



ENVIRONMENTAL PRODUCT DECLARATION

Copper tubes

- Super Green Five Stars;
- Feingroove;
- Green Solar;
- Capillary;
- Hard Straight Length, Cast&Roll;
- Half-Hard straight lengths, Cast&Roll;
- Annealed straight lengths, Cast&Roll.

Via Generale Reverberi, 8, 25050

Passirano BS

Via Martin Luther King, 34, 25065

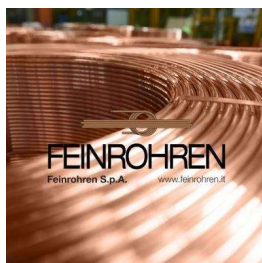
Lumezzane BS

In accordance with ISO 14025 and EN 15804:2012/A2:2019

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www.epditaly.it

GENERAL INFORMATION

EPD OWNER

Name of the company	Feinrohren Spa
Registered office	Via Generale Reverberi, 8, 25050 Passirano BS
Contacts for information on the EPD	Francesca Tomasoni, francesca.tomasoni@feinrohren.it

PROGRAM OPERATOR

EPDItaly	Via Gaetano De Castilia n° 10 - 20124 Milano, Italy
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INFORMATION ON THE EPD

Product name (s)	Copper tubes: - Super Green Five Stars; - Feingroove; - Green Solar; - Capillary; - Hard Straight Length, Cast&Roll; - Half-Hard straight lengths, Cast&Roll; - Annealed straight lengths, Cast&Roll.
Site (s)	Via Generale Reverberi, 8, 25050 Passirano (Bs) Via Martin Luther King, 34, 25065 Lumezzane (Bs)
Short description and technical information of the product (s)	Seven DHP copper tubes products, made by a minimum of 99.90% of copper, with different technical specifications and uses
Field of application of the product (s)	Construction
Product (s) reference standards (if any)	EN 12735-1:2020, EN 12735-2:2024, EN 12449:2023,
CPC Code (number) https://unstats.un.org/unsd/classifications/Econ	41516 - Tubes, pipes and tube or pipe fittings, of copper

VERIFICATION INFORMATION

PCR (title, version, date of publication or update)	PCR ICMQ-001/15 rev3.1 12/11/2024
EPDItaly Regulation (version, date of publication or update)	Regolamento EPDItaly rev, 6.0 del 30/10/2023



Project Report LCA	LCA report of Feinrohren Spa (ver. 3, 21/07/2025)
LCA study carried out by:	Eco-Loop SRL SB, Viale del Lavoro, 2 - 37023 Grezzana, VR
Independent Verification Statement	Independent verification of the declaration and data, carried out according to ISO 14025: 2010. ☐ Internal ☒ External Third party verification carried out by: ICMQ S.p.A., via Gaetano De Castilia n ° 10 - 20124 Milan, Italy. Accredited by Accredia.
Comparability Statement	Environmental statements published within the same product category, but from different programs, may not be comparable. In particular, EPDs of construction products may not be comparable if they do not comply with EN 15804: 2012 + A2: 2019.
Liability Statement	The EPD Owner releases EPDItaly from any non-compliance with environmental legislation. The holder of the declaration will be responsible for the information and supporting evidence. EPDItaly disclaims any responsibility for the information, data and results provided by the EPD Owner for life cycle assessment.

OTHER INFORMATION	
Communication audience	B2B



THE COMPANY, FEINROHREN SPA

In terms of metres produced, Feinrohren is now a leading global company in the industry. This is due to a company policy that has always focused on creating products characterised by premium quality, reliability and innovation, which are essential features in a world where resources are becoming increasingly scarce.

In 1959 Faustino Pasotti was inspired by a friend who manufactured refrigerators and with the help of his children set up a small business producing capillary tubes for refrigerators in Lumezzane, a flourishing industrial district specialising in metalworking - Feinrohren was established.

Through an ongoing profit reinvestment policy, over the course of two decades the small metal drawing business became one of the world's leading capillary tube drawing mills, with customers including major players in the household appliance industry.

In 1996 Feinrohren added coated copper tubes to its product range with the takeover of Zetaesse, a company based in Veduggio (Treviso) and a leader in Europe in the manufacture of coated copper tubes. This company had become internationally significant, mainly thanks to the range and quality of the products, which included cross-linked polyethylene foam for applications in various sectors, such as the building, automobile, clothing, footwear and shipbuilding industries.

In the pursuit of perfect service, in 2011 the company took over Tonoli Srl, which had been a leader in the international distributor of copper tubes and pipes for refrigeration, air conditioning, and medical gas systems. Just a year later, in 2012, the Feinrohren Group acquired Sogetub, a leading French company in the distribution of capillary tubes and pipes for refrigeration, air conditioning, plumbing and heating systems, with a wide range of accessories for these three sectors. The internationalisation of the Feinrohren Group continued with the creation of PTubes in 2014, a manufacturer and distributor based in the USA. In December, the company G.L. (Osio Sopra, Bergamo) manufacturing thermal-acoustic expanded materials is purchased, completing the current Feinrohren Spa group asset.

PRODUCTS DESCRIPTION

GENERAL DESCRIPTION

This EPD refers to the copper tubes, used for a wide range of applications within the construction sector.

This EPD reports the impacts of the following seven commercial products, organised in three families: the LWC (Level Wound Coils), the capillary and the Lengths OD ≤ 28 mm as summarised in Table 1.

Table 1: Copper tubes products and their families (OD = Outside Diameter).

Product family	Code	Product name	Description
LWC	PR1.1	Super Green Five Stars	DHP copper tube in LWC manufactured through Cast&Roll, drawing process and annealing
	PR1.2	Feingroove	Inner Groove DHP copper tube in LWC manufactured through Cast&Roll, drawing process and annealing
	PR1.3	Green Solar	DHP copper tube in LWC manufactured through Cast&Roll, drawing process and annealing
Capillary	PR2	Capillary	DHP Copper capillary tubes manufactured through Cast&Roll, drawing process and eventual annealing
Lengths OD ≤ 28 mm	PR3.1	Hard Straight Length, Cast&Roll	DHP Copper tubes in straight lengths manufactured through a Cast&Roll and drawing process
	PR3.2	Half-Hard straight lengths, Cast&Roll	DHP Copper tubes in straight lengths manufactured through a Cast&Roll, drawing process and annealing
	PR3.3	Annealed straight lengths, Cast&Roll	DHP Copper tubes in straight lengths manufactured through a Cast&Roll, drawing process and annealing



LWC



Capillary



Lengths OD ≤ 28 mm

PRODUCT TECHNICAL FEATURES

Feinrohren copper tubes are manufactured according to the following technical regulations.

- EN 12735-1:2020
- EN 12735-2:2024
- EN 12449:2023

The CE marking under the European regulation n. 305/2011 applies.

Description	UM	Typical value
Type of metal used	-	Cu-DHP
Copper content	%	≥ 99.90
Thermal conductivity of the metal tube	W/(m*K)	339
Coefficient of linear expansion	K ⁻¹	17.7
Tensile strength	MPa	220-450
Elongation at break	%	≥ 40 - ≥ 3
Modulus of elasticity at 20°C	kN/mm ²	132
Density	g/cm ³	8.94
Melting point	°C	1083

The dimension range of copper tubes is detailed in the following table:

Product family	Code	Product name	OD (Outside diameter) range
LWC	PR1.1	Super Green Five Stars	3.50 mm $\leq$ OD $\leq$ 38.20 mm
	PR1.2	Feingroove	4.00 mm $\leq$ OD $\leq$ 12.70 mm
	PR1.3	Green Solar	8.00 mm $\leq$ OD $\leq$ 18.00 mm
Capillary	PR2	Capillary	1.00 mm $\leq$ OD $\leq$ 3.50 mm
Lengths OD $\leq$ 28 mm	PR3.1	Hard Straight Length, Cast&Roll	3.50 mm $\leq$ OD $\leq$ 28.00 mm
	PR3.2	Half-Hard straight lengths, Cast&Roll	3.50 mm $\leq$ OD $\leq$ 28.00 mm
	PR3.3	Annealed straight lengths, Cast&Roll	3.50 mm $\leq$ OD $\leq$ 28.00 mm

PRODUCTS' COMPOSITION

All Feinrohren copper tubes products are composed by a minimum of 99.90% pure copper, sourced differently.

PRODUCT PACKAGING

The products leaving Feinrohren are packaged to be transported to the construction site. The seven products have different packaging systems as per in the table below.

Packaging	SUPER GREEN FIVE STARS	FEINGROOVE	GREEN SOLAR	CAPILLARY	Hard Straight Length C&R	Half-Hard Straight Lengths C&R	Annealed Straight Length C&R
Cardboard	x	x		x			
Plastic film	x	x	x	x			
Foam sheets			x		x	x	
Pallet	x	x	x	x			
Wooden boxes							x

MANUFACTURING PROCESS

All the copper tube products are manufactured at the Feinrohren factory of Passirano (BS); only the capillary (PR_2) is shipped to Lumezzane to conclude its manufacturing process.

The company operates different facilities. In building A, the company processes cathodes purchased externally along with secondary materials (End of Waste and/or by-products) from internal and external sources. The manufacturing process involves melting these materials in furnaces, cutting the roughed tubes to required specifications, milling the external surfaces, performing cold rolling with specialized rollers, cutting, and finally winding the product onto drums.

Building C focuses on melting cathodes acquired from external suppliers and processing secondary materials from various sources. This facility employs a melting furnace with vertical semi-continuous casting technology to produce copper "Billets" as semi-finished products. The facility also houses a cutting line that sizes these billets according to customer requirements and/or internal requirements.

Building B handles the further processing of copper billets, whether purchased externally or produced in-house. The manufacturing sequence begins with reheating these billets in electric induction furnaces. The heated billets then undergo hot extrusion through a dedicated hydraulic press to create tubes of various diameters. These tubes are further refined through cold drawing processes involving multiple stages to achieve the precise required diameters. The facility also performs cutting operations to produce exact-length rods or form coils, heat treatment in controlled inert atmosphere furnaces to anneal the drawn tubes, various finishing operations, and final packaging of the tubes into bundles, coils, or rolls on pallets ready for shipping.

The production ecosystem is supported by various auxiliary operations including raw material and finished product warehousing, a fully equipped mechanical and electrical maintenance workshop, a thermal power plant, and generator sets.

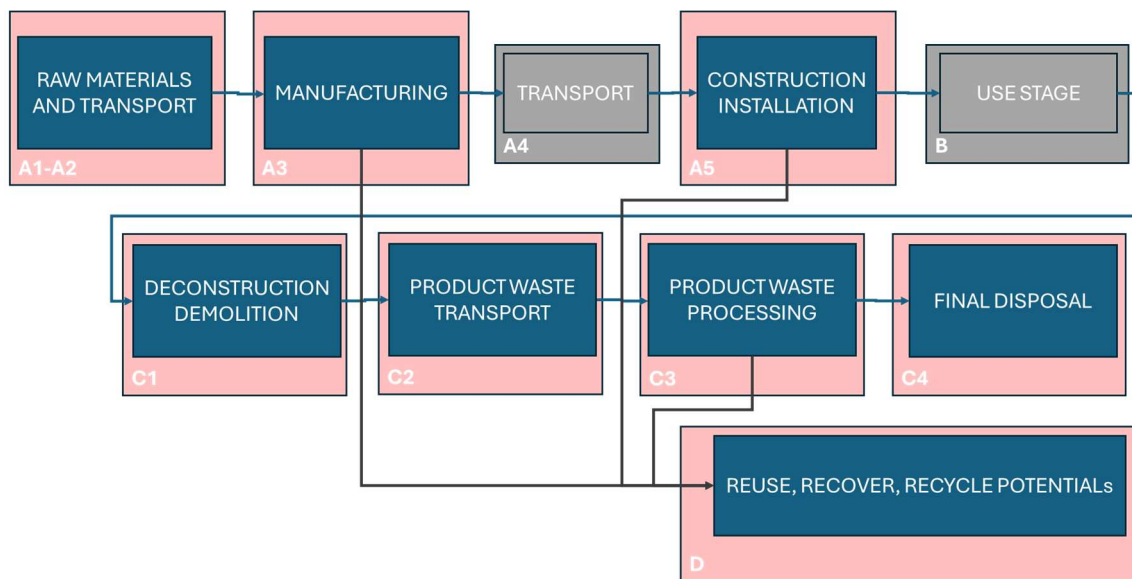


Figure 1: Flow chart of the copper tubes Life Cycle stages.

CALCULATION RULES

DECLARED UNIT

1 kg of copper tube per each product type

SERVICE LIFE

50 years

SYSTEM BOUNDARIES

This is a “Cradle to gate with options” EPD, where modules A4 and A5 are considered, besides the mandatory C1-C4 and D. The life cycle stages included are as shown below.

Table 2: LC-stages included in the EPD (X = module included, ND = module not declared).

A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

TIME AND SPATIAL DEFINITION

There are two production sites, located in northern Italy, in Passirano (BS) and Lumezzane (BS). The raw materials come from EU and extra-EU. Copper end of waste and by-product are sourced from Italy. All other consumables suppliers are mainly spread in Italy and European countries.

The data used to calculate the environmental impacts refers to the reference year 2024.

CUT-OFF RULES

All activities that do not significantly influence the life cycle of the products, as reported below, are excluded from the system boundary and from the LCA study.

- Research and development activities.
- Long-term emissions.
- Office and commercial activities (administration, R&D/design, procurement, etc.) relating to the production plants;
- Workers' travel to and from the workplace;
- Cleaning activities;
- Construction and extraordinary maintenance activities of machinery and plants (as they are not directly related to the product).

Moreover, the following flow has been neglected based on a financial criterion.

- Purchased ancillary items, without a weight specification, with an economic value less than 10,000 €, equal to 0.33 %).

DATA SOURCE AND QUALITY

This EPD is based on the following primary data in terms of amounts: the consumption of raw materials, the origin of the raw materials, transportation to the production site, consumption of water and electricity for the production phase, product packaging and

waste. Some amounts related to the end-of-waste scenarios have been estimated from literature.

The characterisation factors of most of the flows have been taken from EcoInvent 3.10 database.

The GWP of the electricity mix (residual) applied for A1 is equal to 0.384 kgCO₂eq/kWh.

The GWP of the natural gas mixture applied for A1 is equal to 0.0774 kgCO₂eq/MJ.

ALLOCATION

For generic data (databases), the existing allocations were maintained.

For specific data, the mass allocation criterion was used based on the total annual production of Feinrohren reference products compared to the annual production of all products. This was applied for the following categories:

- waste production of the company;
- waste of final products and related packaging recycling scenarios based on literature data;
- consumption of energy carriers (electricity) and water;
- consumption of diesel for internal transport.

DATA ACCURACY AND COMPLETENESS

To ensure the required accuracy and consistency, this study used primary information provided directly by the company for the product manufacturing data conducted itself. The primary data collected were completed with data from the literature and with background data included in the EcoInvent 3.10 database, whose coherence and transparency are recognized worldwide. The detailed exchange of information with the company and the use of the EcoInvent database also made it possible to achieve a good degree of completeness of the information database.

DATA REPRESENTATIVENESS

The primary data collected for the inventory of modules A1, A2 and A3 related to the production phase are site-specific primary data provided by the manufacturer and therefore have a high geographical relevance, technological and temporal representativeness.

The datasets used for the recovery of secondary data belong to the EcoInvent 3.10 database and are all applicable for the year 2024. Where possible, data relating to the reference nation and data referring to a wider geographical area where national data were not applicable.

CALCULATION METHOD

The software used for the calculation is OpenLCA v2.4.0

The database used for the characterisation factors is Eco Invent 3.10-EN 15804+A2.

The modularity principle and the “polluter pay principle” (PPP) were applied in the LCA study.

PROCESSES INCLUDED

MODULE A1 – RAW MATERIALS

All materials and resources purchased to manufacture the copper tubes have been included. They are made by (in terms of mass) a minimum of 99.90 % concentrated copper, sourced from three main typologies: virgin cathode, fully recycled cathode and high-quality End of Waste copper. Moreover, a mother league made up by copper and phosphorus is used. In terms of energies, electricity and natural gas are purchased and used in the smelters.



MODULE A2 – UPSTREAM TRANSPORTATION

Within module A2 the transport of raw materials and packaging materials to the Feinrohren factory of Passirano (BS) has been considered.



MODULE A3 - PRODUCTION

This stage includes all the processes, occurring in the company factories, needed to manufacture and prepare the products to be transported to the customer premises. As specified by the EN 15804, all goods not related to the product "recipe", but related to the manufacturing, are included in this group: final product packaging, goods for polishing and machinery maintenance, diesel for internal movements, ... Moreover, emissions from chimneys and fugitive emissions from the company's technical systems have been considered.



MODULE A4 - DOWNSTREAM TRANSPORT

This stage includes the transportation of the final product to customers. A lorry or a combination of a lorry and a ferry are used as means of transportation. A weighted average distance has been calculated considering all the shipping of final products performed in 2024.

MODULE A5 - INSTALLATION

The copper tubes installation-related input flows have been neglected because of the large variety of intended uses. Conversely, the end-of-life of the final product packaging has been included within this stage in terms of transportation to the treatment centre, processing and end-of-life. Eventual recycling processes have been then included in the D-stage, once they have lost their waste qualification.

MODULES C1, C2, C3, C4 and D

Demolition, Waste transport and treatment, Final disposal, Re-use, Re-cycle, Re-cover potentials

The installed copper tubes, after their service life, can be demolished in different ways based on the different construction uses. The worst-case scenario of a construction system demolition with an excavator-like machine has been considered in C1.

The energy consumption needed for the demolition has been retrieved from literature data¹ resulting in 0.0553 MJ/kg.



After demolition, a quota of the copper tubes waste is transported to a treatment plant and separated to obtain a portion destined to recycling (C3 and D), while the remaining quota is sent to final disposal (C4).

The distance between Feinrohren plants and the treatment centre or the final disposal centre has been assumed to be 50 km (C2)².

¹ Ivanica, R., Risse, M., Weber-Blaschke, G., & Richter, K. (2022). Development of a life cycle inventory database and life cycle impact assessment of the building demolition stage: A case study in Germany. *Journal of Cleaner Production*, 338, 130631.

² DIMOVA, S. Model for Life Cycle Assessment (LCA) of buildings. 2018.
<https://publications.jrc.ec.europa.eu/repository/handle/JRC110082>



The defined scenario is based on the ENEA report on circularity³, from which the following recycling rates are reported and used in this study.

The recycling processes and the avoided net primary materials flows have been calculated to be included in module D and they refer to rates of copper scraps and of the final product packaging materials (i.e. timber, PE for packaging, cardboard). The EoL and EoW scenarios have been defined based on national and European statistics from the different association categories⁴.

Given the low amounts of net flows in D, the energies related to the processes to convert the end-of-waste materials into secondary raw materials have been neglected.

³ 6° rapporto sull'economia circolare in Italia, ENA, 2023 <https://circulareconomynetwork.it/wp-content/uploads/2024/05/CEN2024-Impagina-TOT-DEF.pdf>

⁴ 29° Rapporto Comieco 2023 www.comieco.org/downloads/17130/9832/29%20Rapporto_definitivo%20andato%20in%20stampa.pdf
Rilegno, Rapporto 2020, www.rilegno.org/wp-content/uploads/2020/07/RilegnoRapporto-2020.pdf
Rapporto di Sostenibilità Corepla 2020, www.corepla.it/wp-content/uploads/2024/06/rapportodisostenibilita2020_2_0-2.pdf



RESULTS

To convert the following results expressed per 1 kg of product into 1 linear meter (m) the following formula should be applied:

$$\text{Impact/m} = \text{Impact/kg} * [1/(\pi * (\text{OD}^2 - \text{ID}^2) * 1/\text{density})]$$

Where OD is the outsider diameter (m), ID is the insider diameter (m) and density is $8.94 \cdot 10^3 \text{ kg/m}^3$.

Environmental impacts indicators (Mandatory)

Legend: Global Warming Potential total GWPT [kg CO₂-Eq.]; Global Warming Potential fossil fuels GWPF [kg CO₂-Eq.]; Global Warming Potential biogenic GWPB [kg CO₂-Eq.]; Global Warming Potential land use and land use change GWPL [kg CO₂-Eq.]; Depletion potential of the stratospheric ozone layer ODP [kg CFC11-Eq.]; Acidification potential, Accumulated Exceedance AP [mol H⁺ Eq.]; Eutrophical potential, fraction of nutrients reaching freshwater end compartment EPF [kg (P) Eq.]; Eutrophical potential, fraction of nutrients reaching marine end compartment (EP-marine) EPM [kg N Eq.]; Eutrophical potential, Accumulated Exceedance (EP-terrestrial) EPT [mol N Eq.]; Formation potential of tropospheric ozone photochemical oxidants POCP [kg NMVOC Eq.]; Abiotic depletion potential for non-fossil resources ADPE [kg Sb-Eq.]; Abiotic depletion potential for fossil resources ADPF [MJ, net calorific value]; Water (user) deprivation potential, deprivation-weighted water consumption WDP [m³ world eq. Deprived].

¹ADPE, ADPF and WDP are subject to Disclaimer 2: the results of this environmental impact indicator should be used with caution given that the uncertainties of these results are high or because there is limited experience with the indicator.

Super Green Five Stars, LWC

Acronym	Unit	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWPT	[kg CO ₂ -Eq.]	5.01E+00	2.08E-01	2.20E-01	8.18E-02	2.68E-02	ND	1.11E-02	7.66E-03	2.92E-03	1.62E-02	8.85E-03
GWPF	[kg CO ₂ -Eq.]	5.00E+00	2.08E-01	2.23E-01	8.18E-02	1.18E-02	ND	1.11E-02	7.65E-03	2.95E-03	1.62E-02	-3.48E-03
GWPB	[kg CO ₂ -Eq.]	-1.04E-03	4.07E-05	-1.63E-02	4.28E-05	1.49E-02	ND	1.22E-06	4.64E-06	-3.16E-05	1.29E-05	1.24E-02
GWPL	[kg CO ₂ -Eq.]	7.25E-03	8.45E-05	1.28E-02	2.91E-05	1.93E-06	ND	9.66E-07	2.59E-06	5.27E-06	7.00E-06	-3.10E-05
ODP	[kg CFC11-Eq.]	4.97E-08	3.64E-09	9.40E-09	1.60E-09	1.81E-10	ND	1.70E-10	1.54E-10	3.76E-11	3.41E-10	-9.55E-11
AP	[mol H ⁺ Eq.]	3.66E-01	3.34E-03	2.57E-03	5.51E-04	1.04E-04	ND	1.00E-04	3.44E-05	2.62E-05	9.31E-05	-1.57E-05
EPF	[kg (P) Eq.]	3.00E-02	1.06E-05	7.48E-04	5.34E-06	4.53E-07	ND	3.25E-07	5.25E-07	1.93E-06	1.79E-06	-1.92E-06
EPM	[kg N Eq.]	1.87E-02	9.11E-04	9.91E-04	1.85E-04	4.90E-05	ND	4.66E-05	1.35E-05	5.10E-06	3.61E-05	-7.05E-06
EPT	[mol N Eq.]	2.62E-01	1.01E-02	9.91E-03	2.03E-03	5.23E-04	ND	5.10E-04	1.47E-04	6.21E-05	3.94E-04	-5.47E-05
POCP	[kg NMVOC Eq.]	7.31E-02	2.91E-03	1.94E-03	6.76E-04	1.57E-04	ND	1.52E-04	5.28E-05	1.67E-05	1.34E-04	-1.55E-05
ADPE ¹	[kg Sb-Eq.]	5.16E-03	4.45E-07	1.40E-05	2.44E-07	6.34E-09	ND	4.08E-09	2.44E-08	1.22E-07	4.73E-08	-1.45E-08
ADPF ¹	[MJ, net calorific value]	6.22E+01	2.78E+00	3.79E+00	1.15E+00	1.55E-01	ND	1.45E-01	1.09E-01	4.54E-02	2.69E-01	-5.07E-02
WDP ¹	[m ³ world eq. Deprived]	3.87E+00	1.10E-02	1.51E-01	5.54E-03	4.54E-04	ND	3.56E-04	5.45E-04	1.13E-03	2.05E-03	-2.42E-03



Feingroove, LWC

Acronym	Unit	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWPT	[kg CO2-Eq.]	5.21E+00	2.08E-01	2.12E-01	8.18E-02	4.03E-02	ND	1.11E-02	7.66E-03	2.92E-03	1.62E-02	1.66E-02
GWPF	[kg CO2-Eq.]	5.20E+00	2.08E-01	2.29E-01	8.18E-02	1.24E-02	ND	1.11E-02	7.65E-03	2.95E-03	1.62E-02	-6.50E-03
GWPB	[kg CO2-Eq.]	1.03E-03	4.07E-05	-2.96E-02	4.28E-05	2.79E-02	ND	1.22E-06	4.64E-06	-3.16E-05	1.29E-05	2.31E-02
GWPL	[kg CO2-Eq.]	7.32E-03	8.45E-05	1.28E-02	2.91E-05	2.77E-06	ND	9.66E-07	2.59E-06	5.27E-06	7.00E-06	-5.79E-05
ODP	[kg CFC11-Eq.]	5.55E-08	3.64E-09	9.54E-09	1.60E-09	1.90E-10	ND	1.70E-10	1.54E-10	3.76E-11	3.41E-10	-1.78E-10
AP	[mol H+ Eq.]	3.67E-01	3.34E-03	2.59E-03	5.51E-04	1.07E-04	ND	1.00E-04	3.44E-05	2.62E-05	9.31E-05	-2.93E-05
EPF	[kg (P) Eq.]	3.01E-02	1.06E-05	7.50E-04	5.34E-06	5.65E-07	ND	3.25E-07	5.25E-07	1.93E-06	1.79E-06	-3.58E-06
EPM	[kg N Eq.]	1.88E-02	9.11E-04	1.00E-03	1.85E-04	5.12E-05	ND	4.66E-05	1.35E-05	5.10E-06	3.61E-05	-1.32E-05
EPT	[mol N Eq.]	2.63E-01	1.01E-02	1.00E-02	2.03E-03	5.35E-04	ND	5.10E-04	1.47E-04	6.21E-05	3.94E-04	-1.02E-04
POCP	[kg NMVOC Eq.]	7.37E-02	2.91E-03	1.97E-03	6.76E-04	1.61E-04	ND	1.52E-04	5.28E-05	1.67E-05	1.34E-04	-2.89E-05
ADPE ¹	[kg Sb-Eq.]	5.16E-03	4.45E-07	1.41E-05	2.44E-07	8.31E-09	ND	4.08E-09	2.44E-08	1.22E-07	4.73E-08	-2.70E-08
ADPF ¹	[MJ, net calorific value]	6.49E+01	2.78E+00	3.88E+00	1.15E+00	1.63E-01	ND	1.45E-01	1.09E-01	4.54E-02	2.69E-01	-9.45E-02
WDP ¹	[m3 world eq. Deprived]	3.94E+00	1.10E-02	1.55E-01	5.54E-03	5.38E-04	ND	3.56E-04	5.45E-04	1.13E-03	2.05E-03	-4.51E-03

Green Solar, LWC

Acronym	Unit	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWPT	[kg CO2-Eq.]	5.01E+00	2.08E-01	2.07E-01	8.18E-02	3.88E-02	ND	1.11E-02	7.66E-03	2.92E-03	1.62E-02	2.13E-02
GWPF	[kg CO2-Eq.]	5.00E+00	2.08E-01	2.22E-01	8.18E-02	1.19E-02	ND	1.11E-02	7.65E-03	2.95E-03	1.62E-02	-2.64E-04
GWPB	[kg CO2-Eq.]	-1.04E-03	4.07E-05	-2.79E-02	4.28E-05	2.69E-02	ND	1.22E-06	4.64E-06	-3.16E-05	1.29E-05	2.16E-02
GWPL	[kg CO2-Eq.]	7.25E-03	8.45E-05	1.27E-02	2.91E-05	2.61E-06	ND	9.66E-07	2.59E-06	5.27E-06	7.00E-06	-3.30E-06
ODP	[kg CFC11-Eq.]	4.97E-08	3.64E-09	9.35E-09	1.60E-09	1.83E-10	ND	1.70E-10	1.54E-10	3.76E-11	3.41E-10	-5.27E-12
AP	[mol H+ Eq.]	3.66E-01	3.34E-03	2.56E-03	5.51E-04	1.05E-04	ND	1.00E-04	3.44E-05	2.62E-05	9.31E-05	-1.23E-06
EPF	[kg (P) Eq.]	3.00E-02	1.06E-05	7.46E-04	5.34E-06	5.10E-07	ND	3.25E-07	5.25E-07	1.93E-06	1.79E-06	-1.33E-07
EPM	[kg N Eq.]	1.87E-02	9.11E-04	9.88E-04	1.85E-04	5.02E-05	ND	4.66E-05	1.35E-05	5.10E-06	3.61E-05	-4.01E-07
EPT	[mol N Eq.]	2.62E-01	1.01E-02	9.90E-03	2.03E-03	5.25E-04	ND	5.10E-04	1.47E-04	6.21E-05	3.94E-04	-4.04E-06
POCP	[kg NMVOC Eq.]	7.31E-02	2.91E-03	1.94E-03	6.76E-04	1.57E-04	ND	1.52E-04	5.28E-05	1.67E-05	1.34E-04	-2.33E-06
ADPE ¹	[kg Sb-Eq.]	5.16E-03	4.45E-07	1.40E-05	2.44E-07	6.27E-09	ND	4.08E-09	2.44E-08	1.22E-07	4.73E-08	-8.48E-10
ADPF ¹	[MJ, net calorific value]	6.22E+01	2.78E+00	3.78E+00	1.15E+00	1.57E-01	ND	1.45E-01	1.09E-01	4.54E-02	2.69E-01	-4.83E-03
WDP ¹	[m3 world eq. Deprived]	3.87E+00	1.10E-02	1.50E-01	5.54E-03	4.52E-04	ND	3.56E-04	5.45E-04	1.13E-03	2.05E-03	-1.09E-04



Capillary

Acronym	Unit	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWPT	[kg CO2-Eq.]	5.18E+00	2.08E-01	2.69E-01	8.18E-02	2.68E-02	ND	1.11E-02	7.66E-03	2.92E-03	1.62E-02	8.85E-03
GWPF	[kg CO2-Eq.]	5.17E+00	2.08E-01	2.71E-01	8.18E-02	1.18E-02	ND	1.11E-02	7.65E-03	2.95E-03	1.62E-02	-3.48E-03
GWPB	[kg CO2-Eq.]	7.20E-04	4.07E-05	-1.47E-02	4.28E-05	1.49E-02	ND	1.22E-06	4.64E-06	-3.16E-05	1.29E-05	1.24E-02
GWPL	[kg CO2-Eq.]	7.31E-03	8.45E-05	1.28E-02	2.91E-05	1.93E-06	ND	9.66E-07	2.59E-06	5.27E-06	7.00E-06	-3.10E-05
ODP	[kg CFC11-Eq.]	5.46E-08	3.64E-09	9.56E-09	1.60E-09	1.81E-10	ND	1.70E-10	1.54E-10	3.76E-11	3.41E-10	-9.55E-11
AP	[mol H+ Eq.]	3.67E-01	3.34E-03	2.56E-03	5.51E-04	1.04E-04	ND	1.00E-04	3.44E-05	2.62E-05	9.31E-05	-1.57E-05
EPF	[kg (P) Eq.]	3.00E-02	1.06E-05	7.52E-04	5.34E-06	4.53E-07	ND	3.25E-07	5.25E-07	1.93E-06	1.79E-06	-1.92E-06
EPM	[kg N Eq.]	1.88E-02	9.11E-04	9.84E-04	1.85E-04	4.90E-05	ND	4.66E-05	1.35E-05	5.10E-06	3.61E-05	-7.05E-06
EPT	[mol N Eq.]	2.63E-01	1.01E-02	9.82E-03	2.03E-03	5.23E-04	ND	5.10E-04	1.47E-04	6.21E-05	3.94E-04	-5.47E-05
POCP	[kg NMVOC Eq.]	7.36E-02	2.91E-03	1.93E-03	6.76E-04	1.57E-04	ND	1.52E-04	5.28E-05	1.67E-05	1.34E-04	-1.55E-05
ADPE ¹	[kg Sb-Eq.]	5.16E-03	4.45E-07	1.41E-05	2.44E-07	6.34E-09	ND	4.08E-09	2.44E-08	1.22E-07	4.73E-08	-1.45E-08
ADPF ¹	[MJ, net calorific value]	6.45E+01	2.78E+00	3.90E+00	1.15E+00	1.55E-01	ND	1.45E-01	1.09E-01	4.54E-02	2.69E-01	-5.07E-02
WDP ¹	[m3 world eq. Deprived]	3.93E+00	1.10E-02	1.52E-01	5.54E-03	4.54E-04	ND	3.56E-04	5.45E-04	1.13E-03	2.05E-03	-2.42E-03

Hard Straight Length, Cast&Roll

Acronym	Unit	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWPT	[kg CO2-Eq.]	5.00E+00	2.08E-01	2.29E-01	8.18E-02	1.12E-02	ND	1.11E-02	7.66E-03	2.92E-03	1.62E-02	-4.80E-05
GWPF	[kg CO2-Eq.]	4.99E+00	2.08E-01	2.18E-01	8.18E-02	1.11E-02	ND	1.11E-02	7.65E-03	2.95E-03	1.62E-02	-4.78E-05
GWPB	[kg CO2-Eq.]	-1.17E-03	4.07E-05	-1.07E-03	4.28E-05	1.51E-05	ND	1.22E-06	4.64E-06	-3.16E-05	1.29E-05	-2.02E-07
GWPL	[kg CO2-Eq.]	7.25E-03	8.45E-05	1.27E-02	2.91E-05	9.70E-07	ND	9.66E-07	2.59E-06	5.27E-06	7.00E-06	-2.56E-08
ODP	[kg CFC11-Eq.]	4.94E-08	3.64E-09	9.24E-09	1.60E-09	1.70E-10	ND	1.70E-10	1.54E-10	3.76E-11	3.41E-10	-2.16E-12
AP	[mol H+ Eq.]	3.66E-01	3.34E-03	2.50E-03	5.51E-04	1.00E-04	ND	1.00E-04	3.44E-05	2.62E-05	9.31E-05	-1.47E-07
EPF	[kg (P) Eq.]	3.00E-02	1.06E-05	7.45E-04	5.34E-06	3.27E-07	ND	3.25E-07	5.25E-07	1.93E-06	1.79E-06	-9.11E-09
EPM	[kg N Eq.]	1.87E-02	9.11E-04	9.61E-04	1.85E-04	4.66E-05	ND	4.66E-05	1.35E-05	5.10E-06	3.61E-05	-2.89E-08
EPT	[mol N Eq.]	2.62E-01	1.01E-02	9.60E-03	2.03E-03	5.10E-04	ND	5.10E-04	1.47E-04	6.21E-05	3.94E-04	-2.98E-07
POCP	[kg NMVOC Eq.]	7.31E-02	2.91E-03	1.85E-03	6.76E-04	1.52E-04	ND	1.52E-04	5.28E-05	1.67E-05	1.34E-04	-2.60E-07
ADPE ¹	[kg Sb-Eq.]	5.16E-03	4.45E-07	1.40E-05	2.44E-07	4.12E-09	ND	4.08E-09	2.44E-08	1.22E-07	4.73E-08	-4.23E-10
ADPF ¹	[MJ, net calorific value]	6.20E+01	2.78E+00	3.70E+00	1.15E+00	1.46E-01	ND	1.45E-01	1.09E-01	4.54E-02	2.69E-01	-1.50E-03
WDP ¹	[m3 world eq. Deprived]	3.87E+00	1.10E-02	1.47E-01	5.54E-03	3.59E-04	ND	3.56E-04	5.45E-04	1.13E-03	2.05E-03	-1.27E-05



Half-Hard Straight Length, Cast&Roll

Acronym	Unit	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWPT	[kg CO2-Eq.]	5.06E+00	2.08E-01	2.29E-01	8.18E-02	1.11E-02	ND	1.11E-02	7.66E-03	2.92E-03	1.62E-02	-2.40E-05
GWPF	[kg CO2-Eq.]	5.06E+00	2.08E-01	2.17E-01	8.18E-02	1.11E-02	ND	1.11E-02	7.65E-03	2.95E-03	1.62E-02	-2.39E-05
GWPB	[kg CO2-Eq.]	-4.48E-04	4.07E-05	-1.07E-03	4.28E-05	8.16E-06	ND	1.22E-06	4.64E-06	-3.16E-05	1.29E-05	-1.01E-07
GWPL	[kg CO2-Eq.]	7.27E-03	8.45E-05	1.27E-02	2.91E-05	9.68E-07	ND	9.66E-07	2.59E-06	5.27E-06	7.00E-06	-1.28E-08
ODP	[kg CFC11-Eq.]	5.14E-08	3.64E-09	9.24E-09	1.60E-09	1.70E-10	ND	1.70E-10	1.54E-10	3.76E-11	3.41E-10	-1.08E-12
AP	[mol H+ Eq.]	3.66E-01	3.34E-03	2.50E-03	5.51E-04	1.00E-04	ND	1.00E-04	3.44E-05	2.62E-05	9.31E-05	-7.35E-08
EPF	[kg (P) Eq.]	3.00E-02	1.06E-05	7.45E-04	5.34E-06	3.26E-07	ND	3.25E-07	5.25E-07	1.93E-06	1.79E-06	-4.55E-09
EPM	[kg N Eq.]	1.88E-02	9.11E-04	9.61E-04	1.85E-04	4.66E-05	ND	4.66E-05	1.35E-05	5.10E-06	3.61E-05	-1.44E-08
EPT	[mol N Eq.]	2.62E-01	1.01E-02	9.60E-03	2.03E-03	5.10E-04	ND	5.10E-04	1.47E-04	6.21E-05	3.94E-04	-1.49E-07
POCP	[kg NMVOC Eq.]	7.33E-02	2.91E-03	1.85E-03	6.76E-04	1.52E-04	ND	1.52E-04	5.28E-05	1.67E-05	1.34E-04	-1.30E-07
ADPE ¹	[kg Sb-Eq.]	5.16E-03	4.45E-07	1.40E-05	2.44E-07	4.10E-09	ND	4.08E-09	2.44E-08	1.22E-07	4.73E-08	-2.11E-10
ADPF ¹	[MJ, net calorific value]	6.29E+01	2.78E+00	3.70E+00	1.15E+00	1.46E-01	ND	1.45E-01	1.09E-01	4.54E-02	2.69E-01	-7.49E-04
WDP ¹	[m3 world eq. Deprived]	3.89E+00	1.10E-02	1.47E-01	5.54E-03	3.58E-04	ND	3.56E-04	5.45E-04	1.13E-03	2.05E-03	-6.36E-06

Annealed Straight Length, Cast&Roll

Acronym	Unit	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWPT	[kg CO2-Eq.]	5.09E+00	2.08E-01	2.18E-01	8.18E-02	2.47E-02	ND	1.11E-02	7.66E-03	2.92E-03	1.62E-02	1.04E-02
GWPF	[kg CO2-Eq.]	5.08E+00	2.08E-01	2.20E-01	8.18E-02	1.15E-02	ND	1.11E-02	7.65E-03	2.95E-03	1.62E-02	-1.22E-04
GWPB	[kg CO2-Eq.]	-2.19E-04	4.07E-05	-1.42E-02	4.28E-05	1.31E-02	ND	1.22E-06	4.64E-06	-3.16E-05	1.29E-05	1.05E-02
GWPL	[kg CO2-Eq.]	7.28E-03	8.45E-05	1.27E-02	2.91E-05	1.76E-06	ND	9.66E-07	2.59E-06	5.27E-06	7.00E-06	-1.61E-06
ODP	[kg CFC11-Eq.]	5.20E-08	3.64E-09	9.29E-09	1.60E-09	1.76E-10	ND	1.70E-10	1.54E-10	3.76E-11	3.41E-10	-2.26E-12
AP	[mol H+ Eq.]	3.67E-01	3.34E-03	2.55E-03	5.51E-04	1.02E-04	ND	1.00E-04	3.44E-05	2.62E-05	9.31E-05	-5.81E-07
EPF	[kg (P) Eq.]	3.00E-02	1.06E-05	7.46E-04	5.34E-06	4.14E-07	ND	3.25E-07	5.25E-07	1.93E-06	1.79E-06	-6.37E-08
EPM	[kg N Eq.]	1.88E-02	9.11E-04	9.84E-04	1.85E-04	4.83E-05	ND	4.66E-05	1.35E-05	5.10E-06	3.61E-05	-1.92E-07
EPT	[mol N Eq.]	2.63E-01	1.01E-02	9.85E-03	2.03E-03	5.17E-04	ND	5.10E-04	1.47E-04	6.21E-05	3.94E-04	-1.93E-06
POCP	[kg NMVOC Eq.]	7.34E-02	2.91E-03	1.92E-03	6.76E-04	1.55E-04	ND	1.52E-04	5.28E-05	1.67E-05	1.34E-04	-1.10E-06
ADPE ¹	[kg Sb-Eq.]	5.16E-03	4.45E-07	1.40E-05	2.44E-07	5.13E-09	ND	4.08E-09	2.44E-08	1.22E-07	4.73E-08	-3.52E-10
ADPF ¹	[MJ, net calorific value]	6.33E+01	2.78E+00	3.74E+00	1.15E+00	1.51E-01	ND	1.45E-01	1.09E-01	4.54E-02	2.69E-01	-2.14E-03
WDP ¹	[m3 world eq. Deprived]	3.90E+00	1.10E-02	1.48E-01	5.54E-03	4.02E-04	ND	3.56E-04	5.45E-04	1.13E-03	2.05E-03	-5.11E-05



Environmental impacts indicators (Optional)

Legend: Potential incidence of disease due to PM emissions PMF [Disease incidence]; Potential Human exposure efficiency relative to UR25 IRH [kBq U235 eq]; Potential Comparative Toxic unit for ecosystems (ETP-fw) ETPF [CTUe]; Potential Comparative Toxic unit for human (HTP-c) HTC [CTUh]; Potential Comparative Toxic unit for human (HTP-nc) HTNC [CTUh]; Potential soil quality index (SQP) LULUC [Dimensionless].

² IRH is subject to Disclaimer 1: This impact category primarily concerns the possible impact of low dose ionizing radiation on human health from the nuclear fuel cycle. It does not take into account the effects due to possible nuclear accidents, occupational exposure or the disposal of radioactive waste in underground facilities. Potential ionizing radiation from soil, radon and some building materials is not measured by this indicator.

³ ETPF, HTC, HTNC, LULUC are subject to Disclaimer 2: The results of this environmental impact indicator should be used with caution given that the uncertainties of these results are high or because there is limited experience with the indicator.

Super Green Five Stars, LWC

Acronym	Unit	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
PMF	[Disease incidence]	8.50E-07	1.37E-08	2.28E-08	7.43E-09	2.92E-09	ND	2.85E-09	7.42E-10	3.28E-10	2.66E-09	-1.62E-10
IRH ²	[kBq U235 eq]	5.12E-01	2.62E-03	1.54E-02	1.45E-03	9.64E-05	ND	6.52E-05	1.45E-04	7.20E-04	3.21E-04	-3.94E-04
ETPF ³	[CTUe]	4.40E+02	6.08E-01	1.23E+01	2.92E-01	2.52E-02	ND	2.06E-02	2.84E-02	3.44E-02	1.03E-01	-3.48E-02
HTC ³	[CTUh]	6.77E-08	1.14E-09	7.77E-09	5.33E-10	4.83E-11	ND	4.35E-11	5.17E-11	5.72E-11	2.34E-10	-1.46E-11
HTNC ³	[CTUh]	4.21E-06	1.44E-09	8.95E-09	7.82E-10	2.82E-11	ND	1.98E-11	7.81E-11	1.15E-10	1.32E-10	-5.41E-11
SQP ³	[Dimensionless]	1.31E+02	1.29E+00	9.92E+00	8.03E-01	1.71E-02	ND	1.02E-02	8.19E-02	2.60E-01	3.12E-01	-2.17E-01

Feingroove, LWC

Acronym	Unit	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
PMF	[Disease incidence]	8.55E-07	1.37E-08	2.31E-08	7.43E-09	2.98E-09	ND	2.85E-09	7.42E-10	3.28E-10	2.66E-09	-3.02E-10
IRH	[kBq U235 eq]	5.21E-01	2.62E-03	1.59E-02	1.45E-03	1.23E-04	ND	6.52E-05	1.45E-04	7.20E-04	3.21E-04	-7.35E-04
ETPF	[CTUe]	4.40E+02	6.08E-01	1.24E+01	2.92E-01	2.93E-02	ND	2.06E-02	2.84E-02	3.44E-02	1.03E-01	-6.49E-02
HTC	[CTUh]	6.83E-08	1.14E-09	7.83E-09	5.33E-10	5.24E-11	ND	4.35E-11	5.17E-11	5.72E-11	2.34E-10	-2.72E-11
HTNC	[CTUh]	4.21E-06	1.44E-09	9.02E-09	7.82E-10	3.54E-11	ND	1.98E-11	7.81E-11	1.15E-10	1.32E-10	-1.01E-10
LULUC	[Dimensionless]	1.36E+02	1.29E+00	1.12E+01	8.03E-01	2.31E-02	ND	1.02E-02	8.19E-02	2.60E-01	3.12E-01	-4.04E-01

Green Solar, LWC

Acronym	Unit	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
PMF	[Disease incidence]	8.50E-07	1.37E-08	2.28E-08	7.43E-09	2.93E-09	ND	2.85E-09	7.42E-10	3.28E-10	2.66E-09	-1.69E-11
IRH ²	[kBq U235 eq]	5.12E-01	2.62E-03	1.52E-02	1.45E-03	1.06E-04	ND	6.52E-05	1.45E-04	7.20E-04	3.21E-04	-6.58E-05
ETPF ³	[CTUe]	4.40E+02	6.08E-01	1.23E+01	2.92E-01	2.56E-02	ND	2.06E-02	2.84E-02	3.44E-02	1.03E-01	-1.43E-03
HTC ³	[CTUh]	6.77E-08	1.14E-09	7.80E-09	5.33E-10	4.85E-11	ND	4.35E-11	5.17E-11	5.72E-11	2.34E-10	-1.93E-12
HTNC ³	[CTUh]	4.21E-06	1.44E-09	8.92E-09	7.82E-10	2.86E-11	ND	1.98E-11	7.81E-11	1.15E-10	1.32E-10	-2.38E-12
SQP ³	[Dimensionless]	1.31E+02	1.29E+00	1.09E+01	8.03E-01	2.08E-02	ND	1.02E-02	8.19E-02	2.60E-01	3.12E-01	-1.48E-01



Capillary

Acronym	Unit	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
PMF	[Disease incidence]	8.54E-07	1.37E-08	2.33E-08	7.43E-09	2.92E-09	ND	2.85E-09	7.42E-10	3.28E-10	2.66E-09	-1.62E-10
IRH ²	[kBq U235 eq]	5.20E-01	2.62E-03	1.57E-02	1.45E-03	9.64E-05	ND	6.52E-05	1.45E-04	7.20E-04	3.21E-04	-3.94E-04
ETPF ³	[CTUe]	4.40E+02	6.08E-01	1.25E+01	2.92E-01	2.52E-02	ND	2.06E-02	2.84E-02	3.44E-02	1.03E-01	-3.48E-02
HTC ³	[CTUh]	6.82E-08	1.14E-09	7.83E-09	5.33E-10	4.83E-11	ND	4.35E-11	5.17E-11	5.72E-11	2.34E-10	-1.46E-11
HTNC ³	[CTUh]	4.21E-06	1.44E-09	9.05E-09	7.82E-10	2.82E-11	ND	1.98E-11	7.81E-11	1.15E-10	1.32E-10	-5.41E-11
SQP ³	[Dimensionless]	1.35E+02	1.29E+00	9.97E+00	8.03E-01	1.71E-02	ND	1.02E-02	8.19E-02	2.60E-01	3.12E-01	-2.17E-01

Hard Straight Length, Cast&Roll

Acronym	Unit	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
PMF	[Disease incidence]	8.50E-07	1.37E-08	2.23E-08	7.43E-09	2.85E-09	ND	2.85E-09	7.42E-10	3.28E-10	2.66E-09	-1.16E-12
IRH ²	[kBq U235 eq]	5.12E-01	2.62E-03	1.47E-02	1.45E-03	6.55E-05	ND	6.52E-05	1.45E-04	7.20E-04	3.21E-04	-3.84E-06
ETPF ³	[CTUe]	4.39E+02	6.08E-01	1.23E+01	2.92E-01	2.07E-02	ND	2.06E-02	2.84E-02	3.44E-02	1.03E-01	-1.71E-04
HTC ³	[CTUh]	6.76E-08	1.14E-09	7.71E-09	5.33E-10	4.36E-11	ND	4.35E-11	5.17E-11	5.72E-11	2.34E-10	-1.89E-13
HTNC ³	[CTUh]	4.21E-06	1.44E-09	8.86E-09	7.82E-10	2.00E-11	ND	1.98E-11	7.81E-11	1.15E-10	1.32E-10	-4.12E-13
SQP ³	[Dimensionless]	1.31E+02	1.29E+00	8.49E+00	8.03E-01	1.03E-02	ND	1.02E-02	8.19E-02	2.60E-01	3.12E-01	-1.34E-04

Half-Hard Straight Length, Cast&Roll

Acronym	Unit	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
PMF	[Disease incidence]	8.51E-07	1.37E-08	2.23E-08	7.43E-09	2.85E-09	ND	2.85E-09	7.42E-10	3.28E-10	2.66E-09	-5.80E-13
IRH ²	[kBq U235 eq]	5.15E-01	2.62E-03	1.47E-02	1.45E-03	6.53E-05	ND	6.52E-05	1.45E-04	7.20E-04	3.21E-04	-1.92E-06
ETPF ³	[CTUe]	4.40E+02	6.08E-01	1.23E+01	2.92E-01	2.07E-02	ND	2.06E-02	2.84E-02	3.44E-02	1.03E-01	-8.54E-05
HTC ³	[CTUh]	6.78E-08	1.14E-09	7.71E-09	5.33E-10	4.35E-11	ND	4.35E-11	5.17E-11	5.72E-11	2.34E-10	-9.43E-14
HTNC ³	[CTUh]	4.21E-06	1.44E-09	8.86E-09	7.82E-10	1.99E-11	ND	1.98E-11	7.81E-11	1.15E-10	1.32E-10	-2.06E-13
SQP ³	[Dimensionless]	1.33E+02	1.29E+00	8.49E+00	8.03E-01	1.03E-02	ND	1.02E-02	8.19E-02	2.60E-01	3.12E-01	-6.71E-05

Annealed Straight Length, Cast&Roll

Acronym	Unit	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
PMF	[Disease incidence]	8.52E-07	1.37E-08	2.26E-08	7.43E-09	2.89E-09	ND	2.85E-09	7.42E-10	3.28E-10	2.66E-09	-8.08E-12
IRH ²	[kBq U235 eq]	5.16E-01	2.62E-03	1.49E-02	1.45E-03	8.47E-05	ND	6.52E-05	1.45E-04	7.20E-04	3.21E-04	-3.16E-05
ETPF ³	[CTUe]	4.40E+02	6.08E-01	1.23E+01	2.92E-01	2.30E-02	ND	2.06E-02	2.84E-02	3.44E-02	1.03E-01	-6.71E-04
HTC ³	[CTUh]	6.79E-08	1.14E-09	7.75E-09	5.33E-10	4.59E-11	ND	4.35E-11	5.17E-11	5.72E-11	2.34E-10	-9.13E-13
HTNC ³	[CTUh]	4.21E-06	1.44E-09	8.89E-09	7.82E-10	2.40E-11	ND	1.98E-11	7.81E-11	1.15E-10	1.32E-10	-1.10E-12
SQP ³	[Dimensionless]	1.33E+02	1.29E+00	9.66E+00	8.03E-01	1.53E-02	ND	1.02E-02	8.19E-02	2.60E-01	3.12E-01	-7.21E-02



Resource use

Legend: Use of renewable primary energy excluding renewable primary energy resources used as raw materials PERE [MJ]; Use of renewable primary energy resources used as raw materials (PERM) PERM [MJ]; Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) (PERT) PERT [MJ]; Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (PENRE) PENRE [MJ]; Use of non-renewable primary energy resources used as raw materials (PENRM) PENRM [MJ]; Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) (PENRT) PENRT [MJ]; Use of secondary material (SM) SM [kg]; Use of renewable secondary fuels [RSF] RSF [MJ]; Use of non-renewable secondary fuels [NRSF] NRSF [MJ]; Net use of fresh water [FW] FW [m³].

Super Green Five Stars, LWC

Acronym	Unit	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
PERE	[MJ]	1.75E+01	3.15E-02	1.25E+00	1.69E-02	1.13E-03	ND	7.96E-04	1.68E-03	6.59E-03	4.21E-03	-7.93E-03
PERM	[MJ]	1.43E+00	4.35E-03	3.10E-01	2.16E-03	1.37E-04	ND	9.72E-05	2.12E-04	2.86E-03	8.39E-04	-5.44E-02
PERT	[MJ]	1.90E+01	3.58E-02	1.56E+00	1.90E-02	1.27E-03	ND	8.93E-04	1.89E-03	9.44E-03	5.05E-03	-6.23E-02
PENRE	[MJ]	5.99E+01	2.51E+00	3.55E+00	1.05E+00	1.40E-01	ND	1.31E-01	9.92E-02	4.37E-02	2.45E-01	-4.79E-02
PENRM	[MJ]	2.30E+00	2.65E-01	2.59E-01	1.08E-01	1.51E-02	ND	1.44E-02	1.02E-02	1.75E-03	2.33E-02	-2.89E-03
PENRT	[MJ]	6.22E+01	2.78E+00	3.81E+00	1.15E+00	1.55E-01	ND	1.45E-01	1.09E-01	4.54E-02	2.69E-01	-5.08E-02
SM	[kg]	3.11E-01	2.55E-03	8.68E-02	1.27E-03	9.94E-03	ND	8.60E-05	1.25E-04	4.91E-04	5.60E-04	-3.80E-03
RSF	[MJ]	7.83E-02	5.86E-04	4.04E-03	3.47E-04	1.88E-05	ND	1.02E-05	3.51E-05	2.16E-04	8.54E-05	-1.26E-04
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m ³]	1.44E-01	3.00E-04	1.92E+00	1.55E-04	-1.05E-06	ND	9.46E-06	1.54E-05	3.23E-05	1.75E-04	-5.79E-05

Feingroove, LWC

Acronym	Unit	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
PERE	[MJ]	1.95E+01	3.15E-02	1.26E+00	1.69E-02	1.42E-03	ND	7.96E-04	1.68E-03	6.59E-03	4.21E-03	-1.48E-02
PERM	[MJ]	1.44E+00	4.35E-03	5.31E-01	2.16E-03	1.71E-04	ND	9.72E-05	2.12E-04	2.86E-03	8.39E-04	-1.02E-01
PERT	[MJ]	2.09E+01	3.58E-02	1.79E+00	1.90E-02	1.59E-03	ND	8.93E-04	1.89E-03	9.44E-03	5.05E-03	-1.16E-01
PENRE	[MJ]	6.25E+01	2.51E+00	3.63E+00	1.05E+00	1.47E-01	ND	1.31E-01	9.92E-02	4.37E-02	2.45E-01	-8.94E-02
PENRM	[MJ]	2.44E+00	2.65E-01	2.63E-01	1.08E-01	1.57E-02	ND	1.44E-02	1.02E-02	1.75E-03	2.33E-02	-5.39E-03
PENRT	[MJ]	6.49E+01	2.78E+00	3.89E+00	1.15E+00	1.63E-01	ND	1.45E-01	1.09E-01	4.54E-02	2.69E-01	-9.47E-02
SM	[kg]	3.11E-01	2.55E-03	9.18E-02	1.27E-03	1.85E-02	ND	8.60E-05	1.25E-04	4.91E-04	5.60E-04	-7.10E-03
RSF	[MJ]	9.08E-02	5.86E-04	4.22E-03	3.47E-04	2.62E-05	ND	1.02E-05	3.51E-05	2.16E-04	8.54E-05	-2.35E-04
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m ³]	1.46E-01	3.00E-04	1.92E+00	1.55E-04	-1.01E-05	ND	9.46E-06	1.54E-05	3.23E-05	1.75E-04	-1.08E-04



Green Solar, LWC

Acronym	Unit	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
PERE	[MJ]	1.75E+01	3.15E-02	1.24E+00	1.69E-02	1.24E-03	ND	7.96E-04	1.68E-03	6.59E-03	4.21E-03	-7.29E-04
PERM	[MJ]	1.43E+00	4.35E-03	4.89E-01	2.16E-03	1.41E-04	ND	9.72E-05	2.12E-04	2.86E-03	8.39E-04	-6.33E-02
PERT	[MJ]	1.90E+01	3.58E-02	1.73E+00	1.90E-02	1.38E-03	ND	8.93E-04	1.89E-03	9.44E-03	5.05E-03	-6.40E-02
PENRE	[MJ]	5.99E+01	2.51E+00	3.54E+00	1.05E+00	1.42E-01	ND	1.31E-01	9.92E-02	4.37E-02	2.45E-01	-4.54E-03
PENRM	[MJ]	2.30E+00	2.65E-01	2.58E-01	1.08E-01	1.53E-02	ND	1.44E-02	1.02E-02	1.75E-03	2.33E-02	-2.89E-04
PENRT	[MJ]	6.22E+01	2.78E+00	3.80E+00	1.15E+00	1.57E-01	ND	1.45E-01	1.09E-01	4.54E-02	2.69E-01	-4.83E-03
SM	[kg]	3.11E-01	2.55E-03	8.41E-02	1.27E-03	1.20E-02	ND	8.60E-05	1.25E-04	4.91E-04	5.60E-04	-5.24E-05
RSF	[MJ]	7.83E-02	5.86E-04	3.99E-03	3.47E-04	1.79E-05	ND	1.02E-05	3.51E-05	2.16E-04	8.54E-05	-2.24E-05
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m³]	1.44E-01	3.00E-04	1.92E+00	1.55E-04	-1.18E-05	ND	9.46E-06	1.54E-05	3.23E-05	1.75E-04	-2.97E-06

Capillary

Acronym	Unit	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
PERE	[MJ]	1.92E+01	3.15E-02	1.25E+00	1.69E-02	1.13E-03	ND	7.96E-04	1.68E-03	6.59E-03	4.21E-03	-7.93E-03
PERM	[MJ]	1.44E+00	4.35E-03	3.11E-01	2.16E-03	1.37E-04	ND	9.72E-05	2.12E-04	2.86E-03	8.39E-04	-5.44E-02
PERT	[MJ]	2.06E+01	3.58E-02	1.56E+00	1.90E-02	1.27E-03	ND	8.93E-04	1.89E-03	9.44E-03	5.05E-03	-6.23E-02
PENRE	[MJ]	6.21E+01	2.51E+00	3.64E+00	1.05E+00	1.40E-01	ND	1.31E-01	9.92E-02	4.37E-02	2.45E-01	-4.79E-02
PENRM	[MJ]	2.42E+00	2.65E-01	2.67E-01	1.08E-01	1.51E-02	ND	1.44E-02	1.02E-02	1.75E-03	2.33E-02	-2.89E-03
PENRT	[MJ]	6.45E+01	2.78E+00	3.91E+00	1.15E+00	1.55E-01	ND	1.45E-01	1.09E-01	4.54E-02	2.69E-01	-5.08E-02
SM	[kg]	3.11E-01	2.55E-03	9.09E-02	1.27E-03	9.94E-03	ND	8.60E-05	1.25E-04	4.91E-04	5.60E-04	-3.80E-03
RSF	[MJ]	8.89E-02	5.86E-04	4.19E-03	3.47E-04	1.88E-05	ND	1.02E-05	3.51E-05	2.16E-04	8.54E-05	-1.26E-04
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m³]	1.46E-01	3.00E-04	3.18E+00	1.55E-04	-1.05E-06	ND	9.46E-06	1.54E-05	3.23E-05	1.75E-04	-5.79E-05

Hard Straight Length, Cast&Roll

Acronym	Unit	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
PERE	[MJ]	1.74E+01	3.15E-02	1.24E+00	1.69E-02	7.99E-04	ND	7.96E-04	1.68E-03	6.59E-03	4.21E-03	-3.54E-05
PERM	[MJ]	1.43E+00	4.35E-03	5.61E-02	2.16E-03	9.82E-05	ND	9.72E-05	2.12E-04	2.86E-03	8.39E-04	-5.55E-06
PERT	[MJ]	1.89E+01	3.58E-02	1.29E+00	1.90E-02	8.97E-04	ND	8.93E-04	1.89E-03	9.44E-03	5.05E-03	-4.10E-05
PENRE	[MJ]	5.97E+01	2.51E+00	3.46E+00	1.05E+00	1.31E-01	ND	1.31E-01	9.92E-02	4.37E-02	2.45E-01	-1.38E-03
PENRM	[MJ]	2.29E+00	2.65E-01	2.53E-01	1.08E-01	1.44E-02	ND	1.44E-02	1.02E-02	1.75E-03	2.33E-02	-1.23E-04
PENRT	[MJ]	6.20E+01	2.78E+00	3.72E+00	1.15E+00	1.46E-01	ND	1.45E-01	1.09E-01	4.54E-02	2.69E-01	-1.50E-03
SM	[kg]	3.11E-01	2.55E-03	8.11E-02	1.27E-03	1.08E-04	ND	8.60E-05	1.25E-04	4.91E-04	5.60E-04	-2.26E-06
RSF	[MJ]	7.75E-02	5.86E-04	3.82E-03	3.47E-04	1.03E-05	ND	1.02E-05	3.51E-05	2.16E-04	8.54E-05	-1.12E-06
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m³]	1.44E-01	3.00E-04	1.92E+00	1.55E-04	9.51E-06	ND	9.46E-06	1.54E-05	3.23E-05	1.75E-04	-3.33E-07



Half-Hard straight lengths, Cast&Roll

Acronym	Unit	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
PERE	[MJ]	1.81E+01	3.15E-02	1.24E+00	1.69E-02	7.97E-04	ND	7.96E-04	1.68E-03	6.59E-03	4.21E-03	-1.77E-05
PERM	[MJ]	1.43E+00	4.35E-03	5.61E-02	2.16E-03	9.77E-05	ND	9.72E-05	2.12E-04	2.86E-03	8.39E-04	-2.77E-06
PERT	[MJ]	1.95E+01	3.58E-02	1.29E+00	1.90E-02	8.95E-04	ND	8.93E-04	1.89E-03	9.44E-03	5.05E-03	-2.05E-05
PENRE	[MJ]	6.06E+01	2.51E+00	3.46E+00	1.05E+00	1.31E-01	ND	1.31E-01	9.92E-02	4.37E-02	2.45E-01	-6.87E-04
PENRM	[MJ]	2.34E+00	2.65E-01	2.53E-01	1.08E-01	1.44E-02	ND	1.44E-02	1.02E-02	1.75E-03	2.33E-02	-6.15E-05
PENRT	[MJ]	6.30E+01	2.78E+00	3.71E+00	1.15E+00	1.46E-01	ND	1.45E-01	1.09E-01	4.54E-02	2.69E-01	-7.49E-04
SM	[kg]	3.11E-01	2.55E-03	8.11E-02	1.27E-03	9.71E-05	ND	8.60E-05	1.25E-04	4.91E-04	5.60E-04	-1.13E-06
RSF	[MJ]	8.18E-02	5.86E-04	3.82E-03	3.47E-04	1.02E-05	ND	1.02E-05	3.51E-05	2.16E-04	8.54E-05	-5.57E-07
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m ³]	1.45E-01	3.00E-04	1.92E+00	1.55E-04	9.48E-06	ND	9.46E-06	1.54E-05	3.23E-05	1.75E-04	-1.66E-07

Annealed straight lengths, Cast&Roll

Acronym	Unit	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
PERE	[MJ]	1.83E+01	3.15E-02	1.24E+00	1.69E-02	1.01E-03	ND	7.96E-04	1.68E-03	6.59E-03	4.21E-03	-3.51E-04
PERM	[MJ]	1.43E+00	4.35E-03	2.68E-01	2.16E-03	1.18E-04	ND	9.72E-05	2.12E-04	2.86E-03	8.39E-04	-3.09E-02
PERT	[MJ]	1.98E+01	3.58E-02	1.51E+00	1.90E-02	1.13E-03	ND	8.93E-04	1.89E-03	9.44E-03	5.05E-03	-3.12E-02
PENRE	[MJ]	6.09E+01	2.51E+00	3.50E+00	1.05E+00	1.36E-01	ND	1.31E-01	9.92E-02	4.37E-02	2.45E-01	-2.02E-03
PENRM	[MJ]	2.35E+00	2.65E-01	2.55E-01	1.08E-01	1.48E-02	ND	1.44E-02	1.02E-02	1.75E-03	2.33E-02	-1.23E-04
PENRT	[MJ]	6.33E+01	2.78E+00	3.75E+00	1.15E+00	1.51E-01	ND	1.45E-01	1.09E-01	4.54E-02	2.69E-01	-2.14E-03
SM	[kg]	3.11E-01	2.55E-03	8.26E-02	1.27E-03	5.91E-03	ND	8.60E-05	1.25E-04	4.91E-04	5.60E-04	-2.53E-05
RSF	[MJ]	8.32E-02	5.86E-04	3.90E-03	3.47E-04	1.39E-05	ND	1.02E-05	3.51E-05	2.16E-04	8.54E-05	-1.08E-05
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m ³]	1.45E-01	3.00E-04	1.92E+00	1.55E-04	-9.94E-07	ND	9.46E-06	1.54E-05	3.23E-05	1.75E-04	-1.40E-06



Output flow

Legend: Components for re-use (CRU) CRU [Kg]; Materials for recycling (MFR) MFR [Kg]; Materials for energy recovery (MER) MER [Kg]; Exported energy (Electrical) EEE [MJ]; Exported energy (Thermal) EET [MJ]; Waste: Hazardous waste disposed HWD [kg (HWD)]; Waste: Non-hazardous waste disposed NHWD [kg (NHWD)]; Waste: Radioactive waste disposed RWD [kg (RWD)]

Super Green Five Stars, LWC

Acronym	Unit	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
CRU	[Kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[Kg]	3.89E-01	2.34E-03	1.33E-02	1.14E-03	9.10E-05	ND	7.10E-05	1.11E-04	4.26E-04	4.24E-04	-1.04E-02
MER	[Kg]	3.52E-05	2.63E-07	1.81E-06	1.56E-07	8.43E-09	ND	4.57E-09	1.58E-08	9.72E-08	3.83E-08	-5.66E-08
EEE	[MJ]	5.14E-02	3.25E-04	2.29E-03	1.87E-04	1.04E-05	ND	6.49E-06	1.88E-05	1.14E-04	2.17E-01	-6.07E-05
EET	[MJ]	1.68E-01	7.01E-04	4.40E-03	4.43E-04	5.73E-06	ND	3.45E-06	4.53E-05	9.75E-06	7.87E-02	-2.05E-05
HWD	kg (HWD)	1.56E+00	2.73E-03	2.53E-02	1.14E-03	1.51E-04	ND	1.26E-04	1.08E-04	2.55E-04	6.25E-04	-1.49E-04
NHWD	kg (NHWD)	5.78E+00	2.54E-02	4.17E-01	1.20E-02	1.87E-02	ND	9.44E-04	1.16E-03	3.02E-01	7.08E-01	-1.50E-03
RWD	kg (RWD)	1.34E-04	6.49E-07	3.88E-06	3.60E-07	2.38E-08	ND	1.60E-08	3.60E-08	1.85E-07	7.95E-08	-1.00E-07

Feingroove, LWC

Acronym	Unit	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
CRU	[Kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[Kg]	4.11E-01	2.34E-03	1.41E-02	1.14E-03	1.08E-04	ND	7.10E-05	1.11E-04	4.26E-04	4.24E-04	-1.95E-02
MER	[Kg]	4.08E-05	2.63E-07	1.90E-06	1.56E-07	1.18E-08	ND	4.57E-09	1.58E-08	9.72E-08	3.83E-08	-1.06E-07
EEE	[MJ]	7.83E-02	3.25E-04	2.38E-03	1.87E-04	1.39E-05	ND	6.49E-06	1.88E-05	1.14E-04	2.17E-01	-1.13E-04
EET	[MJ]	1.68E-01	7.01E-04	4.45E-03	4.43E-04	7.71E-06	ND	3.45E-06	4.53E-05	9.75E-06	7.87E-02	-3.83E-05
HWD	kg (HWD)	1.57E+00	2.73E-03	2.55E-02	1.14E-03	1.72E-04	ND	1.26E-04	1.08E-04	2.55E-04	6.25E-04	-2.79E-04
NHWD	kg (NHWD)	5.82E+00	2.54E-02	4.20E-01	1.20E-02	3.42E-02	ND	9.44E-04	1.16E-03	3.02E-01	7.08E-01	-2.79E-03
RWD	kg (RWD)	1.36E-04	6.49E-07	4.03E-06	3.60E-07	3.06E-08	ND	1.60E-08	3.60E-08	1.85E-07	7.95E-08	-1.87E-07

Green Solar, LWC

Acronym	Unit	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
CRU	[Kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[Kg]	3.89E-01	2.34E-03	1.28E-02	1.14E-03	9.01E-05	ND	7.10E-05	1.11E-04	4.26E-04	4.24E-04	-1.20E-02
MER	[Kg]	3.52E-05	2.63E-07	1.79E-06	1.56E-07	8.03E-09	ND	4.57E-09	1.58E-08	9.72E-08	3.83E-08	-1.01E-08
EEE	[MJ]	5.14E-02	3.25E-04	2.27E-03	1.87E-04	1.12E-05	ND	6.49E-06	1.88E-05	1.14E-04	2.17E-01	-1.05E-05
EET	[MJ]	1.68E-01	7.01E-04	4.43E-03	4.43E-04	6.38E-06	ND	3.45E-06	4.53E-05	9.75E-06	7.87E-02	-1.08E-06
HWD	kg (HWD)	1.56E+00	2.73E-03	2.52E-02	1.14E-03	1.49E-04	ND	1.26E-04	1.08E-04	2.55E-04	6.25E-04	-7.25E-06
NHWD	kg (NHWD)	5.78E+00	2.54E-02	4.17E-01	1.20E-02	3.32E-02	ND	9.44E-04	1.16E-03	3.02E-01	7.08E-01	-2.37E-04
RWD	kg (RWD)	1.34E-04	6.49E-07	3.84E-06	3.60E-07	2.61E-08	ND	1.60E-08	3.60E-08	1.85E-07	7.95E-08	-1.65E-08



Capillary

Acronym	Unit	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
CRU	[Kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[Kg]	4.07E-01	2.34E-03	1.37E-02	1.14E-03	9.10E-05	ND	7.10E-05	1.11E-04	4.26E-04	4.24E-04	-1.04E-02
MER	[Kg]	3.99E-05	2.63E-07	1.88E-06	1.56E-07	8.43E-09	ND	4.57E-09	1.58E-08	9.72E-08	3.83E-08	-5.66E-08
EEE	[MJ]	7.42E-02	3.25E-04	2.37E-03	1.87E-04	1.04E-05	ND	6.49E-06	1.88E-05	1.14E-04	2.17E-01	-6.07E-05
EET	[MJ]	1.68E-01	7.01E-04	4.45E-03	4.43E-04	5.73E-06	ND	3.45E-06	4.53E-05	9.75E-06	7.87E-02	-2.05E-05
HWD	kg (HWD)	1.57E+00	2.73E-03	2.62E-02	1.14E-03	1.51E-04	ND	1.26E-04	1.08E-04	2.55E-04	6.25E-04	-1.49E-04
NHWD	kg (NHWD)	5.82E+00	2.54E-02	4.33E-01	1.20E-02	1.87E-02	ND	9.44E-04	1.16E-03	3.02E-01	7.08E-01	-1.50E-03
RWD	kg (RWD)	1.36E-04	6.49E-07	3.97E-06	3.60E-07	2.38E-08	ND	1.60E-08	3.60E-08	1.85E-07	7.95E-08	-1.00E-07

Hard Straight Length, Cast&Roll

Acronym	Unit	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
CRU	[Kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[Kg]	3.88E-01	2.34E-03	1.25E-02	1.14E-03	7.15E-05	ND	7.10E-05	1.11E-04	4.26E-04	4.24E-04	-2.19E-05
MER	[Kg]	3.48E-05	2.63E-07	1.72E-06	1.56E-07	4.60E-09	ND	4.57E-09	1.58E-08	9.72E-08	3.83E-08	-5.01E-10
EEE	[MJ]	4.97E-02	3.25E-04	2.18E-03	1.87E-04	6.53E-06	ND	6.49E-06	1.88E-05	1.14E-04	2.17E-01	-5.95E-07
EET	[MJ]	1.67E-01	7.01E-04	4.34E-03	4.43E-04	3.48E-06	ND	3.45E-06	4.53E-05	9.75E-06	7.87E-02	-3.09E-07
HWD	kg (HWD)	1.56E+00	2.73E-03	2.50E-02	1.14E-03	1.27E-04	ND	1.26E-04	1.08E-04	2.55E-04	6.25E-04	-1.22E-06
NHWD	kg (NHWD)	5.78E+00	2.54E-02	4.14E-01	1.20E-02	9.83E-04	ND	9.44E-04	1.16E-03	3.02E-01	7.08E-01	-3.91E-04
RWD	kg (RWD)	1.34E-04	6.49E-07	3.72E-06	3.60E-07	1.61E-08	ND	1.60E-08	3.60E-08	1.85E-07	7.95E-08	-9.77E-10

Half-Hard straight lengths, Cast&Roll

Acronym	Unit	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
CRU	[Kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[Kg]	3.95E-01	2.34E-03	1.25E-02	1.14E-03	7.13E-05	ND	7.10E-05	1.11E-04	4.26E-04	4.24E-04	-1.09E-05
MER	[Kg]	3.68E-05	2.63E-07	1.72E-06	1.56E-07	4.59E-09	ND	4.57E-09	1.58E-08	9.72E-08	3.83E-08	-2.50E-10
EEE	[MJ]	5.91E-02	3.25E-04	2.18E-03	1.87E-04	6.51E-06	ND	6.49E-06	1.88E-05	1.14E-04	2.17E-01	-2.97E-07
EET	[MJ]	1.68E-01	7.01E-04	4.34E-03	4.43E-04	3.46E-06	ND	3.45E-06	4.53E-05	9.75E-06	7.87E-02	-1.54E-07
HWD	kg (HWD)	1.57E+00	2.73E-03	2.50E-02	1.14E-03	1.27E-04	ND	1.26E-04	1.08E-04	2.55E-04	6.25E-04	-6.09E-07
NHWD	kg (NHWD)	5.79E+00	2.54E-02	4.14E-01	1.20E-02	9.63E-04	ND	9.44E-04	1.16E-03	3.02E-01	7.08E-01	-1.96E-04
RWD	kg (RWD)	1.35E-04	6.49E-07	3.72E-06	3.60E-07	1.60E-08	ND	1.60E-08	3.60E-08	1.85E-07	7.95E-08	-4.88E-10



Annealed straight lengths, Cast&Roll

Acronym	Unit	A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4	D
CRU	[Kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[Kg]	3.98E-01	2.34E-03	1.27E-02	1.14E-03	8.01E-05	ND	7.10E-05	1.11E-04	4.26E-04	4.24E-04	-5.83E-03
MER	[Kg]	3.74E-05	2.63E-07	1.75E-06	1.56E-07	6.24E-09	ND	4.57E-09	1.58E-08	9.72E-08	3.83E-08	-4.84E-09
EEE	[MJ]	6.20E-02	3.25E-04	2.22E-03	1.87E-04	8.78E-06	ND	6.49E-06	1.88E-05	1.14E-04	2.17E-01	-5.02E-06
EET	[MJ]	1.68E-01	7.01E-04	4.37E-03	4.43E-04	4.86E-06	ND	3.45E-06	4.53E-05	9.75E-06	7.87E-02	-4.82E-07
HWD	kg (HWD)	1.57E+00	2.73E-03	2.51E-02	1.14E-03	1.37E-04	ND	1.26E-04	1.08E-04	2.55E-04	6.25E-04	-3.36E-06
NHWD	kg (NHWD)	5.80E+00	2.54E-02	4.15E-01	1.20E-02	1.67E-02	ND	9.44E-04	1.16E-03	3.02E-01	7.08E-01	-5.83E-05
RWD	kg (RWD)	1.35E-04	6.49E-07	3.78E-06	3.60E-07	2.09E-08	ND	1.60E-08	3.60E-08	1.85E-07	7.95E-08	-7.93E-09

Additional information

Product name	UM/UD	Biogenic Carbon Content (Packaging)	Biogenic Carbon Content (Product)
PR1.1 Super Green Five Stars	kgCb/kg	0.007	0
PR1.2 Feingroove	kgCb/kg	0.012	0
PR1.3 Green Solar	kgCb/kg	0.012	0
PR2 Capillary	kgCb/kg	0.007	0
PR3.1 Hard Straight Length, Cast&Roll	kgCb/kg	-	0
PR3.2 Half-Hard Straight Length, Cast&Roll	kgCb/kg	-	0
PR3.3 Annealed Straight Length, Cast&Roll	kgCb/kg	-	0

NOTE: 1 kg of biogenic carbon is equivalent to 44.12 kgCO₂.



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