	Total			9.3E+01	Subtotal	8.55E+01	Subtotal	9.20E+01

Note Toners included to the "Use stage".

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

SOx and NOx should be indicated in SO_2, NO_2 equivalent.

Consumption	Classification	Energy	Energy	Energy	Energy	Material	Material	Material	
	Distribution	Diesel oil as fuel (kg)	Electricity (kWh)	Heavy oil as fuel (kg)	Furnace LNG (kg)	Clean water (kg)	Acetone (kg)	Methanol(CH3OH) (kg)	
	Quantity	1.38E-01	6.38E+01	3.44E-01	9.56E-02	1.30E+02	8.61E-04	1.49E-01	
	Note								
Emission / Discharge	Classification	Discharge							
	Distribution	Sewage processing (kg)							
	Quantity	1.30E+02							
	Note								

Note

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

Distribution	Means of transportation	Diesel truck:10 ton (kg･km)	Diesel truck:10 ton (kg･km)	Diesel truck:10 ton (kg･km)	Diesel truck:10 ton (kg･km)	Freight by ship (kg･km)	Freight by ship (kg･km)	Freight by ship (kg･km)	Freight by ship (kg･km)
	Conditions	Mass(kg)	Distance （km)	Loading Ratio(%w)	Load(kg･km)	Mass(kg)	Distance （km)	Loading Ratio(%w)	Load(kg･km)
	Quantity	9.30E+01	3.00E+01	1.00E+02	2.79E+03	9.30E+01	1.10E+04	1.00E+02	1.02E+06
	Note								
	Means of transportation	Diesel truck:10 ton (kg･km)	Diesel truck:10 ton (kg･km)	Diesel truck:10 ton (kg･km)	Diesel truck:10 ton (kg･km)	Diesel truck:2 ton (kg･km)	Diesel truck:2 ton (kg･km)	Diesel truck:2 ton (kg･km)	Diesel truck:2 ton (kg･km)
	Conditions	Mass(kg)	Distance （km)	Loading Ratio(%w)	Load(kg･km)	Mass(kg)	Distance （km)	Loading Ratio(%w)	Load(kg･km)
	Quantity	9.30E+01	7.00E+01	1.00E+02	6.51E+03	9.30E+01	3.00E+01	3.72E+01	7.50E+03
	Note								

Note The shipping distance of the products unloaded from a ship is set to 100km.

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	Cold-Rolled steel plate (kg)	Electroplated steel Plate (kg)	Stainless steel plate (kg)	Copper plate (kg)	Aluminum plate (kg)	Glass (kg)	High density polyethylene (kg)	Low density polyethylene (kg)
	Quantity	3.01E+00	1.86E+00	1.24E+00	2.78E-02	3.46E-01	3.59E-01	1.81E-01	5.12E-01
	Note								
	Classification	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption
	Distribution	Polypropylene (kg)	Polystyrene (kg)	Polycarbonate (kg)	Polycarbonate-ABS (70/30) (kg)	POM(polyacetal) (kg)	ABS (kg)	MMA resin (kg)	PET (kg)
	Quantity	2.01E-02	1.48E+01	5.20E-01	6.21E-01	5.79E-01	3.33E-01	1.53E+01	1.65E-01
	Note								
	Classification	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption
	Distribution	Expandable soft polyurethane(for automobile) (kg)	Nitrile-butadiene rubber(NBR) (kg)	Styrene-butadiene rubber(SBR) (kg)	Butadiene rubber (BR) (kg)	Methanol(CH3OH) (kg)	Corrugated cardboard (kg)	Paper(Western style) (kg)	Assembled circuit board (kg)
	Quantity	1.08E-01	4.20E-03	3.00E-02	4.64E-03	4.25E-03	7.67E+00	1.95E-02	8.58E-02
	Note								
	Classification	Consumption	Condition	Consumption	Consumption	Consumption	Consumption	Condition	Energy
	Distribution	Ink (kg)	Diesel truck:10 ton (kg･km)	Press molding:Iron (kg)	Press molding:Nonferrous metal (kg)	Injection molding (kg)	Parts assembly (kg)	Freight by ship (kg･km)	Electricity (kWh)
	Quantity	1.28E+00	1.47E+03	3.56E+00	9.30E+00	1.79E+01	3.08E+01	5.40E+05	3.12E+02
	Note								
	Classification	Material	Energy	Material	Material	Energy	Condition	Consumption	Condition
	Distribution	Heavy oil as fuel (kg)	Furnace LNG (kg)	Acetone (kg)	Clean water (kg)	Diesel oil as fuel (kg)	Diesel truck:10 ton (kg･km)	Electricity (kWh)	Diesel truck:2 ton (kg･km)
	Quantity	3.44E-01	9.60E-02	1.20E-03	1.30E+02	6.00E-02	3.44E+03	3.60E+02	3.68E+03
	Note								
	Classification	Condition	Condition	Condition					
	Distribution	Diesel truck:4 ton (kg･km)	Diesel truck:10 ton (kg･km)	Diesel truck:4 ton (kg･km)					
	Quantity	3.68E+03	1.96E+04	6.14E+03					
	Note								

Note According to PCR provision, Environmental Impacts are calculated from the use stage of printing 405,600 sheets in 5 years.

4.2 Disposition/Recycle information on consumables and replacement parts

Consumables	Classification	Discharge	Process	Process	Process	Process	Process	Process	Process
	Distribution	Sewage processing (kg)	Incineration: Industrial waste (kg)	Landfill:Industrial waste (kg)	Incineration to landfill(as ash) (kg)	Landfill:General waste (kg)	Sorting:Iron(by magnetic force) (kg)	Sorting: Nonferrous metal(by eddy current with wood force) (kg)	Sorting:Plastic(by relative density difference in water) (kg)
	Quantity	1.30E+02	3.80E+00	1.00E-01	3.80E+00	2.97E+01	1.17E+01	9.30E+00	8.90E+00
	Note								
	Classification	Process	Process	Process	Process	Process	Process	Deduction	Deduction
	Distribution	Shredding (kg)	Recycle:to cold-rolled steel (kg)	Recycle:to copper plate (kg)	Recycle:to Aluminum plate (kg)	Recycle:to Glass (kg)	Recycle:to Thermoplastic pellet (kg)	Cold-Rolled steel plate (kg)	Copper plate (kg)
	Quantity	1.17E+01	2.40E+00	1.00E-02	2.00E-01	2.00E-01	8.90E+00	2.40E+00	1.00E-02
	Note								
	Classification	Deduction	Deduction	Deduction					
	Distribution	Aluminum plate (kg)	Glass (kg)	ABS (kg)					
	Quantity	2.00E-01	2.00E-01	8.90E+00					
	Note								

Note The values above are calculated based on a performance based recycling scenario.

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

Scenario									
	Classification	Process	Process	Process	Process	Process	Process	Process	Process
	Distribution	Incineration: Industrial waste (kg)	Landfill:Industrial waste (kg)	Incineration to landfill(as ash) (kg)	Landfill:General waste (kg)	Shredding (kg)	Sorting:Iron(by magnetic force) (kg)	Sorting: Nonferrous metal(by eddy current with wind force) (kg)	Sorting:Plastics(By relative density difference in water) (kg)
	Quantity	7.10E+00	3.40E+00	7.10E+00	3.94E+01	3.60E+01	3.60E+01	1.86E+01	1.64E+01
	Note								
	Classification	Process	Process	Process	Process	Process	Deduction	Deduction	Deduction
	Distribution	Recycle:to cold-rolled steel (kg)	Recycle:to copper plate (kg)	Recycle:to Aluminum plate (kg)	Recycle:to Glass (kg)	Recycle:to Thermoplastic pellet (kg)	Cold-Rolled steel plate (kg)	Copper plate (kg)	Aluminum plate (kg)
	Quantity	1.74E+01	9.00E-01	2.00E-01	1.10E+00	1.64E+01	1.74E+01	9.00E-01	2.00E-01
	Note								
	Classification	Deduction	Deduction	Condition	Condition	Condition			
	Distribution	Glass (kg)	ABS (kg)	Diesel truck:4t ton (kg･km)	Diesel truck:10 ton (kg･km)	Diesel truck:4t ton (kg･km)			
	Quantity	1.10E+00	1.64E+01	7.50E+03	2.05E+04	6.25E+03			
	Note								

Note The values above are calculated based on a performance based recycling scenario.

6. Others

The following basic units are used in this LCA.
The sources of these basic units are provided in the Eco Leaf Environmental Label LCI Common Basic Unit(V2.1.)
URL: http://www.ecoleaf-jemai.jp/application/data/basicunit_en20150601.pdf

No	Field	Base Unit Name	Unit
1	Material Production(Metal)	Cold-Rolled steel plate	kg
2		Electroplated steel Plate	kg
6		Stainless steel plate	kg
7		Copper plate	kg
8		Aluminum plate	kg
9		Zinc	kg
16	Material Production(Inorganic Chemistry)	Glass	kg
26	Material Production(Synthetic Resin)	High density polyethylene	kg
27		Low density polyethylene	kg
28		Polypropylene	kg
29		Polystyrene	kg
31		PBT	kg
32		Polycarbonate	kg
33		Polycarbonate-ABS (70/30)	kg
34		POM (polyacetal)	kg
36		ABS	kg
38		MMA resin	kg
39		PA66 (Polyamide 66)	kg
40		PET	kg
43		Expandable soft polyurethane	kg
46		Acrylic Nitrile	kg
47		Phenol resin (PF)	kg
48	Material Production(Rubber)	Nitrile-butadiene rubber (NBR)	kg
49		Styrene-butadiene rubber (SBR)	kg
50		Natural rubber	kg
51		Butadiene rubber (BR)	kg
55	Material Production(Organic Chemistry)	Methanol (CH3OH)	kg
62		Acetone	kg
67	Material Production(Wood and Paper)	Corrugated cardboard	kg
69		Paper (Western style)	kg
71		Wood chip (imported)	kg
72		Raw wood (imported)	kg
76	Material Production(General)	Assembled circuit board	kg
78		Medium-sized motor	kg
83	parts Production(Others)	Ink	kg
85	Processing	Press molding: Iron	kg
86		Press molding: Nonferrous metal	kg
87		Injection molding	kg
89		Glass molding	kg
90	Assembly	Parts assembly	kg
91	Distribution	Diesel truck: 2 ton	kg.km
92		Diesel truck: 4 ton	kg.km
93		Diesel truck: 10 ton	kg.km
97		Freight by ship	kg.km
99	Electricity and Fuel	Electricity	kWh
100		Heavy oil as fuel	kg
101		Diesel oil as fuel	kg
109		Furnace LNG	kg
126	Utility (Water)	Clean water	kg
129	Disposition and Recycle (Crushing and Sorting)	Shredding	kg
130		Sorting: Iron	kg
131		Sorting: Nonferrous metal	kg
132		Sorting: Plastics	kg
134	Disposition and Recycle (Incineration and Landfill)	Incineration: Industrial waste	kg
137		Landfill: Industrial waste	kg
138	Disposition and Recycle (Recovery)	Recycle: to cold-rolled steel	kg
139		Recycle: to copper plate	kg
140		Recycle: to Aluminum plate	kg
141		Recycle: to Thermoplastic pellet	kg
145		Recycle: to Glass	kg
146	Disposition and Recycle (Others)	Sewage processing	kg