Product Environmental Aspects Declaration

Flat-bed / Sheet-fed scanner (PCR-ID: CA-02)

ECO LEAF
製品環境情報
http://www.jemai.or.jp

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FUJITSU

fi-800R

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PFU LIMITED

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Product Name	fi-800R
Product Category	Sheet-fed scanner（Without Flat-bed）For Business
Scanning Speed (A4 Portrait)	Simplex or Duplex, 40 ppm (80 ipm)
Scanning Size	215.9 × 355.6mm (8.5 × 14in.)
Optical Resolution	600 × 600 dpi (dots per inch)
Scanning Method	Color Contact Image Sensor ×2 (Front/Back) Image Sensor: CMOS

Consumption and discharge in a life cycle	All the stage sum totals
Global Warming (CO_2 equivalent)	52.45kg（50.14kg）
Acidification (SO_2 equivalent)	0.077kg（0.074kg）
Energy resources (crude oil equivalent)	1,029MJ（994MJ）

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

Warming load CO_2 equivalent of each stage[kg]

■Direct Effect ■Recycle Effect

Raw material	Product	Distribution	Use	Disposition
17.8	0.9	1.1	32.3 / −1.9	0.2 / −0.4
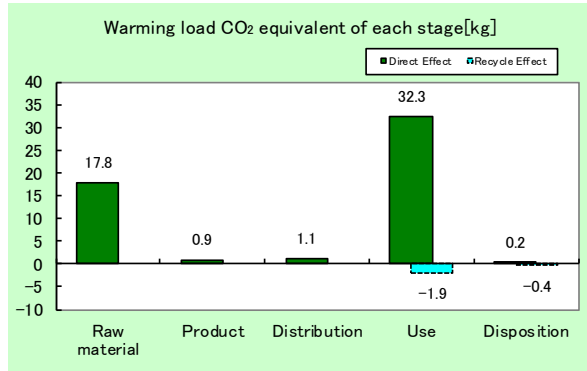
The burdens have been calculated with 15 scans per day, a monthly use of 20 days, and 5 years of use, for the number of scans of 18,000 times (4,800,000 pages) overall.

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 regulations: ENERGY STAR[(R)] Program
・ This product are produced in our factories certified to ISO14001 management system standard.
・ Conformance with RoHS Directive (2011/65/EU).

PCR review was conducted by : PCR Deliberation Committee, Sep 30, 2016, Name of representative: Ryoko Sugiyama, University of Tokoha, Graduate School

Independent verification of the declaration and data, according to ISO14025:2006 □internal ■external
Third party verifier: Eikyu Watanabe*

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)

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Document control no.	F-02Bs-02	
Product vendor	PFU LIMITED	
EcoLeaf registration no.	CA-19-036	

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

PCR name	Flat-bed / Sheet-fed scanner	Product type		fi-800R	
PCR code	CA-02	Product weight (kg)	1.69	Package (kg) 0.93	Weight total (kg) 2.62

			Unit	Production		Distribution	Use	Disposition	Recycle Effect
		Life Cycle Stage / In/Out items		Raw material	Product				
Inventory analyses	Energy Consumption		MJ	3.19E+02	1.64E+01	1.56E+01	6.77E+02	1.10E+00	-3.48E+01
			Mcal	7.62E+01	3.92E+00	3.72E+00	1.62E+02	2.63E-01	-8.32E+00
	Energy resources	Coal	kg	1.72E+00	1.19E-01	3.64E-05	3.42E+00	1.13E-03	-3.58E-02
		Crude oil (for fuel)	kg	3.44E+00	1.34E-01	3.40E-01	5.35E+00	2.19E-02	-6.63E-01
		LNG	kg	7.78E-01	5.95E-02	5.26E-03	1.90E+00	8.91E-04	-2.82E-02
		Uranium content of an ore	kg	7.81E-05	8.04E-06	2.47E-09	2.29E-04	7.66E-08	-2.43E-06
	Mineral resources	Crude oil (for material)	kg	9.17E-01	0	0	2.82E-01	0	-3.07E-02
		Iron content of an ore	kg	5.46E-01	0	0	4.21E-02	0	0
		Cu content of an ore	kg	1.30E-01	0	0	0	0	0
		Al content of an ore	kg	2.16E-02	0	0	0	0	0
		Ni content of an ore	kg	3.52E-02	0	0	2.19E-03	0	0
		C content of an ore	kg	4.77E-02	0	0	2.98E-03	0	0
		Mn content of an ore	kg	7.14E-03	0	0	5.76E-04	0	0
		Pb content of an ore	kg	6.64E-03	0	0	0	0	0
		Sn content of an ore	kg	0	0	0	0	0	0
		Zn content of an ore	kg	6.53E-02	0	0	0	0	0
		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	9.71E-02	0	0	4.71E-04	0	0
		Halite	kg	6.80E-01	5.07E-06	0	6.91E-05	1.61E-05	7.84E-05
		Limestone	kg	1.40E-01	0	0	1.54E-02	1.65E-03	0
		Natural soda ash	kg	8.02E-03	0	0	0	0	0
	Renewable resources	Wood	kg	1.02E+00	0	0	6.56E+00	0	-3.89E+00
		Water	kg	1.85E+03	9.09E+01	2.76E-02	3.08E+03	9.64E-01	-1.60E+02
	to Atmosphere	CO2	kg	1.74E+01	9.23E-01	1.10E+00	3.21E+01	2.41E-01	-2.27E+00
		Sox	kg	1.26E-02	7.04E-04	7.87E-04	2.11E-02	1.72E-04	-4.69E-04
		Nox	kg	2.21E-02	5.59E-04	7.21E-03	2.89E-02	1.19E-03	-4.47E-03
		N2O	kg	1.47E-03	1.01E-05	1.58E-04	5.93E-04	1.40E-06	-1.37E-04
		CH4	kg	2.09E-04	2.15E-05	6.60E-06	6.11E-04	2.05E-07	-6.56E-06
		CO	kg	2.29E-03	1.36E-04	2.28E-03	4.61E-03	4.16E-04	-1.12E-04
		NMVOC	kg	4.08E-04	4.21E-05	1.29E-08	1.20E-03	4.02E-07	-1.28E-05
		CxHy	kg	6.84E-04	2.20E-06	1.89E-04	2.22E-04	2.06E-05	-6.54E-05
		Dust	kg	2.17E-03	3.02E-05	6.46E-04	1.18E-03	9.04E-05	-9.17E-05
	to Water system	BOD	kg	-	-	-	-	-	-
		COD	kg	-	-	-	-	-	-
		N total	kg	-	-	-	-	-	-
		P total	kg	-	-	-	-	-	-
		SS	kg	-	-	-	-	-	-
	to Soil system	Unspecified Solid Waste	kg	1.75E-01	3.30E-05	0	2.66E-01	2.01E-02	3.49E+00
		Slag	kg	3.23E-01	0	0	1.42E-02	0	0
		Sludge	kg	0	0	0	0	0	0
		Low level radio-active waste	kg	5.47E-05	5.62E-06	1.72E-09	1.59E-04	5.35E-08	-1.70E-06
Impact assessment	Exhaustible resources	Energy resources (crude oil equivalent)	kg	6.12E+00	3.48E-01	3.47E-01	1.17E+01	2.44E-02	-7.40E-01
		Mineral resources (Iron ore equivalent)	kg	5.89E+01	0	0	1.93E+00	0	-1.69E-02
	to Atmosphere	Global Warming (CO2 equivalent)	kg	1.78E+01	9.27E-01	1.15E+00	3.23E+01	2.42E-01	-2.31E+00
		Acidification (SO2 equivalent)	kg	2.81E-02	1.10E-03	5.83E-03	4.13E-02	1.00E-03	-3.60E-03
		-	-	-	-	-	-	-	-
		Photochemical Oxidant	kg	1.33E-03	3.11E-05	3.40E-04	1.08E-03	4.55E-05	-6.82E-05

[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]

1. Regarding the ""Raw material"" production, the environmental burdens of resource mining, transportation and raw material production for the main unit, accessories and packaging materials are calculated using the EcoLeaf basic unit.

2. In "Product" production, for parts processing, the environmental burden is calculated using the EcoLeaf basic unit and production site data.
  For Parts/material C assembled at other than the main unit assembly site, the burden is calculated using the EcoLeaf basic unit (Assembly).

3. The "Distribution" stage basic conditions and basic unit are in accordance with the provisions of PCR.
  The burdens are calculated with 500km for the total domestic transportation distance.
  For transportation from Indonesia, the burdens of transporting by truck and sea are entered into the calculation.

4. The "Use" stage basic conditions and basic unit are in accordance with the provisions of PCR.
  The burdens of electricity consumption, consumables production and transportation are calculated with the total scanning number of 4,800,000 sheets in the customer use period of 5 years.
  For the part recovery rate, it is difficult to obtain the value from an actual history in our company.
  The recycling burden is calculated by handling all the consumables that the customer uses as industrial waste.
  For the manual and packaging box for consumables, the recycling burden is calculated by setting up the Open Recycling Scenario.

5. At the "Disposition/Recycle" stage, in accordance with the provisions of PCR, the recycling burden is calculated by handling all the products that the customer uses as industrial waste.
  For manuals, packaging boxes and cushioning materials, the recycling burden is calculated by setting up the Open Recycling Scenario.

6. Regarding "Recycle Effect", the burdens accompanying the production of raw materials using the materials recycled from the parts are deducted.
  Deduction regarding recycled materials used in products, accessories and packaging materials is not entered into the calculation.

Product data sheet
（Input data and parameters for LCA）

Document control no.	F-03s-02
Product vendor	PFU LIMITED
EcoLeaf registration no.	CA-19-036

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PCR name	Flat-bed / Sheet-fed scanner (PCR-ID: CA-02)	Product type		fi-800R			
LCA/LCIA in units of:	1 unit	Product weight (kg)	1.69	Package (kg)	0.93	Weight total (kg)	2.62

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	Other metals	1.71E-01	Rubber	4.95E-03	Press molding:Iron (kg)	4.20E-01	Parts assembly (kg)	3.31E-01
	Ordinary steel	1.98E-01			Press molding:Nonferrous metal (kg)	2.13E-01		
	Stainless steel	2.23E-01			Injection molding (kg)	1.06E+00		
	Semiconductor circuit board	2.19E-01						
	Thermoplastic resin	1.05E+00						
	Glass	3.07E-02						
	Medium-sized motor	2.46E-01						
	Paper	4.76E-01						
	Subtotal	2.62E+00	Subtotal	4.95E-03				
	Total		2.62E+00		Subtotal	1.69E+00	Subtotal	3.31E-01

Note The environmental burdens of the main unit, accessories and packaging materials are included.

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.

	Classification	Energy	Material					
Consumption	Distribution	Electricity (kWh)	Industrial water (kg)					
	Quantity	8.39E-02	8.74E-01					
	Note							
Emission/Discharge	Classification	Water system						
	Distribution	Sewage processing (kg)						
	Quantity	8.74E-01						
	Note							

Note The burdens of mounting parts on printed circuit boards, air conditioners, electric lights, electric tools and test equipment at the product production site are included.

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

	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)
Distribution	Conditions	Mass(kg)	Distance （km）	Loading Ratio(%w)	Load(kg·km)	Mass(kg)	Distance （km）	Loading Ratio(%w)	Load(kg·km)
	Quantity	2.62E+00	1.46E+01	5.60E+01	6.84E+01	2.62E+00	2.69E+01	1.00E+02	7.05E+01
	Note								
	Means of transportation	Freight by ship (kg·km)	Freight by ship (kg·km)	Freight by ship (kg·km)	Freight by ship (kg·km)	Diesel truck: 10 ton (kg·km)	Diesel truck: 10 ton (kg·km)	Diesel truck: 10 ton (kg·km)	Diesel truck: 10 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	2.62E+00	5.41E+03	1.00E+02	1.42E+04	2.62E+00	4.25E+01	5.60E+01	1.99E+02
	Note								
	Means of transportation	Diesel truck: 4 ton (kg·km)	Diesel truck: 4 ton (kg·km)	Diesel truck: 4 ton (kg·km)	Diesel truck: 4 ton (kg·km)				
	Conditions	Mass(kg)	Distance （km）	Loading Ratio(%w)	Load(kg·km)				
	Quantity	2.62E+00	5.00E+02	4.00E+01	3.28E+03				
	Note								

Note In accordance with the provisions of PCR, the burdens are calculated with 500km for the total domestic transportation distance.
For transportation from Indonesia, the burdens of transporting by truck and sea are entered into the calculation.

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

	Classification	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption	Consumption
Product	Distribution	Electroplated steel Plate (kg)	Stainless steel plate (kg)	POM (polyacetal) (kg)	Nitrile-butadiene rubber (NBR) (kg)	Corrugated cardboard (kg)	Paper (Western style) (kg)	Press molding: Iron (kg)	Injection molding (kg)
	Quantity	3.63E-02	1.38E-02	1.93E-01	1.74E-01	2.06E+00	9.50E-01	5.01E-02	3.67E-01
	Note								
	Classification	Consumption	Consumption	Condition	Condition	Condition	Condition	Condition	Condition
	Distribution	Parts assembly (kg)	Electricity (kWh)	Diesel truck: 10 ton (kg·km)	Freight by ship (kg·km)	Freight by ship (kg·km)	Diesel truck: 10 ton (kg·km)	Diesel truck: 4 ton (kg·km)	Diesel truck: 2 ton (kg·km)
	Quantity	1.96E-01	5.78E+01	5.10E+00	5.26E+00	1.06E+03	1.49E+01	2.45E+02	7.19E+01
	Note								
	Classification	Condition							
	Distribution	Diesel truck: 2 ton (kg·km)							
	Quantity	2.12E+02							
	Note								

Note In accordance with the provisions of PCR, the burdens of electricity consumption and transportation are calculated with the total scanning number of 4,800,000 sheets in the customer use period of 5 years.

4.2 Disposition/Recycle information on consumables and replacement parts

	Classification	Process	Process	Process	Process	Deduction	Process		
Consumables	Distribution	Shredding (kg)	Incineration to landfill (as ash) (kg)	Sorting: Nonferrous metal (by eddy current with wind force) (kg)	Recycle: to corrugated cardboard (kg)	Corrugated cardboard (kg)	Landfill: Industrial waste (kg)		
	Quantity	5.57E-01	5.57E-01	2.45E+00	1.58E+00	1.58E+00	1.29E+00		
	Note								

Note For the product recovery rate, it is difficult to obtain the value from an actual history in our company.
The recycling burden is calculated by handling all the consumables that the customer uses as industrial waste.
For the manual and packaging box for consumables, the recycling burden is calculated by setting up the Open Recycling Scenario.

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

	Classification	Process	Process	Process	Process	Deduction	Process	Process	Deduction
Scenario	Distribution	Shredding (kg)	Incineration to landfill (as ash) (kg)	Sorting: Nonferrous metal (by eddy current with wind force) (kg)	Recycle: to corrugated cardboard (kg)	Corrugated cardboard (kg)	Sorting: Plastics (by relative density difference in water) (kg)	Recycle: to Thermoplastic pellet (kg)	PS (kg)
	Quantity	1.30E-01	1.30E-01	3.88E-01	2.50E-01	2.50E-01	5.83E-02	3.08E-02	3.08E-02
	Note								
	Classification	Process	Condition	Condition	Condition				
	Distribution	Landfill: Industrial waste (kg)	Diesel truck: 2 ton (kg·km)	Diesel truck: 2 ton (kg·km)	Diesel truck: 2 ton (kg·km)				
	Quantity	2.21E+00	3.53E+02	3.34E+01	5.03E+00				
	Note								

Note For the product recovery rate, it is difficult to obtain the value from an actual history in our company.
The recycling burden is calculated by handling all the products that the customer uses as industrial waste.
For manuals, packaging boxes and cushioning materials, the recycling burden is calculated by setting up the Open Recycling Scenario.

6. Others

Regarding "Recycle Effect", the burdens accompanying the production of raw materials using the materials recycled from the parts are deducted.