Form 1（F-01-03）

Product Environmental Aspects Declaration

Heat-resistant crystallized glass for fire door (intermediate goods)
(Applicable PCR No. DP-01-02)

No. DP-18-001-A

Date of publication : November 12, 2018

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GLASS FOR FUTURE
Nippon Electric Glass

http://www.neg.co.jp/

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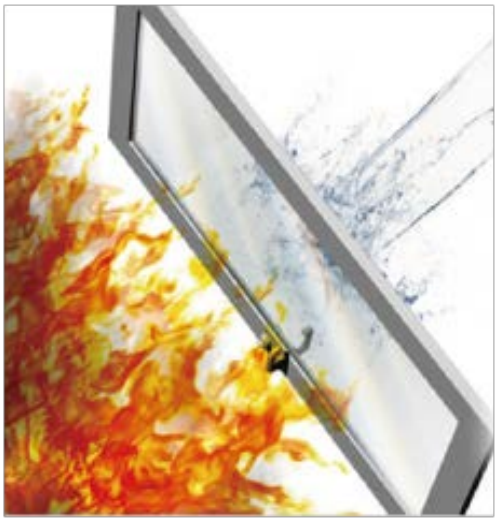
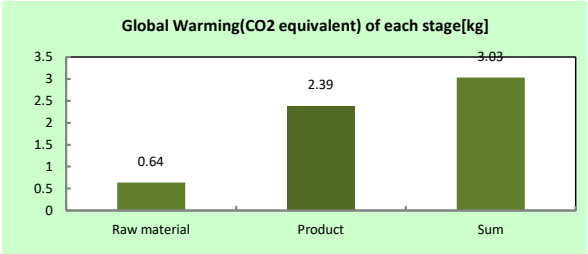
FIRELITE/FIRELITE PREMIUM

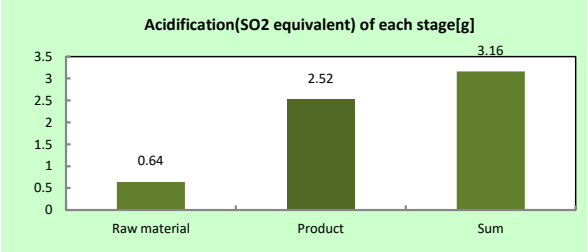
Name of product: Heat resistant crystallized glass for fire door
Product specifications: Heat-proof temperature: 800 ℃　No bonding Sash not included
Calculated weight: 1 kg
Certification: fire protection equipment, specific fire protection equipment certification, UL certification

Consumption and discharge at target stage	Stage total
Global Warming (CO_2 equivalent)	3.03kg
Acidification (SO_2 equivalent)	3.16g
Energy Consumption	53.7MJ

＊1　Total of material manufacturing stage and product stage







This product is an intermediate goods.
Distribution, use, disposal and recycling are not covered.

Notes:

1. The basic data is described on the product environmental information disclosure sheet (PEIDS) and product data sheet.
2. For unified standards for data calculation, please refer to product classification standard (PCR). Please visit http://www.ecoleaf-jemai.jp/ for details.
3. The country of shipment of this product is Japan, and it is calculated using data in Japan. Part of the basic unit data is using IDEA Ver 1.1.
4. It is calculated using the characterization coefficient v 02.1 of the Eco Leaf program.

[Supplemental environmental information]

We manufacture it at a business site that has received ISO 14001 certification.(Head office site, Takatsuki site)
Arsenic is not contained in this product.

PCR review was conducted by : September 1st.2016　Yuko Yamaguchi Affiliation Kyoritsu Women's Junior College
Independent verification of the declaration and data, according to ISO14025、ISO21930　□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.
* PCR is created in compliance with ISO14040、ISO14044、ISO14025、ISO21930.

Form 2-A(F-02As-02)

Product Environmental Information Data Sheet (PEIDS)

Document control no.	F-02As-02
Product vendor	Nippon Electric Glass Co. , Ltd.
EcoLeaf registration no.	DP-18-001-A

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

PCR name	Fire-rated glass ceramics (intermediate product)		Product type	firelite/ firelite premium			
PCR code	DP-01-02	Product weight (kg)	1	Package (kg)	0	Weight total (kg)	1

In/Out items \ Life Cycle Stage					Unit	Production		Distribution	Use	Disposition	Total
						Raw material	Product				
Energy Consumption					MJ	1.27E+01	4.09E+01	–	–	–	5.37E+01
					Mcal	3.04E+00	9.78E+00	–	–	–	1.28E+01
Inventory analyses	Impact by Resource Consumption	Exhaustible resources	Energy resources	Coal	kg	4.67E−02	8.57E−02	–	–	–	1.32E−01
				Crude oil (for fuel)	kg	1.98E−02	2.20E−01	–	–	–	2.40E−01
				LNG	kg	2.88E−02	4.18E−01	–	–	–	4.47E−01
				Uranium content of an ore	kg	7.31E−07	5.80E−06	–	–	–	6.53E−06
			Mineral resources	Crude oil (for material)	kg	1.01E−01	4.75E−04	–	–	–	1.01E−01
				Iron content of an ore	kg	5.35E−05	4.74E−08	–	–	–	5.36E−05
				Cu content of an ore	kg	1.68E−07	1.12E−10	–	–	–	1.68E−07
				Al content of an ore	kg	5.11E−01	3.66E−03	–	–	–	5.15E−01
				Ni content of an ore	kg	3.01E−07	4.02E−10	–	–	–	3.02E−07
				C content of an ore	kg	7.93E−07	1.13E−09	–	–	–	7.95E−07
				Mn content of an ore	kg	5.46E−07	5.25E−10	–	–	–	5.46E−07
				Pb content of an ore	kg	7.43E−07	1.06E−09	–	–	–	7.44E−07
				Sn content of an ore	kg	0.00E+00	0.00E+00	–	–	–	0.00E+00
				Zn content of an ore	kg	2.44E−08	2.75E−11	–	–	–	2.44E−08
				Au content of an ore	kg	6.64E−11	8.62E−14	–	–	–	6.65E−11
				Ag content of an ore	kg	1.66E−09	1.16E−12	–	–	–	1.66E−09
				Silica Sand	kg	4.56E−01	1.42E−10	–	–	–	4.56E−01
				Halite	kg	1.13E−02	6.46E−05	–	–	–	1.13E−02
				Limestone	kg	2.14E−01	8.22E−05	–	–	–	2.14E−01
				Natural soda ash	kg	4.36E−03	0.00E+00	–	–	–	4.36E−03
			Renewable resources	Wood	kg	0.00E+00	0.00E+00	–	–	–	0.00E+00
				Water	kg	2.72E+02	1.57E+02	–	–	–	4.29E+02
	Impact by Emission/Discharge to the environment	to Atmosphere		CO2	kg	6.22E−01	2.03E+00	–	–	–	2.65E+00
				Sox	kg	3.67E−04	6.47E−04	–	–	–	1.01E−03
				Nox	kg	3.84E−04	2.68E−03	–	–	–	3.06E−03
				N2O	kg	2.93E−05	1.34E−03	–	–	–	1.37E−03
				CH4	kg	4.00E−04	1.72E−05	–	–	–	4.17E−04
				CO	kg	3.91E−05	3.44E−04	–	–	–	3.83E−04
				NMVOC	kg	7.69E−06	3.04E−05	–	–	–	3.81E−05
				CxHy	kg	8.63E−06	2.36E−04	–	–	–	2.45E−04
				Dust	kg	5.31E−04	1.03E−04	–	–	–	6.34E−04
		to Water system	to Water domain	BOD	kg	1.47E−06	6.65E−09	–	–	–	1.48E−06
				COD	kg	3.45E−06	1.61E−08	–	–	–	3.47E−06
				N total	kg	6.23E−08	8.43E−11	–	–	–	6.23E−08
				P total	kg	1.31E−13	1.82E−16	–	–	–	1.31E−13
				SS	kg	3.05E−06	1.42E−08	–	–	–	3.06E−06
		to Soil system		Unspecified Solid Waste	kg	5.03E−02	5.75E−03	–	–	–	5.60E−02
				Slag	kg	9.43E−08	1.28E−10	–	–	–	9.44E−08
				Sludge	kg	8.04E−02	3.79E−04	–	–	–	8.08E−02
				Low level radio-active waste	kg	0.00E+00	0.00E+00	–	–	–	0.00E+00
				Hazardous waste	kg	8.94E−05	4.16E−06	–	–	–	9.35E−05
Impact assessment	by Res	Exhaustible resources		Energy resources (crude oil equivalent)	kg	9.06E−02	8.28E−01	–	–	–	9.19E−01
				Mineral resources (Iron ore equivalent)	kg	1.20E+00	8.41E−03	–	–	–	1.20E+00
	by Emission / Discharge to environment	to Atmosphere		Global Warming (CO2 equivalent)	kg	6.38E−01	2.39E+00	–	–	–	3.03E+00
				Acidification (SO2 equivalent)	kg	6.36E−04	2.52E−03	–	–	–	3.16E−03
				Ozone Depletion (CFC-11 equivalent)	kg	–	–	–	–	–	–
				Photochemical Oxidant	kg	2.30E−04	1.44E−04	–	–	–	3.75E−04
		to Water system		Eutrophication (Phosphate equivalent)	kg	1.02E−07	3.90E−10	–	–	–	1.02E−07

[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:Not subject to PCR

C. "Use" stage:Not subject to PCR

D. "Disposition" stage:Not subject to PCR

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).

D.Since hazardous waste is properly managed by Japanese domestic law,it is not included as a basic flow.

E.As renewable energy is not used in system power,renewable energy is not recorded.

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".

D. The total column shows the total of material production and product manufacturing stages according to PCR.

(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	Nippon Electric Glass Co. , Ltd.
EcoLEaf registration no.	DP-18-001-A

PCR name	Fire-rated glass ceramics (intermediate product)	Product type	firelite / firelite premium				
LCA/LCIA in units of:	1kg	Product weight (kg)	1	Package (kg)	0	Weight total (kg)	1

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	Silica sand	5.82E-01						
	Aluminum oxide							
	Lithium carbonate							
	glass	5.20E-02						
	Reproduction	3.66E-01						
	Subtotal	1.00E+00	Subtotal	0.00E+00				
	Total			1.00E+00	Subtotal	0.00E+00	Subtotal	0.00E+00

Note:Heat resistant crystallized glass is cut and chamfered to make it as a product.There are no sashes installed.

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	Material	Energy	Material	Energy	Material	Material
	Distribution	Diesel oil as fuel (kg)	Electricity (kWh)	Ultrapure water (kg)	Furnace urban gas (13A) (m3)	Industrial water (kg)	Furnace LNG (kg)	Alumina	Diesel truck:10 ton (kg･km)
	Quantity	3.00E-03	1.55E+00	1.00E+00	4.75E-01	8.70E+01	9.56E-05	1.00E-03	8.55E+01
	Note								
	Classification	Material							
	Distribution	Freight by ship (kg･km)							
	Quantity	4.61E+03							
	Note								
Emission/Discharge	Classification	Water system	Soil system	Soil system					
	Distribution	Sewage processing (kg)	Unspecified Solid Waste	Landfill:General waste (kg)					
	Quantity	1.10E+01	1.19E-03	1.00E-03					
	Note								

Note:Mixing, manufacturing, melting and molding of heat resistant crystallized glass are at the head officd site, then inter-site transport is carried out, sintering, polishing, chamfering and cutting are done at the Takatsuki site in northern Shiga Prefecture.

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

Distribution	Means of transportation								
	Conditions								
	Quantity								
	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								
	Distribution								
	Quantity								
	Note								

Note

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								
	Distribution								
	Quantity								
	Note								

Note

6. Others