

Product Environmental Aspects Declaration



Flat-bed / Sheet-fed scanner (PCR-ID: CA-01)

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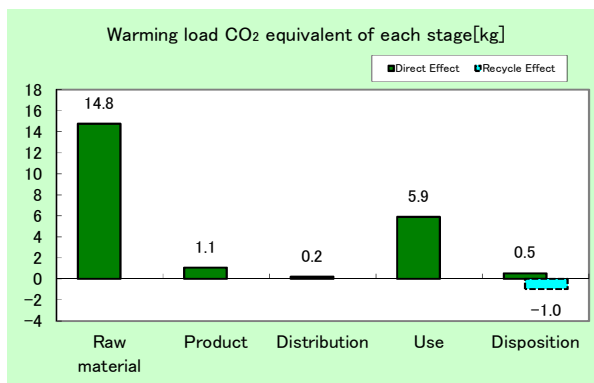
* Image Scanners Contact:
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Product Name	fi-65F
Product Category	Flat-bed scanner (Without ADF) For Business
Scanning Speed	Simplex, 1.0sec/paper
Scanning Size	148mm × 105mm
Optical Resolution	600 X 600 dpi (dots per inch)
Scanning Method	Color Contact Image Sensor Image Sensor: CMOS (Complementary Metal Oxide Semiconductor)

Consumption and discharge in a life cycle	All the stage sum totals
Global Warming (CO ₂ equivalent)	22.5kg (21.5kg)
Acidification (SO ₂ equivalent)	0.034kg (0.032kg)
Energy resources (crude oil equivalent)	409MJ (390MJ)

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



The burdens have been calculated with 20 scans per day, a monthly use of 4 days, and 5 years of use, for the number of scans of 480 times (4,800 pages) overall.

Notes:

- Original LCA data is available on PEIDS: Product Environmental Information Declaration Sheet, and Product Data Sheet.
- 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.
- Recycle Effect illustrates an indirect influence to other products/services.

[Supplemental environmental information]

- Certified regulations: Energy Star Version 2.0
- 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 : Review Panel, June 07, 2006, 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: Yasuo Koseki*

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	PFU LIMITED
EcoLeaf registration no.	CA-13-020

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

PCR name	Flat-bed / Sheet-fed scanner		Product type	fi-65F			
PCR code	CA-01	Product weight (kg)	0.9	Package (kg)	0.9	Weight total (kg)	1.8

In/Out items	Life Cycle Stage	Unit	Production		Distribution	Use	Disposition	Recycle Effect			
			Raw material	Product							
Energy Consumption			MJ	2.50E+02	2.22E+01	2.77E+00	1.33E+02	1.14E+00	-1.92E+01		
			Mcal	5.98E+01	5.30E+00	6.63E-01	3.18E+01	2.72E-01	-4.60E+00		
Inventory analyses	Impact by Resource Consumption	Energy resources	Coal	kg	1.31E+00	1.39E-01	6.49E-06	7.56E-01	3.85E-03	-9.10E-02	
			Crude oil (for fuel)	kg	2.96E+00	1.57E-01	6.06E-02	8.55E-01	1.77E-02	-2.34E-01	
			LNG	kg	5.72E-01	6.96E-02	9.38E-04	3.78E-01	2.15E-03	-4.20E-03	
			Uranium content of an ore	kg	7.01E-05	9.42E-06	4.39E-10	5.12E-05	2.60E-07	5.38E-08	
			Crude oil (for material)	kg	3.87E-01	0	0	0	0	-1.31E-01	
			Iron content of an ore	kg	2.39E-01	0	0	0	0	-1.04E-01	
			Cu content of an ore	kg	6.88E-02	0	0	0	0	-1.45E-02	
			Al content of an ore	kg	8.71E-04	0	0	0	0	0	
			Ni content of an ore	kg	7.20E-03	0	0	0	0	-2.12E-06	
		Exhaustible resources	Mineral resources	C content of an ore	kg	9.83E-03	0	0	0	0	-3.87E-05
				Mn content of an ore	kg	2.37E-03	0	0	0	0	-9.05E-05
				Pb content of an ore	kg	5.42E-03	0	0	0	0	-1.18E-03
				Sn content of an ore	kg	0	0	0	0	0	0
				Zn content of an ore	kg	5.34E-02	0	0	0	0	-1.16E-02
				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	2.18E-01	0	0	0	0	-6.93E-02
				Halite	kg	3.35E-01	0	0	0	4.30E-04	-1.91E-02
				Limestone	kg	1.79E-01	0	0	0	4.56E-03	-3.80E-02
	Renewable resources	Wood	kg	1.21E+00	0	0	0	0	-5.88E-01		
		Water	kg	1.76E+03	1.05E+02	4.88E-03	5.73E+02	3.21E+00	-2.37E+01		
	Impact by Emission/Discharge to the environment	to Atmosphere	CO2	kg	1.44E+01	1.08E+00	1.95E-01	5.88E+00	5.32E-01	-9.47E-01	
			Sox	kg	9.42E-03	8.26E-04	2.40E-04	4.49E-03	3.05E-04	-3.94E-04	
Nox			kg	1.78E-02	6.55E-04	3.00E-03	3.56E-03	1.10E-03	-1.66E-03		
N2O			kg	1.15E-03	1.18E-05	3.53E-06	6.42E-05	1.62E-06	-1.11E-04		
CH4			kg	1.88E-04	2.52E-05	1.17E-09	1.37E-04	6.97E-07	1.64E-07		
CO			kg	1.79E-03	1.60E-04	1.20E-03	8.69E-04	3.09E-04	-8.57E-05		
NMVOG			kg	3.66E-04	4.93E-05	2.31E-09	2.68E-04	1.37E-06	3.34E-07		
CxHy			kg	5.33E-04	2.58E-06	6.06E-05	1.40E-05	1.30E-05	-5.72E-05		
Dust			kg	1.65E-03	3.53E-05	2.40E-04	1.92E-04	7.49E-05	-1.53E-04		
to Water system			BOD	kg	-	-	-	-	-	-	
			COD	kg	-	-	-	-	-	-	
			N total	kg	-	-	-	-	-	-	
			P total	kg	-	-	-	-	-	-	
		SS	kg	-	-	-	-	-	-		
		to Soil system	Unspecified Solid Waste	kg	8.27E-02	0	0	0	5.39E-01	2.54E-01	
Slag			kg	2.50E-01	0	0	0	0	-4.48E-02		
Sludge			kg	0	0	0	0	0	0		
Low level radio-active waste			kg	4.91E-05	6.58E-06	3.08E-10	3.57E-05	1.82E-07	3.80E-08		
Impact assessment by Emission / Discharge to environment		Exhaustible resources	Energy resources (crude oil equivalent)	kg	5.06E+00	4.08E-01	6.17E-02	2.22E+00	2.49E-02	-2.97E-01	
	Mineral resources (Iron ore equivalent)		kg	2.63E+01	0	0	0	0	-4.52E+00		
	to Atmosphere	Global Warming (CO2 equivalent)	kg	1.48E+01	1.09E+00	1.96E-01	5.90E+00	5.32E-01	-9.77E-01		
		Acidification (SO2 equivalent)	kg	2.18E-02	1.28E-03	2.34E-03	6.98E-03	1.07E-03	-1.55E-03		
		Photochemical Oxidant	kg	1.04E-03	3.64E-05	1.23E-04	1.98E-04	3.67E-05	-8.49E-05		
to Water 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. 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.
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 sheets in the customer use period of 5 years.
The electricity consumption during power-off is entered into the calculation, presuming that the products remain plugged even if not in use.
Based on the recycling scenario established at our company, the recycling burden is calculated with the 40% part recovery rate for the consumables that the customer uses.
For the 60% non-recovery rate, the burden is calculated by using the General Waste Disposal Scenario.
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 scenario is established at our company.
The recycling burden is calculated with the 40% product recovery rate from the customer. For the 60% non-recovery rate, the burden is calculated by using the General Waste Disposal Scenario.
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-13-020



PCR name	Flat-bed / Sheet-fed scanner (PCR-ID: CA-01)	Product type	fi-65F				
LCA/LCIA in units of:	1 unit	Product weight (kg)	0.9	Package (kg)	0.9	Weight total (kg)	1.8

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)
	Other metals	1.20E-01	Medium-sized-motor	9.90E-03	Press molding:Iron (kg)	2.52E-01	Parts assembly (kg)	2.34E-01
	Ordinary steel	2.06E-01	Glass	2.02E-01	Press molding:Nonferrous metal (kg)	1.51E-01		
	Stainless steel	4.55E-02			Injection molding (kg)	3.80E-01		
	Thermoplastic resin	4.01E-01			Glass molding (kg)	2.01E-01		
	Aluminium	6.40E-04						
	Paper	5.56E-01						
	Semiconductor circuit board	2.21E-01						
	Rubber	1.18E-03						
	Subtotal	1.55E+00	Subtotal	2.12E-01				
	Total	1.76E+00	Subtotal	9.82E-01	Subtotal	2.34E-01		

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

SO_x and NO_x should be indicated in SO₂, NO₂ equivalent.

Consumption	Classification	Energy						
	Distribution	Electricity (kWh)						
Quantity	1.51E+00							
Note								
Emission/Discharge	Classification							
	Distribution							
Quantity								
Note								

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

Distribution	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	1.80E+00	5.00E+02	4.80E+01	1.88E+03				
Note								

Note 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.

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						
	Distribution	Electricity (kWh)						
Quantity	1.41E+01							
Note								

Note 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 sheets in the customer use period of 5 years. The electricity consumption during power-off is entered into the calculation, presuming that the products remain plugged even if not in use.

4.2 Disposition/Recycle information on consumables and replacement parts

Consumables	Classification							
	Distribution							
Quantity								
Note								

Note

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

Scenario	Classification	Process	Process	Process	Consumption	Consumption	Process	Deduction	Process
	Distribution	Shredding (kg)	Landfill: General waste (kg)	Incineration to landfill (as ash) (kg)	Electricity (kWh)	Diesel oil as fuel (kg)	Recycle: to cold-rolled steel (kg)	Cold-Rolled steel plate (kg)	Recycle: to copper plate (kg)
	Quantity	1.30E+00	4.83E-01	3.59E-01	1.05E-01	3.48E-04	1.01E-01	1.01E-01	4.82E-02
	Note								
	Classification	Deduction	Process	Condition	Deduction	Deduction	Process	Process	Condition
	Distribution	Copper plate (kg)	Recycle: to Glass (kg)	Diesel truck: 2 ton (kg·km)	Glass (kg)	ABS (kg)	Sorting: Nonferrous metal (by eddy current with wind force) (kg)	Recycle: to corrugated cardboard (kg)	Diesel truck: 2 ton (kg·km)
	Quantity	4.82E-02	8.84E-02	1.89E+02	8.84E-02	1.24E-01	4.39E-01	2.76E-01	4.97E+01
	Note								
	Classification	Deduction	Process	Process	Process	Condition	Deduction		
	Distribution	Corrugated cardboard (kg)	Landfill: Industrial waste (kg)	Sorting: Plastics (by relative density difference in water) (kg)	Recycle: to Thermoplastic pellet (kg)	Diesel truck: 2 ton (kg·km)	Polystyrene (kg)		
	Quantity	2.76E-01	2.69E-01	2.45E-02	1.39E-01	1.21E+00	1.57E-02		
	Note								

Note At the "Disposition/Recycle" stage, in accordance with the provisions of PCR, the recycling scenario is established at our company.

The recycling burden is calculated with the 40% product recovery rate from the customer.

For the 60% non-recovery rate, the burden is calculated by using the General Waste Disposal Scenario.

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.

Deduction regarding recycled materials used in products, accessories and packaging materials is not entered into the calculation.