

Product Environmental Aspects Declaration



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

No. AD-16-711

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SHARP

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Digital Full Color Multifunctional System MX-3650FN

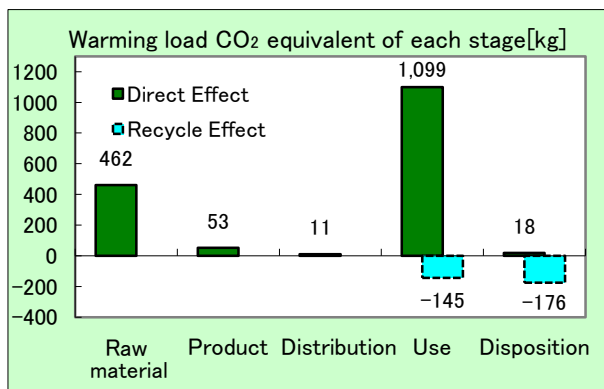
- Print Speed : Monochrome 36 prints/minute (A4)
Full-color 36 prints/minute (A4)
- Maximum Paper Size : SRA3
- Warm-up Time : 10 sec
- Control Panel Display : 10.1-inch Color LCD Touchscreen



Environmental Impacts are calculated as follows:
 Use stage: Printing 768,000 sheets in 5 years.
 The environmental impacts of the optional unit (3-Paper Drawer) are not included in the calculation.

Consumption and discharge in a life cycle	All the stage sum totals
Global Warming (CO ₂ equivalent)	1,641kg (1,319kg)
Acidification (SO ₂ equivalent)	2.3kg (1.8kg)
Energy resources (crude oil equivalent)	32,204MJ (24,334MJ)

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



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, Japan Eco Mark (15 155 037), EU RoHS, Act on Promotion of Procurement of Eco-Friendly Goods and Services by the State and Other Entities. (Act on Promoting Green Purchasing)
- Manufactured at ISO14001 certified factories.
- Equipped with antibacterial panel that conform to SIAA standards.
- Adopt biomass-based plastics (JBP No.134).

PCR review was conducted by : PCR Deliberation Committee, January 01, 2008, Name of representative: Youji Uchiyama, University of Tsukuba, Graduate School
 Independent verification of the declaration and data, according to ISO14025:2006 internal external
 Third party verifier: Hiroo Sakazaki *

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-02Bs-02
Product vendor	Sharp Corporation
EcoLeaf registration no.	AD-16-711

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

PCR name	EP and IJ printer		Product type	MX-3650FN			
PCR code	AD-04	Product weight (kg)	81	Package (kg)	13.6	Weight total (kg)	94.6

In/Out items	Life Cycle Stage	Unit	Production		Distribution	Use	Disposition	Recycle Effect			
			Raw material	Product							
Energy Consumption			MJ	8.63E+03	9.19E+02	1.43E+02	2.24E+04	6.49E+01	-7.87E+03		
			Mcal	2.06E+03	2.19E+02	3.43E+01	5.36E+03	1.55E+01	-1.88E+03		
Inventory analyses	Impact by Resource Consumption	Energy resources	Coal	kg	5.88E+01	6.74E+00	3.35E-04	8.46E+01	1.02E-01	-4.37E+01	
			Crude oil (for fuel)	kg	8.15E+01	7.61E+00	3.13E+00	2.33E+02	1.23E+00	-7.00E+01	
			LNG	kg	1.64E+01	3.37E+00	4.84E-02	4.54E+01	6.85E-02	-2.42E+00	
			Uranium content of an ore	kg	1.68E-03	4.55E-04	2.27E-08	4.51E-03	6.89E-06	2.07E-05	
			Crude oil (for material)	kg	3.28E+01	0	0	6.47E+01	0	-7.17E+01	
			Iron content of an ore	kg	3.87E+01	0	0	1.45E+01	0	-4.86E+01	
			Cu content of an ore	kg	1.86E+00	0	0	2.72E-02	0	-5.90E-01	
		Exhaustible resources	Mineral resources	Al content of an ore	kg	8.79E-01	0	0	1.49E+00	0	-2.02E+00
				Ni content of an ore	kg	4.30E-01	0	0	5.46E-01	0	-9.89E-04
				C content of an ore	kg	5.94E-01	0	0	7.45E-01	0	-1.81E-02
				Mn content of an ore	kg	2.49E-01	0	0	1.65E-01	0	-4.22E-02
				Pb content of an ore	kg	8.29E-02	0	0	2.21E-03	0	-4.79E-02
				Sn content of an ore	kg	0	0	0	0	0	0
				Zn content of an ore	kg	8.28E-01	0	0	2.17E-02	0	-4.71E-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	3.53E+00	0	0	8.17E-01	0	-2.67E+00	
	Halite			kg	2.73E+01	0	0	4.75E+00	9.19E-03	-8.49E-01	
	Limestone			kg	8.49E+00	0	0	4.27E+00	5.83E-01	-8.89E+00	
	Natural soda ash			kg	3.26E-01	0	0	7.41E-02	0	-2.52E-01	
	Impact by Emission/Discharge to the environment	to Atmosphere	Wood	kg	1.92E+01	0	0	3.51E+01	0	0	
			Water	kg	3.48E+04	5.10E+03	2.54E-01	5.73E+04	8.60E+01	-4.02E+03	
			CO2	kg	4.51E+02	5.23E+01	1.02E+01	1.08E+03	1.75E+01	-3.10E+02	
			Sox	kg	2.95E-01	3.99E-02	6.34E-03	5.74E-01	7.55E-03	-1.88E-01	
			Nox	kg	5.36E-01	3.17E-02	5.09E-02	1.33E+00	2.39E-02	-5.10E-01	
			N2O	kg	3.82E-02	5.72E-04	1.67E-03	7.76E-02	9.47E-05	-4.43E-02	
			CH4	kg	4.48E-03	1.22E-03	6.07E-08	1.20E-02	1.84E-05	9.42E-05	
CO			kg	6.09E-02	7.73E-03	1.35E-02	1.24E-01	1.84E-03	-4.62E-02		
NM VOC			kg	8.76E-03	2.39E-03	1.19E-07	2.35E-02	3.61E-05	1.83E-04		
CxHy			kg	1.82E-02	1.24E-04	1.49E-03	2.47E-02	2.90E-05	-2.28E-02		
Dust			kg	5.86E-02	1.71E-03	4.82E-03	7.07E-02	3.82E-05	-6.93E-02		
to Water system			to Water domain	BOD	kg	3.86E-04	-	-	1.46E-03	-	-
				COD	kg	-	-	-	-	-	-
	N total	kg		-	-	-	-	-	-		
to Soil system	to Soil domain	P total	kg	-	-	-	-	-	-		
		SS	kg	6.40E-05	-	-	2.40E-04	-	-		
		Unspecified Solid Waste	kg	3.70E+00	0	0	6.00E+01	8.50E+00	-8.88E+00		
		Slag	kg	1.32E+01	0	0	4.81E+00	0	-1.52E+01		
		Sludge	kg	1.06E+00	0	0	3.19E+00	0	-4.33E+00		
Low level radio-active waste	kg	1.18E-03	3.18E-04	1.59E-08	3.14E-03	4.82E-06	1.51E-05				
Impact assessment	by Res	to Atmosphere	Energy resources (crude oil equivalent)	kg	1.53E+02	1.97E+01	3.19E+00	3.79E+02	1.43E+00	-1.01E+02	
			Mineral resources (Iron ore equivalent)	kg	8.07E+02	0	0	4.94E+02	0	-2.73E+02	
			Global Warming (CO2 equivalent)	kg	4.62E+02	5.25E+01	1.06E+01	1.10E+03	1.76E+01	-3.21E+02	
			Acidification (SO2 equivalent)	kg	6.71E-01	6.21E-02	4.20E-02	1.51E+00	2.43E-02	-5.45E-01	
			Ozone Depletion (CFC-11 equivalent)	kg	0	0	0	0	0	0	
			Photochemical Oxidant	kg	3.49E-02	1.76E-03	2.57E-03	4.86E-02	4.20E-05	-3.73E-02	
			Eutrophication (Phosphate equivalent)	kg	0	0	0	0	0	0	

[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]

Product data sheet

(Input data and parameters for LCA)



Document control no.	F-03s-02
Product vendor	Sharp Corporation
EcoLeaf registration no.	AD-16-711

PCR name	EP and IJ printer (PCR-ID: AD-04)	Product type	MX-3650FN				
LCA/LCIA in units of:	1	Product weight (kg)	81	Package (kg)	13.6	Weight total (kg)	94.6

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)
	Normal steel	3.19E+01	paper	9.00E+00	Press molding:Iron (kg)	3.11E+01	Parts assembly (kg)	9.32E+01
Stainless steel	2.72E+00	semiconductor substrates	3.06E+00	Press molding:Nonferrous metal (kg)	1.41E+01			
aluminum	4.68E-01	wood	5.88E-04	Injection molding (kg)	3.75E+01			
other metals	1.94E+00	Medium-sized motor (kg)	4.37E+00	Glass molding (kg)	2.97E+00			
thermoplastic resins	3.75E+01	Ink (kg)	2.91E-02					
thermosetting resins	6.10E-04							
rubber	5.70E-01							
glass	2.98E+00							
Subtotal	9.46E+01	Subtotal						
Total		Subtotal	9.46E+01	Subtotal	8.58E+01	Subtotal	9.32E+01	

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	Energy	Energy	Material	Material		
	Distribution	Diesel oil as fuel (kg)	Electricity (kWh)	Heavy oil as fuel (kg)	Furnace LPG (kg)	Clean water (kg)	Acetone (kg)		
Quantity	7.90E-02	7.66E+01	3.33E-01	2.74E-01	6.36E+01	7.50E-04			
Note									
Emission/Discharge	Classification	Water system	Water system						
	Distribution	BOD	SS						
Quantity	3.86E-04	6.40E-05							
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	9.46E+01	5.00E+01	1.00E+02	4.73E+03	9.46E+01	1.63E+03	1.00E+02	1.54E+05
	Note								
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)	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	9.46E+01	7.00E+01	1.00E+02	6.62E+03	9.46E+01	3.00E+01	3.78E+01	7.51E+03
	Note								

Note The values above are calculated as follows;
 Marine transport distance: the resultant transport distance.
 Domestic transport distance: 100 km (according to PCR provision).

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	9.43E+00	3.45E+00	3.45E+00	5.67E-02	1.41E+00	8.61E-01	3.53E-01	2.27E+00
	Note								
Product	Classification	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption
	Distribution	Polypropylene (kg)	Polystyrene (kg)	PBT (kg)	Polycarbonate (kg)	Polycarbonate-ABS (70/30) (kg)	POM(polyacetal) (kg)	ABS (kg)	MMA resin (kg)
	Quantity	6.24E+00	2.41E+01	6.98E-02	1.21E+00	2.34E+00	1.25E+00	1.94E+00	3.18E+01
	Note								
Product	Classification	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption
	Distribution	PA66(Polyamide 66) (kg)	PET (kg)	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)
	Quantity	7.30E-03	3.21E-01	1.90E-01	1.61E+00	1.41E-01	9.40E-03	2.25E-02	1.64E+01
	Note								
Product	Classification	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption	Energy
	Distribution	Paper(Western style) (kg)	Assembled circuit board (kg)	Ink (kg)	Press molding:Iron (kg)	Press molding: Nonferrous metal (kg)	Injection molding (kg)	Parts assembly (kg)	Electricity (kWh)
	Quantity	5.98E-02	7.30E-02	2.67E+00	1.18E+01	1.82E+01	4.23E+01	7.23E+01	5.95E+02
	Note								
Product	Classification	Energy	Energy	Energy	Material	Material	Water system	Water system	Condition
	Distribution	Heavy oil as fuel (kg)	Diesel oil as fuel (kg)	Furnace LPG (kg)	Clean water (kg)	Acetone (kg)	BOD	SS	Diesel truck:10 ton (kg·km)
	Quantity	1.28E+01	9.40E-02	5.82E+00	2.46E+00	2.90E-02	1.46E-03	2.40E-04	5.60E+03
	Note								
Product	Classification	Condition	Condition	Consumption	Consumption				
	Distribution	Freight by ship (kg·km)	Diesel truck:10 ton (kg·km)	Electricity (kWh)	Gasoline as fuel (kg)				
	Quantity	1.83E+05	7.84E+03	4.17E+02	8.18E+01				
	Note								

Note According to PCR provision, Environmental Impacts are calculated from the use stage of printing 768,000 sheets in 5 years.

4.2 Disposition/Recycle information on consumables and replacement parts.

Consumables	Classification	Consumption	Process	Process	Process	Process	Process	Process	Process
	Distribution	Gasoline as fuel (kg)	Incineration: Industrial waste (kg)	Landfill:Industrial waste (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)	Shredding (kg)	Recycle: to cold-rolled steel (kg)
	Quantity	1.20E+00	1.65E+01	4.14E+01	1.23E+01	5.94E+01	4.02E+01	9.54E+01	1.23E+01
	Note								
	Classification	Process	Process	Process	Deduction	Deduction	Deduction	Deduction	
	Distribution	Recycle:to copper plate (kg)	Recycle: to Aluminum plate (kg)	Recycle: to Thermoplastic pellet (kg)	Cold-Rolled steel plate (kg)	Copper plate (kg)	Aluminum plate (kg)	ABS (kg)	
	Quantity	5.70E-02	1.41E+00	4.02E+01	1.23E+01	5.70E-02	1.41E+00	4.02E+01	
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	Consumption	Process	Process	Process	Process	Process	Process	Process
	Distribution	Gasoline as fuel (kg)	Incineration: Industrial waste (kg)	Landfill:Industrial waste (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)	Shredding (kg)	Recycle: to cold-rolled steel (kg)
	Quantity	1.01E+00	9.00E+00	8.50E+00	3.46E+01	2.29E+01	3.70E+01	8.54E+01	3.46E+01
	Note								
	Classification	Process	Process	Process	Process	Deduction	Deduction	Deduction	Deduction
	Distribution	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)	Glass (kg)
	Quantity	1.90E+00	5.00E-01	3.00E+00	3.70E+01	3.46E+01	1.90E+00	5.00E-01	3.00E+00
	Note								
	Classification	Deduction							
	Distribution	ABS (kg)							
	Quantity	3.70E+01							
	Note								

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

6. Others.

The following basic units are used in this LOA.

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	
42	Expandable hard polyurethane (Hard)		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	
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	
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	
103		Gasoline as fuel	kg	
108		Furnace LPG	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	