Environmental Product Declaration for GIB® Plasterboard

AUSTRALASIA EPD®

ENVIRONMENTAL PRODUCT DECLARATION

Version 1.1 of 1 March 2018

Valid until 5 December 2022

No. S-P-01000

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Winstone Wallboards Ltd is New Zealand's largest manufacturer and marketer of gypsum plasterboard, drywall systems, associated products and services. The company has been operating since 1927 and manufactures plasterboard systems under the GIB® brand name. Winstone Wallboards Ltd, has facilities in Auckland, Wellington and Christchurch.

The GIB® brand is a New Zealand icon brand and Winstone Wallboards has a proud heritage of being a New Zealand focused and New Zealand based company. Locally made for local conditions, the products meet or exceed the New Zealand building code, are BRANZ appraised and are backed by full technical information and support to give complete confidence in using GIB® Plasterboard Systems.

The Winstone Wallboards warranty covers GIB® products and/or systems for a minimum of 10 years from the date of purchase. Winstone Wallboards warrants that GIB® products will be free from defects caused by factory workmanship or materials and, subject to compliance with the conditions attached, that the product or system will perform to the extent set out in relevant Winstone Wallboards published literature current at the time of installation.

PRODUCED UNDER THE AUSTRALASIAN EPD PROGRAMME IN ACCORDANCE WITH ISO 14025 AND EN 15804

EPD registration number:	S-P-01000
Version	1.1 of 2018-03-01
Approval date:	2017-12-05
Valid until:	2022-12-05
Geographical scope:	New Zealand

General information

An Environmental Product Declaration, or EPD, is a standardised and verified way of quantifying the environmental impacts of a product based on a consistent set of rules known as a PCR (Product Category Rules). Environmental product declarations within the same product category from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804.

Declaration owner:	**Winstone Wallboards Ltd**	
GIB®	Web:	www.gib.co.nz
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EPD produced by:	**thinkstep Ltd**	
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CEN standard EN 15804 served as the core PCR	
PCR:	PCR 2012:01 Construction Products and Construction Services v2.2 (2017-05-30)
PCR review was conducted by:	The Technical Committee of the International EPD® System. Chair: Massimo Marino. Contact via info@environdec.com
Independent verification of the declaration and data, according to ISO 14025:	☐ EPD process certification (Internal) ✓ EPD verification (External)

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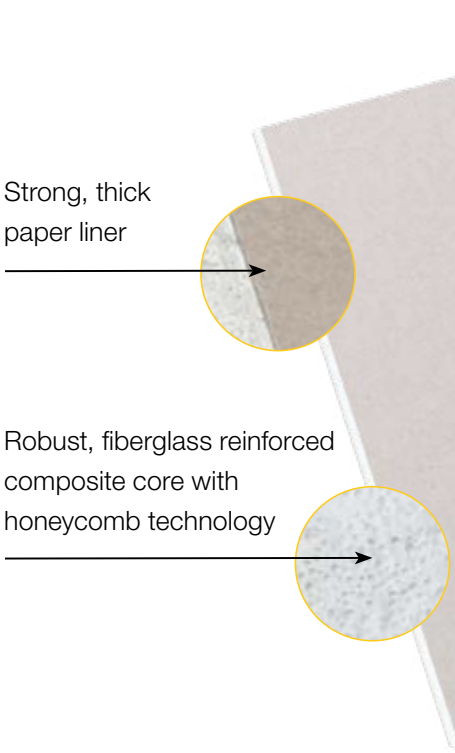
Accredited or approved by:	**The Australasian EPD® Programme**

CONTENT

GIB® Plasterboard product variety

GIB STANDARD®

GIB® Standard plasterboard is an economical lining material available in 10mm and 13mm thicknesses. It is suitable for multiple uses: maintains bracing performance of GS1 and GS2 systems and ceiling diaphragms as presented in GIB EzyBrace® Systems 2011; and can be used in GIB® Fire Rated and GIB® Noise Control Systems. While 10mm GIB® Standard plasterboard is suitable for walls, the thicker 13mm GIB® Standard plasterboard is recommended for use on ceilings for a better quality finish, especially where wet and humid conditions mean ceiling sag can be amplified. Used in ceilings it can withstand distributed loads up to 3.0kg/m^2 easily supporting loads such as R5.0 insulation.



- **Clean score and snap** means cleaner cuts and better edges.
- **Low edge breakout and damage** means less wastage.
- **Easy screw bedding means** quicker installation.
- **Excellent uniformity** means a consistent, quality finish.
- **Great flexibility** means easy sheet manoeuvrability with less risk of damage and wastage.
- **Strong and rigid with low sag** for easy sheet lifting and flat ceilings.

	Board Thickness (mm)	Sheet Width (mm)	2400	2700	3000	3300	3600	4200	4800	6000	Max. kg/m^2
TE/TE	10	1200	■	■	■	■	■	■	■	■	7.0
TE/TE	13	1200	■	■	■	■	■	■	■	■	8.7
TE/TE	10	1200	■		■		■	■	■	■	7.0
GIB Wideline® TE/SE	10	1350					■		■	■	7.0
GIB Wideline® TE/SE	13	1350							■		8.7
GIB Patch-board®	10	1200 x 590									7.0

GIB WIDELINE®

GIB Wideline® plasterboard is the ideal product for horizontal fixing on 2.7m studs. At 1350mm wide, this means fewer joints and a better finish.

	Board Thickness (mm)	Sheet Width (mm)	2400	2700	3000	3300	3600	4200	4800	6000	Max. kg/m²
GIB Wideline® TE/SE	10	1350					■		■	■	7.0
GIB Wideline® TE/SE	13	1350							■		8.7

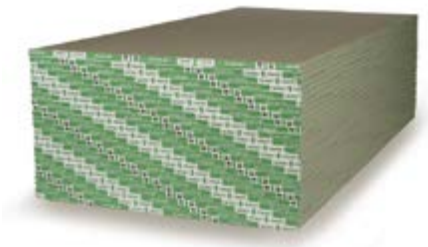
GIB AQUALINE®

GIB Aqualine® is New Zealand's No 1 wet area lining*. This is due to its water resistant core containing special polymers to help prevent steam and moisture penetration.

GIB Aqualine® has a fibreglass core which gives added strength that easily supports the weight of tiles to provide a solid, stable backing. 10mm GIB Aqualine® can be used for ceramic tiles up to 20kg/m² and 13mm GIB Aqualine® can be used for ceramic tiles up to 32kg/m². Over 90% of wall tiles comprise ceramic or porcelain tiles; and most ceramic and porcelain tiles weigh less than 20kg/m².

*based on annual Branz report E635: Wet Area Linings Market Report

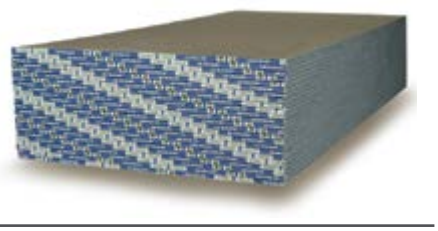
	Board Thickness (mm)	Sheet Width (mm)	2400	2700	3000	3300	3600	4200	4800	6000	Max. kg/m²
TE/TE	10	1200	■	■	■		■				7.8
TE/TE	13	1200	■	■	■		■				10.2
TE/SE	10	1200							■		7.8
TE/SE	10	1350					■				7.8



GIB BRACELINE® / GIB NOISELINE®

Dual board GIB Braceline® / GIB Noiseline® is an effective wall bracing sheet for light timber framed buildings. It is a high performance plasterboard designed specifically for reducing the level of sound transmission between rooms and even between floors in two storey homes due to its high density core. Other benefits of this product are its 30 and 60minute fire ratings when used in fire systems and its increased strength and stiffness gives a more solid wall or ceiling.

	Board Thickness (mm)	Sheet Width (mm)	2400	2700	3000	3300	3600	4200	4800	6000	Max. kg/m²
TE/TE	10	1200	■	■	■		■		■		9.0
TE/TE	13	1200	■	■	■		■				12.4
TE/SE	10	1200							■		9.0
TE/SE	10	1350							■		9.0



GIB ULTRALINE®

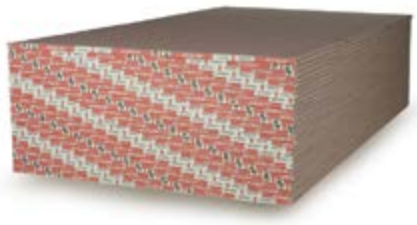
GIB Ultraline®'s special Pearlcoat coated white surface paper has a finer, smoother texture, and a special mix of plaster and fibreglass reinforcing in its core. These features make it more solid and rigid than 10mm GIB® standard plasterboard and result in an enhanced finish quality. GIB Ultraline® is suitable for areas of a home which are seen most often by visitors and those living in house including entranceways, lounges and dining rooms.

	Board Thickness (mm)	Sheet Width (mm)	2400	2700	3000	3300	3600	4200	4800	6000	Max. kg/m²
TE/TE	10	1200					■		■	■	7.2
TE/SE	10	1200							■		7.2
TE/SE	10	1350							■		7.2
TE/TE	13	1200			■		■		■	■	9.1

GIB FYRELINE®

GIB Fyreline® is a high performance fire resistant board with pink face paper. Its high density, modified core resists exposure to fire longer than standard plasterboard. GIB Fyreline® systems provide from 1/2 hour to 4 hours fire protection on standard 600mm timber or steel frames.

	Board Thickness (mm)	Sheet Width (mm)	2400	2700	3000	3300	3600	4200	4800	6000	Max. kg/m²
TE/TE	10	1200	■	■	■		■				7.0
TE/TE	13	1200	■	■	■	■	■				10.7
TE/TE	16	1200	■	■	■						13.7
TE/TE	19	1200	■		■						16.5



GIB TOUGHLINE®

GIB Toughline® is a high performance plasterboard designed specifically for use in areas requiring improved impact resistance. GIB Toughline® is a 13mm thick high density plasterboard. A continuous fiberglass mesh is embedded inside the back face of the board. This gives the board increased impact resistance and reduces repair costs. GIB Toughline® is ideal for high traffic areas such as hallways, classrooms, patient rooms and offices.

	Board Thickness (mm)	Sheet Width (mm)	2400	2700	3000	3300	3600	4200	4800	6000	Max. kg/m²
TE/TE	13	1200	■	■	■		■				11.4

GIB SUPERLINE®

The 5-in-1 GIB® Plasterboard, specially developed for situations that require multi-performance including impact and water resistance.

GIB Superline® is ideal for: wet areas that require a higher level of durability and toughness; high traffic/wear and tear areas that could also benefit from some water resistance; and specifying more broadly across a project to generally improve the level of wall performance.

GIB Superline® plasterboard also features built-in anti-microbial performance- specifically included to help ensure a cleaner, healthier environment in specialised high-hygiene environments such as hospitals.

GIB Superline® can be ordered pre-cut to match specific length or height requirements. The maximum sheet length for a special length is 3000mm and a minimum quantity of 100 sheets applies.

	Board Thickness (mm)	Sheet Width (mm)	2400	2700	3000	3300	3600	4200	4800	6000	Max. kg/ m^2
TE/TE	13	1200									11.4

THE GIB® PERFORMANCE SYSTEM

The New Zealand Building Code (NZBC), architectural, and owner requirements can often dictate multiple functionality for a given space. For example, bathroom walls may need wet area linings as well as provide noise and fire separation between tenancies.

GIB Superline® has been specially developed to deliver wet area performance, noise control, as well as impact, fire and bracing resistance.

TECHNICAL INFORMATION

Table 1: Plasterboard products included in the EPD and Product components

Product	Board weight [kg/m^2]	Plaster	Paper	Gypsum	Starch	Vermiculite	Crenette	Other material
	Calculated value							
GIB® Standard 10mm	6.70	90.8%	6.0%	1.9%	0.5%	0.0%	0.0%	0.9%
GIB® Standard 13mm	8.76	93.2%	4.4%	1.2%	0.5%	0.0%	0.0%	0.7%
GIB Wideline® 10mm	6.70	90.8%	6.0%	1.9%	0.5%	0.0%	0.0%	0.9%
GIB Wideline® 13mm	8.76	93.2%	4.4%	1.2%	0.5%	0.0%	0.0%	0.7%
GIB Braceline® GIB Noiseline® 10mm	9.04	93.3%	4.1%	1.4%	0.4%	0.0%	0.0%	0.8%
GIB Braceline® GIB Noiseline® 13mm	12.45	91.8%	3.0%	0.5%	0.4%	3.7%	0.0%	0.8%
GIB Aqualine® 10mm	7.76	91.0%	4.9%	1.4%	0.5%	0.0%	0.0%	2.3%
GIB Aqualine® 13mm	10.17	88.7%	3.7%	1.2%	0.5%	4.6%	0.0%	1.4%
GIB Ultraline® 10mm	7.20	91.7%	5.3%	1.6%	0.5%	0.0%	0.0%	1.0%
GIB Ultraline® 13mm	9.16	93.4%	4.1%	1.0%	0.5%	0.0%	0.0%	0.9%
GIB Toughline® 13mm	12.45	83.9%	3.0%	0.5%	0.4%	3.9%	7.5%	0.8%
GIB Fyreline® 10mm	7.20	91.9%	5.3%	1.6%	0.5%	0.0%	0.0%	0.7%
GIB Fyreline® 13mm	10.12	89.1%	3.7%	1.1%	0.5%	4.6%	0.0%	1.0%
GIB Fyreline® 16mm	14.11	90.8%	2.7%	0.4%	0.4%	4.3%	0.0%	1.4%
GIB Fyreline® 19mm	16.95	89.3%	2.3%	0.4%	0.4%	6.2%	0.0%	1.4%
GIB Superline® 13mm	12.44	83.5%	3.3%	0.5%	0.0%	3.8%	7.6%	1.3%

This EPD covers the different plasterboard products listed in Table 1. No differentiation is made between different edge finishes (TE/TE, both tapered; TE/SE, 1 tapered, 1 square edge) as production processes are similar.

Table 1 lists the calculated average board weight for the 2015/16 financial year. This calculated value may differ slightly from GIB® specifications. It also lists components included in the product.

None of the products in this EPD contain any materials included on the Candidate List of substances of very high concern under the European REACH Regulation (EC 1907 / 2006) at a concentration greater than 0.1% weight/weight.

All plasterboard products comply with the standard "AS/NZS 2588 Gypsum Plasterboard" and from a quality management perspective with ISO 9001.

Declared Unit

The declared unit is 1m^2 of installed plasterboard according to PCR 2012:01 Construction Products and Construction Services v2.2 (2017-05-30).

As a buyer of GIB® plasterboard cannot choose which factory it comes from, all results are presented as a sales-weighted average from Winstone Wallboards' two production sites (Auckland and Christchurch) in the financial year 1 July 2015 to 30 June 2016.

Industry classification

All covered plasterboard types can be classified as can be seen in the following table.

Table 2: Classification of plasterboard

Classification	Code	Category
UN CPC Ver.2	37530	Articles of plaster or of compositions based on plaster
ANZSIC 2006	C203200	Plaster and gypsum product manufacturing

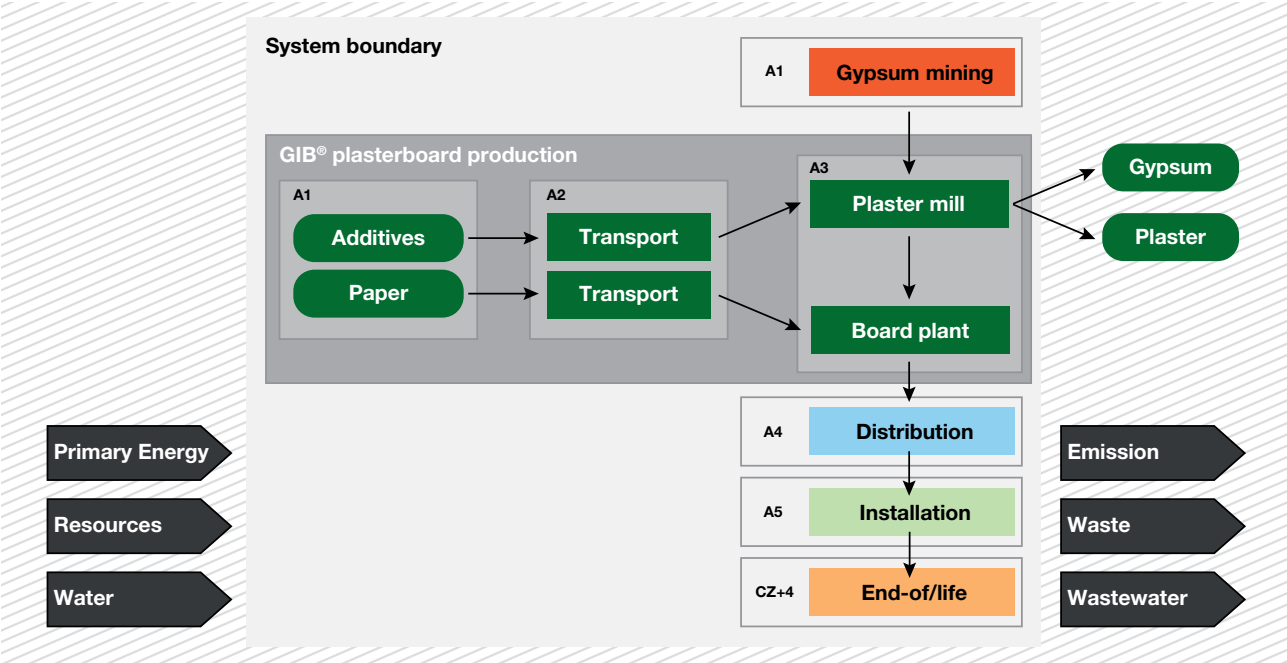
SYSTEM BOUNDARIES

This EPD is of the 'cradle-to-gate' type with options, as shown in Table 3. The options include transport to customer (module A4), installation (module A5) and end-of-life processing (modules C2 and C4). Other life cycle stages (modules B1-B7, C1, C3 and D) are either not relevant or dependent on particular scenarios and best modelled at the building level. The full life cycle of GIB® plasterboard is presented in Figure 1.

Table 3: Modules included in the scope of the EPD (X = included in the EPD; MND = module not declared (such a declaration shall not be regarded as an indicator result of zero))

Product stage			Construction process stage		Use stage							End of life stage				Benefits and loads beyond the system boundary
Raw material supply	Transport of raw materials	Manufacturing	Transport to customer	Construction / Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction / demolition	Transport to waste processing	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	X	MND	X	MND

Figure 1: Life cycle stages of GIB® plasterboard



PRODUCTION STAGE

Plasterboard is manufactured by heating gypsum in a plaster mill (known as calcination) to remove moisture and produce Plaster of Paris. The dry plaster powder is then mixed with water and additives to give each board its desired properties. The mixture is rolled out to a uniform thickness and paper is added to the top and bottom faces. The board is then dried, converting the plaster back to gypsum, and cut to size ready for distribution to the customer.

Module A1 (raw material supply) includes the mining of gypsum in Australia, production of paper in Australia, production of additives, generation and transmission of electricity in New Zealand, and generation of thermal energy from natural gas and LPG.

Module A2 (transportation) includes transport of gypsum via rail to port and shipping in a bulk carrier to Auckland (for the Auckland production site) and Lyttleton (for the Christchurch production site). Transport from port to production plant is via truck. Transport for paper and all other additives is a mixture of truck and sea freight.

Module A3 (manufacturing) includes production of ancillary materials and the composting, recycling and landfill of manufacturing waste.

CONSTRUCTION STAGE

Module A4 (distribution) includes distribution from Winstone Wallboards manufacturing sites in Auckland and Christchurch through its distribution centres. GIB® plasterboard is distributed through builder's merchants and direct delivery to construction sites.

Module A5 (installation) includes the materials used to install the plasterboard (plaster, jointing tape, screws and water) and the production and disposal of offcuts from installation, including a combination of composting and landfill.

END-OF-LIFE STAGE

Module C2 (transport to end-of-life) includes transport of waste plasterboard to landfill after demolition of the wall or building where it was used.

Module C4 (disposal) includes plasterboard end-of-life in landfill.

LIFE CYCLE INVENTORY (LCI) DATA

The Life Cycle Inventory data used in this EPD has been collected and applied according to EN 15804:2012+A1:2013, ISO 14025 and PCR 2012:01 Construction Products and Construction Services v2.2 (2017-05-30) of the International EPD® System.

Primary data were used for all manufacturing operations up to the factory gate, including plaster mill and plasterboard plant. Most of the data represent the financial year 2015/16 (1 July 2015 to 30 June 2016), with some additional data for substances occurring in small volumes dated to 2012/13.

The GaBi Professional software system for life cycle engineering developed by thinkstep AG has been used (thinkstep 2017). All relevant background datasets are taken from GaBi Databases 2017 and documented online (at http://www.gabi-software.com/support/gabi/gabi-database-2017-lci-documentation). Most datasets have a reference year between 2013 and 2016 and all fall within the 10-year limit allowable for generic data under EN 15804.

KEY ASSUMPTIONS

Background data:

The following background data was used for relevant electricity grid mixes, thermal energy:

- NZ: Electricity grid mix, thinkstep, reference year 2013
- AU: Electricity grid mix, thinkstep, reference year 2013 (for operations in Australia e.g. gypsum mining)
- NZ: Thermal energy from natural gas, thinkstep, reference year 2013
- EU-27: Thermal energy from LPG, thinkstep, reference year 2013 (no NZ-specific dataset was available)

Installation (module A5)

During installation, 15% of the plasterboard is assumed to be lost as offcuts. 25% of these offcuts are sent to industrial composting and 75% to landfill. The transport distance to landfill and composting is assumed to be 50 km with capacity utilisation of 50%. The consumables shown in Table 4 are assumed based on GIB® installation guidelines.

Table 4: Consumables assumed for installation

Amount per m^2 of plasterboard	Unit
Jointing compound	0.1924 kg
Jointing tape	0.0108 kg
Screws (8 screws, each 2.6 g)	0.0208 kg
Water	0.1202 L

End of life (module C2 and C4)

100% of plasterboard waste and the waste from installation materials is assumed to be sent to landfill (i.e. worst case). Plasterboard is assumed to be disposed of in a municipal landfill rather than an inert demolition waste landfill as plasterboard is not required to be separated from other waste in New Zealand. The assumed transport distance is 50 km with capacity utilisation of 50%.

Cut off criteria

Environmental impacts relating to personnel, infrastructure, and production equipment not directly consumed in the process are excluded from the system boundary as per the PCR (IEPDS 2017, section 7.5.4). All other reported data was incorporated and modelled using the best available life cycle inventory data. Only pallets for final delivery to customer were excluded from the study due to very high reuse rates.

ALLOCATION

Upstream data: For refinery products, allocation is done by mass and net calorific value. Inventories for electricity and thermal energy generation include allocation by economic value for some by-products (e.g. gypsum, boiler ash and fly ash). Allocation by energy is applied for co-generation of heat and power. For materials and chemicals, the allocation rule most suitable for the product is applied (see thinkstep 2017).

Manufacturing: The share of inputs used per product were based on bills of materials. Allocation of all inputs in the plasterboard plant was done on a mass basis, except for electricity which was done on an area basis (i.e. per square metre of board).

Material recycling (cut-off approach): Any open scrap inputs into manufacturing remain unconnected. The system boundary at end of life is drawn after scrap collection to account for the collection rate, which generates an open scrap output for the product system. The processing and recycling of the scrap is associated with the subsequent product system and is not considered in this study.

Energy recovery from landfill (cut-off approach): The system boundary includes the waste incineration and landfilling processes following the polluter-pays-principle. In cases where materials are sent to landfills, they are linked to an inventory that accounts for waste composition, regional leakage rates, landfill gas capture as well as utilisation rates (flaring vs. power production). No credits for power or heat production are given.

RESULTS OF ASSESSMENT

An introduction to each environmental indicator is provided below. The best-known effect of each indicator is listed to the right of its name.

Note: All indicators represent the potential to cause environmental impacts; they do not predict if specific environmental thresholds, safety margins or risks will be exceeded. The actual impacts on the environment typically depend upon local, regional and/or global conditions.

Global Warming Potential (GWP) -> Climate Change

A measure of greenhouse gas emissions, such as carbon dioxide and methane. These emissions increase absorption of radiation emitted by the earth, intensifying the natural greenhouse effect.

Ozone Depletion Potential (ODP) -> Ozone Hole

A measure of air emissions that contribute to the depletion of the stratospheric ozone layer, causing higher levels of ultraviolet B (UVB) to reach the earth's surface with detrimental effects on humans, animals and plants.

Acidification Potential (AP) -> Acid Rain

A measure of emissions that cause acidifying effects to the environment. Acidification potential is a measure of a molecule's capacity to increase the hydrogen ion (H^+) concentration in the presence of water, thus decreasing the pH value. Potential effects include fish mortality, forest decline and the deterioration of building materials.

Eutrophication Potential (EP) -> Algal Blooms

A measure of nutrient enrichment that may cause an undesirable shift in species composition and elevated biomass production in both aquatic and terrestrial ecosystems. It includes potential impacts of excessively high levels of macronutrients, the most important of which are nitrogen (N) and phosphorus (P).

Photochemical Ozone Creation Potential (POCP) -> Smog

A measure of emissions of precursors that contribute to ground level smog formation (mainly ozone O3), produced by the reaction of volatile organic compounds (VOCs) and carbon monoxide in the presence of nitrogen oxides under the influence of UV light. Ground level ozone may be harmful to human and ecosystem health and may also damage crops.

Abiotic Depletion Potential (ADP) -> Resource Consumption

The consumption of non-renewable resources leads to a decrease in the future availability of the functions supplied by these resources. Depletion of mineral resource elements (ADPE) and non-renewable fossil energy resources (ADPF) are reported separately.

GIB® STANDARD 10MM

		Production	Distribution	Installation	End-of-life	
Environmental impact	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Global warming potential (total)	kg CO_2-eq.	1.08E+00	1.73E-01	5.505E-01	3.14E-02	1.85E+00
Global warming potential (fossil)	kg CO_2-eq.	1.87E+00	1.68E-01	5.090E-01	3.05E-02	5.74E-01
Global warming potential (biogenic)	kg CO_2-eq.	-7.91E-01	4.77E-03	4.15E-02	8.93E-04	1.28E+00
Depletion potential of the stratospheric ozone layer	kg CFC11-eq.	1.27E-11	1.85E-15	3.125E-12	3.03E-16	2.87E-13
Acidification potential of land and water	kg SO_2-eq.	7.28E-03	6.47E-04	1.984E-03	1.35E-04	1.82E-03
Eutrophication potential	kg PO_4^{3-}-eq.	1.10E-03	1.50E-04	3.119E-04	3.22E-05	4.06E-04
Photochemical ozone creation potential	kg C_2H_4-eq.	5.74E-04	-2.55E-04	1.408E-04	-5.70E-05	3.98E-04
Abiotic depletion potential – elements	kg Sb-eq.	9.06E-07	4.52E-09	4.855E-07	4.38E-10	4.35E-08
Abiotic depletion potential – fossil fuels	MJ	2.73E+01	2.34E+00	7.153E+00	4.26E-01	8.21E+00

Resource use	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Renewable primary energy as energy carrier	MJ	1.19E+01	1.88E-01	2.18E+00	7.67E-03	7.93E-01
Renewable primary energy resources as material utilisation	MJ	8.40E+00	0.00E+00	1.323E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources	MJ	2.03E+01	1.88E-01	3.507E+00	7.67E-03	7.93E-01
Non-renewable primary energy as energy carrier	MJ	2.77E+01	2.34E+00	7.29E+00	4.26E-01	8.37E+00
Non-renewable primary energy as material utilisation	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources	MJ	2.77E+01	2.34E+00	7.286E+00	4.26E-01	8.37E+00
Use of secondary material	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m^3	1.98E-02	4.175E-04	4.113E-03	4.14E-06	7.45E-04

Waste categories and output flows	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Hazardous waste disposed	kg	8.41E-07	1.97E-10	1.553E-07	2.94E-11	1.49E-08
Non-hazardous waste disposed	kg	3.67E-02	4.23E-05	7.178E-01	2.13E-06	5.65E+00
Radioactive waste disposed	kg	1.23E-04	5.13E-08	5.258E-05	6.94E-09	6.35E-05
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	1.50E-01	0.00E+00	3.220E-01	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported electrical energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported thermal energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

RELATIVE CONTRIBUTIONS		Production	Distribution	Installation	End-of-life	
Environmental impact		**A1-A3**	**A4**	**A5**	**C2**	**C4**
Global warming potential (total)		29.3%	4.7%	14.9%	0.9%	50.2%
Global warming potential (fossil)		59.3%	5.3%	16.2%	1.0%	18.2%
Global warming potential (biogenic)		-148.4%	0.9%	7.8%	0.2%	239.6%
Depletion potential of the stratospheric ozone layer		78.8%	0.0%	19.4%	0.0%	1.8%
Acidification potential of land and water		61.3%	5.5%	16.7%	1.1%	15.3%
Eutrophication potential		55.0%	7.5%	15.6%	1.6%	20.3%
Photochemical ozone creation potential		71.7%	-31.9%	17.6%	-7.1%	49.7%
Abiotic depletion potential – elements		62.9%	0.3%	33.7%	0.0%	3.0%
Abiotic depletion potential – fossil fuels		60.1%	5.1%	15.7%	0.9%	18.1%

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		Production	Distribution	Installation	End-of-life	
Environmental impact	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Global warming potential (total)	kg CO_2-eq.	1.57E+00	2.26E-01	6.694E-01	4.07E-02	2.02E+00
Global warming potential (fossil)	kg CO_2-eq.	2.36E+00	2.20E-01	6.273E-01	3.95E-02	7.39E-01
Global warming potential (biogenic)	kg CO_2-eq.	-7.92E-01	6.24E-03	4.20E-02	1.15E-03	1.28E+00
Depletion potential of the stratospheric ozone layer	kg CFC11-eq.	1.36E-11	2.42E-15	3.306E-12	3.92E-16	3.69E-13
Acidification potential of land and water	kg SO_2-eq.	9.23E-03	8.46E-04	2.430E-03	1.75E-04	2.31E-03
Eutrophication potential	kg PO_4^{3-}-eq.	1.37E-03	1.96E-04	3.769E-04	4.17E-05	4.71E-04
Photochemical ozone creation potential	kg C_2H_4-eq.	7.49E-04	-3.34E-04	1.633E-04	-7.37E-05	4.43E-04
Abiotic depletion potential – elements	kg Sb-eq.	1.15E-06	5.92E-09	5.299E-07	5.66E-10	5.60E-08
Abiotic depletion potential – fossil fuels	MJ	3.44E+01	3.06E+00	8.847E+00	5.52E-01	1.06E+01

Resource use	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Renewable primary energy as energy carrier	MJ	1.25E+01	2.46E-01	2.32E+00	9.92E-03	1.02E+00
Renewable primary energy resources as material utilisation	MJ	8.40E+00	0.00E+00	1.323E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources	MJ	2.08E+01	2.46E-01	3.647E+00	9.92E-03	1.02E+00
Non-renewable primary energy as energy carrier	MJ	3.48E+01	3.06E+00	8.99E+00	5.52E-01	1.08E+01
Non-renewable primary energy as material utilisation	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources	MJ	3.48E+01	3.06E+00	8.990E+00	5.52E-01	1.08E+01
Use of secondary material	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m^3	2.35E-02	5.464E-04	4.824E-03	5.35E-06	9.12E-04

Waste categories and output flows	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Hazardous waste disposed	kg	1.06E-06	2.58E-10	1.941E-07	3.80E-11	1.92E-08
Non-hazardous waste disposed	kg	4.70E-02	5.53E-05	9.512E-01	2.75E-06	7.40E+00
Radioactive waste disposed	kg	1.31E-04	6.71E-08	5.634E-05	8.98E-09	8.16E-05
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	1.99E-01	0.00E+00	4.218E-01	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported electrical energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported thermal energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

RELATIVE CONTRIBUTIONS		Production	Distribution	Installation	End-of-life	
Environmental impact		**A1-A3**	**A4**	**A5**	**C2**	**C4**
Global warming potential (total)		34.7%	5.0%	14.8%	0.9%	44.6%
Global warming potential (fossil)		59.2%	5.5%	15.7%	1.0%	18.5%
Global warming potential (biogenic)		-147.6%	1.2%	7.8%	0.2%	238.3%
Depletion potential of the stratospheric ozone layer		78.8%	0.0%	19.1%	0.0%	2.1%
Acidification potential of land and water		61.6%	5.6%	16.2%	1.2%	15.4%
Eutrophication potential		55.9%	8.0%	15.3%	1.7%	19.2%
Photochemical ozone creation potential		79.1%	-35.3%	17.3%	-7.8%	46.8%
Abiotic depletion potential – elements		65.9%	0.3%	30.5%	0.0%	3.2%
Abiotic depletion potential – fossil fuels		59.9%	5.3%	15.4%	1.0%	18.4%

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		Production	Distribution	Installation	End-of-life	
Environmental impact	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Global warming potential (total)	kg CO_2-eq.	1.08E+00	1.73E-01	5.508E-01	3.14E-02	1.85E+00
Global warming potential (fossil)	kg CO_2-eq.	1.87E+00	1.68E-01	5.093E-01	3.05E-02	5.74E-01
Global warming potential (biogenic)	kg CO_2-eq.	-7.91E-01	4.77E-03	4.15E-02	8.93E-04	1.28E+00
Depletion potential of the stratospheric ozone layer	kg CFC11-eq.	1.27E-11	1.85E-15	3.125E-12	3.03E-16	2.87E-13
Acidification potential of land and water	kg SO_2-eq.	7.28E-03	6.47E-04	1.985E-03	1.35E-04	1.82E-03
Eutrophication potential	kg PO_4^{3-}-eq.	1.10E-03	1.50E-04	3.118E-04	3.22E-05	4.06E-04
Photochemical ozone creation potential	kg C_2H_4-eq.	5.75E-04	-2.55E-04	1.409E-04	-5.70E-05	3.98E-04
Abiotic depletion potential – elements	kg Sb-eq.	9.06E-07	4.52E-09	4.855E-07	4.38E-10	4.35E-08
Abiotic depletion potential – fossil fuels	MJ	2.74E+01	2.34E+00	7.155E+00	4.26E-01	8.21E+00

Resource use	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Renewable primary energy as energy carrier	MJ	1.19E+01	1.88E-01	2.18E+00	7.67E-03	7.93E-01
Renewable primary energy resources as material utilisation	MJ	8.40E+00	0.00E+00	1.323E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources	MJ	2.03E+01	1.88E-01	3.507E+00	7.67E-03	7.93E-01
Non-renewable primary energy as energy carrier	MJ	2.77E+01	2.34E+00	7.29E+00	4.26E-01	8.37E+00
Non-renewable primary energy as material utilisation	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources	MJ	2.77E+01	2.34E+00	7.288E+00	4.26E-01	8.37E+00
Use of secondary material	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m^3	1.98E-02	4.175E-04	4.114E-03	4.14E-06	7.45E-04

Waste categories and output flows	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Hazardous waste disposed	kg	8.41E-07	1.97E-10	1.553E-07	2.94E-11	1.49E-08
Non-hazardous waste disposed	kg	3.68E-02	4.23E-05	7.178E-01	2.13E-06	5.65E+00
Radioactive waste disposed	kg	1.23E-04	5.13E-08	5.260E-05	6.94E-09	6.35E-05
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	1.50E-01	0.00E+00	3.220E-01	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported electrical energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported thermal energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

RELATIVE CONTRIBUTIONS		Production	Distribution	Installation	End-of-life	
Environmental impact		**A1-A3**	**A4**	**A5**	**C2**	**C4**
Global warming potential (total)		29.3%	4.7%	14.9%	0.9%	50.2%
Global warming potential (fossil)		59.3%	5.3%	16.2%	1.0%	18.2%
Global warming potential (biogenic)		-148.4%	0.9%	7.8%	0.2%	239.6%
Depletion potential of the stratospheric ozone layer		78.8%	0.0%	19.4%	0.0%	1.8%
Acidification potential of land and water		61.4%	5.5%	16.7%	1.1%	15.3%
Eutrophication potential		55.0%	7.5%	15.6%	1.6%	20.3%
Photochemical ozone creation potential		71.7%	-31.9%	17.6%	-7.1%	49.7%
Abiotic depletion potential – elements		62.9%	0.3%	33.7%	0.0%	3.0%
Abiotic depletion potential – fossil fuels		60.1%	5.1%	15.7%	0.9%	18.1%

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		Production	Distribution	Installation	End-of-life	
Environmental impact	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Global warming potential (total)	kg CO_2-eq.	1.62E+00	2.26E-01	6.774E-01	4.07E-02	2.02E+00
Global warming potential (fossil)	kg CO_2-eq.	2.41E+00	2.20E-01	6.353E-01	3.95E-02	7.39E-01
Global warming potential (biogenic)	kg CO_2-eq.	-7.92E-01	6.24E-03	4.21E-02	1.15E-03	1.28E+00
Depletion potential of the stratospheric ozone layer	kg CFC11-eq.	1.37E-11	2.42E-15	3.318E-12	3.92E-16	3.69E-13
Acidification potential of land and water	kg SO_2-eq.	9.34E-03	8.46E-04	2.449E-03	1.75E-04	2.31E-03
Eutrophication potential	kg PO_4^{3-}-eq.	1.37E-03	1.96E-04	3.758E-04	4.17E-05	4.71E-04
Photochemical ozone creation potential	kg C_2H_4-eq.	7.70E-04	-3.34E-04	1.671E-04	-7.37E-05	4.43E-04
Abiotic depletion potential – elements	kg Sb-eq.	1.15E-06	5.92E-09	5.305E-07	5.66E-10	5.60E-08
Abiotic depletion potential – fossil fuels	MJ	3.48E+01	3.06E+00	8.914E+00	5.52E-01	1.06E+01

Resource use	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Renewable primary energy as energy carrier	MJ	1.25E+01	2.46E-01	2.33E+00	9.92E-03	1.02E+00
Renewable primary energy resources as material utilisation	MJ	8.40E+00	0.00E+00	1.324E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources	MJ	2.09E+01	2.46E-01	3.656E+00	9.92E-03	1.02E+00
Non-renewable primary energy as energy carrier	MJ	3.52E+01	3.06E+00	9.06E+00	5.52E-01	1.08E+01
Non-renewable primary energy as material utilisation	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources	MJ	3.52E+01	3.06E+00	9.058E+00	5.52E-01	1.08E+01
Use of secondary material	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m^3	2.37E-02	5.464E-04	4.845E-03	5.35E-06	9.12E-04

Waste categories and output flows	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Hazardous waste disposed	kg	1.06E-06	2.58E-10	1.941E-07	3.80E-11	1.92E-08
Non-hazardous waste disposed	kg	4.96E-02	5.53E-05	9.517E-01	2.75E-06	7.40E+00
Radioactive waste disposed	kg	1.34E-04	6.71E-08	5.693E-05	8.98E-09	8.16E-05
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	2.02E-01	0.00E+00	4.224E-01	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported electrical energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported thermal energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

RELATIVE CONTRIBUTIONS		Production	Distribution	Installation	End-of-life	
Environmental impact		**A1-A3**	**A4**	**A5**	**C2**	**C4**
Global warming potential (total)		35.3%	4.9%	14.8%	0.9%	44.1%
Global warming potential (fossil)		59.6%	5.4%	15.7%	1.0%	18.3%
Global warming potential (biogenic)		-147.4%	1.2%	7.8%	0.2%	238.2%
Depletion potential of the stratospheric ozone layer		78.8%	0.0%	19.1%	0.0%	2.1%
Acidification potential of land and water		61.7%	5.6%	16.2%	1.2%	15.3%
Eutrophication potential		55.8%	8.0%	15.3%	1.7%	19.2%
Photochemical ozone creation potential		79.2%	-34.4%	17.2%	-7.6%	45.6%
Abiotic depletion potential – elements		66.0%	0.3%	30.4%	0.0%	3.2%
Abiotic depletion potential – fossil fuels		60.1%	5.3%	15.4%	1.0%	18.2%

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		Production	Distribution	Installation	End-of-life	
Environmental impact	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Global warming potential (total)	kg CO_2-eq.	1.40E+00	2.00E-01	6.028E-01	3.62E-02	1.79E+00
Global warming potential (fossil)	kg CO_2-eq.	2.15E+00	1.95E-01	5.641E-01	3.52E-02	5.74E-01
Global warming potential (biogenic)	kg CO_2-eq.	-7.51E-01	5.53E-03	3.88E-02	1.03E-03	1.21E+00
Depletion potential of the stratospheric ozone layer	kg CFC11-eq.	1.26E-11	2.14E-15	3.121E-12	3.49E-16	2.86E-13
Acidification potential of land and water	kg SO_2-eq.	8.58E-03	7.49E-04	2.235E-03	1.56E-04	1.83E-03
Eutrophication potential	kg PO_4^{3-}-eq.	1.27E-03	1.73E-04	3.448E-04	3.71E-05	3.99E-04
Photochemical ozone creation potential	kg C_2H_4-eq.	6.91E-04	-2.96E-04	1.529E-04	-6.56E-05	3.88E-04
Abiotic depletion potential – elements	kg Sb-eq.	2.00E-06	5.24E-09	6.782E-07	5.04E-10	4.33E-08
Abiotic depletion potential – fossil fuels	MJ	3.16E+01	2.71E+00	7.979E+00	4.91E-01	8.21E+00

Resource use	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Renewable primary energy as energy carrier	MJ	1.19E+01	2.18E-01	2.21E+00	8.83E-03	7.89E-01
Renewable primary energy resources as material utilisation	MJ	7.97E+00	0.00E+00	1.267E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources	MJ	1.99E+01	2.18E-01	3.478E+00	8.83E-03	7.89E-01
Non-renewable primary energy as energy carrier	MJ	3.20E+01	2.71E+00	8.13E+00	4.91E-01	8.37E+00
Non-renewable primary energy as material utilisation	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources	MJ	3.20E+01	2.71E+00	8.126E+00	4.91E-01	8.37E+00
Use of secondary material	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m^3	2.13E-02	4.838E-04	4.385E-03	4.76E-06	7.35E-04

Waste categories and output flows	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Hazardous waste disposed	kg	1.15E-06	2.28E-10	2.092E-07	3.38E-11	1.48E-08
Non-hazardous waste disposed	kg	4.69E-02	4.90E-05	8.426E-01	2.45E-06	6.58E+00
Radioactive waste disposed	kg	1.55E-04	5.94E-08	5.815E-05	7.99E-09	6.31E-05
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	1.73E-01	0.00E+00	3.728E-01	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported electrical energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported thermal energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

RELATIVE CONTRIBUTIONS		Production	Distribution	Installation	End-of-life	
Environmental impact		**A1-A3**	**A4**	**A5**	**C2**	**C4**
Global warming potential (total)		34.8%	5.0%	15.0%	0.9%	44.4%
Global warming potential (fossil)		61.1%	5.5%	16.0%	1.0%	16.3%
Global warming potential (biogenic)		-147.5%	1.1%	7.6%	0.2%	238.6%
Depletion potential of the stratospheric ozone layer		78.8%	0.0%	19.4%	0.0%	1.8%
Acidification potential of land and water		63.3%	5.5%	16.5%	1.2%	13.5%
Eutrophication potential		57.1%	7.8%	15.5%	1.7%	17.9%
Photochemical ozone creation potential		79.4%	-34.0%	17.6%	-7.5%	44.6%
Abiotic depletion potential – elements		73.3%	0.2%	24.9%	0.0%	1.6%
Abiotic depletion potential – fossil fuels		62.0%	5.3%	15.6%	1.0%	16.1%

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		Production	Distribution	Installation	End-of-life	
Environmental impact	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Global warming potential (total)	kg CO_2-eq.	2.14E+00	2.62E-01	7.712E-01	4.69E-02	1.98E+00
Global warming potential (fossil)	kg CO_2-eq.	2.91E+00	2.55E-01	7.305E-01	4.56E-02	7.39E-01
Global warming potential (biogenic)	kg CO_2-eq.	-7.70E-01	7.24E-03	4.07E-02	1.33E-03	1.25E+00
Depletion potential of the stratospheric ozone layer	kg CFC11-eq.	1.43E-11	2.81E-15	3.420E-12	4.52E-16	3.68E-13
Acidification potential of land and water	kg SO_2-eq.	1.42E-02	9.82E-04	3.333E-03	2.02E-04	2.34E-03
Eutrophication potential	kg PO_4^{3-}-eq.	1.96E-03	2.27E-04	4.858E-04	4.81E-05	4.70E-04
Photochemical ozone creation potential	kg C_2H_4-eq.	1.09E-03	-3.88E-04	2.134E-04	-8.51E-05	4.39E-04
Abiotic depletion potential – elements	kg Sb-eq.	2.43E-06	6.86E-09	7.564E-07	6.54E-10	5.57E-08
Abiotic depletion potential – fossil fuels	MJ	4.21E+01	3.55E+00	1.030E+01	6.36E-01	1.06E+01

Resource use	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Renewable primary energy as energy carrier	MJ	1.35E+01	2.85E-01	2.53E+00	1.14E-02	1.02E+00
Renewable primary energy resources as material utilisation	MJ	8.17E+00	0.00E+00	1.293E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources	MJ	2.17E+01	2.85E-01	3.824E+00	1.14E-02	1.02E+00
Non-renewable primary energy as energy carrier	MJ	4.27E+01	3.55E+00	1.05E+01	6.36E-01	1.08E+01
Non-renewable primary energy as material utilisation	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources	MJ	4.27E+01	3.55E+00	1.049E+01	6.36E-01	1.08E+01
Use of secondary material	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m^3	2.60E-02	6.339E-04	5.277E-03	6.18E-06	9.05E-04

Waste categories and output flows	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Hazardous waste disposed	kg	1.24E-06	2.99E-10	2.255E-07	4.39E-11	1.91E-08
Non-hazardous waste disposed	kg	6.37E-02	6.42E-05	1.123E+00	3.18E-06	8.68E+00
Radioactive waste disposed	kg	2.39E-04	7.78E-08	7.546E-05	1.04E-08	8.12E-05
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	2.29E-01	0.00E+00	4.891E-01	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported electrical energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported thermal energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

RELATIVE CONTRIBUTIONS		Production	Distribution	Installation	End-of-life	
Environmental impact		**A1-A3**	**A4**	**A5**	**C2**	**C4**
Global warming potential (total)		41.1%	5.0%	14.8%	0.9%	38.1%
Global warming potential (fossil)		62.2%	5.4%	15.6%	1.0%	15.8%
Global warming potential (biogenic)		-146.7%	1.4%	7.8%	0.3%	237.3%
Depletion potential of the stratospheric ozone layer		79.0%	0.0%	18.9%	0.0%	2.0%
Acidification potential of land and water		67.4%	4.7%	15.8%	1.0%	11.1%
Eutrophication potential		61.4%	7.1%	15.2%	1.5%	14.7%
Photochemical ozone creation potential		85.8%	-30.6%	16.8%	-6.7%	34.6%
Abiotic depletion potential – elements		74.8%	0.2%	23.3%	0.0%	1.7%
Abiotic depletion potential – fossil fuels		62.7%	5.3%	15.3%	0.9%	15.7%

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		Production	Distribution	Installation	End-of-life	
Environmental impact	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Global warming potential (total)	kg CO_2-eq.	1.62E+00	2.33E-01	6.458E-01	4.19E-02	1.77E+00
Global warming potential (fossil)	kg CO_2-eq.	2.36E+00	2.27E-01	6.078E-01	4.07E-02	5.75E-01
Global warming potential (biogenic)	kg CO_2-eq.	-7.40E-01	6.44E-03	3.80E-02	1.19E-03	1.20E+00
Depletion potential of the stratospheric ozone layer	kg CFC11-eq.	1.23E-11	2.50E-15	3.054E-12	4.04E-16	2.85E-13
Acidification potential of land and water	kg SO_2-eq.	9.51E-03	8.73E-04	2.426E-03	1.81E-04	1.86E-03
Eutrophication potential	kg PO_4^{3-}-eq.	1.39E-03	2.02E-04	3.721E-04	4.29E-05	4.00E-04
Photochemical ozone creation potential	kg C_2H_4-eq.	7.51E-04	-3.45E-04	1.548E-04	-7.60E-05	3.87E-04
Abiotic depletion potential – elements	kg Sb-eq.	1.18E-06	6.10E-09	5.344E-07	5.83E-10	4.31E-08
Abiotic depletion potential – fossil fuels	MJ	3.47E+01	3.15E+00	8.615E+00	5.68E-01	8.23E+00

Resource use	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Renewable primary energy as energy carrier	MJ	1.20E+01	2.54E-01	2.24E+00	1.02E-02	7.86E-01
Renewable primary energy resources as material utilisation	MJ	7.85E+00	0.00E+00	1.250E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources	MJ	1.98E+01	2.54E-01	3.487E+00	1.02E-02	7.86E-01
Non-renewable primary energy as energy carrier	MJ	3.51E+01	3.15E+00	8.75E+00	5.68E-01	8.39E+00
Non-renewable primary energy as material utilisation	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources	MJ	3.51E+01	3.15E+00	8.755E+00	5.68E-01	8.39E+00
Use of secondary material	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m^3	2.26E-02	5.636E-04	4.639E-03	5.51E-06	7.30E-04

Waste categories and output flows	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Hazardous waste disposed	kg	1.08E-06	2.66E-10	1.976E-07	3.92E-11	1.48E-08
Non-hazardous waste disposed	kg	4.79E-02	5.71E-05	9.842E-01	2.84E-06	7.65E+00
Radioactive waste disposed	kg	1.38E-04	6.92E-08	5.524E-05	9.25E-09	6.28E-05
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	2.01E-01	0.00E+00	4.343E-01	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported electrical energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported thermal energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

RELATIVE CONTRIBUTIONS		Production	Distribution	Installation	End-of-life	
Environmental impact		**A1-A3**	**A4**	**A5**	**C2**	**C4**
Global warming potential (total)		37.6%	5.4%	15.0%	1.0%	41.0%
Global warming potential (fossil)		62.0%	5.9%	15.9%	1.1%	15.1%
Global warming potential (biogenic)		-147.3%	1.3%	7.6%	0.2%	238.2%
Depletion potential of the stratospheric ozone layer		78.6%	0.0%	19.6%	0.0%	1.8%
Acidification potential of land and water		64.0%	5.9%	16.3%	1.2%	12.5%
Eutrophication potential		57.8%	8.4%	15.4%	1.8%	16.6%
Photochemical ozone creation potential		86.1%	-39.5%	17.7%	-8.7%	44.4%
Abiotic depletion potential – elements		66.9%	0.3%	30.3%	0.0%	2.4%
Abiotic depletion potential – fossil fuels		62.8%	5.7%	15.6%	1.0%	14.9%

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		Production	Distribution	Installation	End-of-life	
Environmental impact	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Global warming potential (total)	kg CO_2-eq.	2.57E+00	3.21E-01	8.564E-01	5.71E-02	1.97E+00
Global warming potential (fossil)	kg CO_2-eq.	3.33E+00	3.12E-01	8.163E-01	5.55E-02	7.42E-01
Global warming potential (biogenic)	kg CO_2-eq.	-7.58E-01	8.87E-03	4.01E-02	1.62E-03	1.23E+00
Depletion potential of the stratospheric ozone layer	kg CFC11-eq.	1.39E-11	3.44E-15	3.351E-12	5.50E-16	3.66E-13
Acidification potential of land and water	kg SO_2-eq.	1.58E-02	1.20E-03	3.662E-03	2.46E-04	2.39E-03
Eutrophication potential	kg PO_4^{3-}-eq.	2.19E-03	2.78E-04	5.364E-04	5.86E-05	4.76E-04
Photochemical ozone creation potential	kg C_2H_4-eq.	1.21E-03	-4.75E-04	2.191E-04	-1.04E-04	4.41E-04
Abiotic depletion potential – elements	kg Sb-eq.	1.62E-06	8.40E-09	6.135E-07	7.96E-10	5.55E-08
Abiotic depletion potential – fossil fuels	MJ	4.84E+01	4.34E+00	1.157E+01	7.75E-01	1.06E+01

Resource use	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Renewable primary energy as energy carrier	MJ	1.38E+01	3.49E-01	2.59E+00	1.39E-02	1.01E+00
Renewable primary energy resources as material utilisation	MJ	8.04E+00	0.00E+00	1.276E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources	MJ	2.18E+01	3.49E-01	3.869E+00	1.39E-02	1.01E+00
Non-renewable primary energy as energy carrier	MJ	4.90E+01	4.34E+00	1.18E+01	7.75E-01	1.08E+01
Non-renewable primary energy as material utilisation	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources	MJ	4.90E+01	4.34E+00	1.175E+01	7.75E-01	1.08E+01
Use of secondary material	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m^3	2.86E-02	7.762E-04	5.747E-03	7.52E-06	8.99E-04

Waste categories and output flows	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Hazardous waste disposed	kg	1.47E-06	3.67E-10	2.671E-07	5.34E-11	1.90E-08
Non-hazardous waste disposed	kg	6.56E-02	7.86E-05	1.378E+00	3.87E-06	1.06E+01
Radioactive waste disposed	kg	2.11E-04	9.53E-08	7.052E-05	1.26E-08	8.07E-05
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	2.80E-01	0.00E+00	5.988E-01	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported electrical energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported thermal energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

RELATIVE CONTRIBUTIONS		Production	Distribution	Installation	End-of-life	
Environmental impact		**A1-A3**	**A4**	**A5**	**C2**	**C4**
Global warming potential (total)		44.5%	5.6%	14.8%	1.0%	34.1%
Global warming potential (fossil)		63.4%	5.9%	15.5%	1.1%	14.1%
Global warming potential (biogenic)		-146.0%	1.7%	7.7%	0.3%	236.3%
Depletion potential of the stratospheric ozone layer		78.9%	0.0%	19.0%	0.0%	2.1%
Acidification potential of land and water		67.8%	5.2%	15.7%	1.1%	10.2%
Eutrophication potential		61.9%	7.9%	15.2%	1.7%	13.4%
Photochemical ozone creation potential		93.7%	-36.8%	17.0%	-8.0%	34.2%
Abiotic depletion potential – elements		70.5%	0.4%	26.7%	0.0%	2.4%
Abiotic depletion potential – fossil fuels		63.9%	5.7%	15.3%	1.0%	14.0%

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		Production	Distribution	Installation	End-of-life	
Environmental impact	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Global warming potential (total)	kg CO_2-eq.	1.23E+00	1.86E-01	5.708E-01	3.37E-02	1.79E+00
Global warming potential (fossil)	kg CO_2-eq.	1.98E+00	1.81E-01	5.320E-01	3.27E-02	5.74E-01
Global warming potential (biogenic)	kg CO_2-eq.	-7.54E-01	5.13E-03	3.88E-02	9.57E-04	1.22E+00
Depletion potential of the stratospheric ozone layer	kg CFC11-eq.	1.22E-11	1.99E-15	3.051E-12	3.25E-16	2.87E-13
Acidification potential of land and water	kg SO_2-eq.	7.84E-03	6.96E-04	2.093E-03	1.45E-04	1.82E-03
Eutrophication potential	kg PO_4^{3-}-eq.	1.16E-03	1.61E-04	3.239E-04	3.45E-05	3.99E-04
Photochemical ozone creation potential	kg C_2H_4-eq.	6.19E-04	-2.75E-04	1.440E-04	-6.11E-05	3.88E-04
Abiotic depletion potential – elements	kg Sb-eq.	9.67E-07	4.86E-09	4.964E-07	4.69E-10	4.34E-08
Abiotic depletion potential – fossil fuels	MJ	2.91E+01	2.51E+00	7.495E+00	4.57E-01	8.22E+00

Resource use	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Renewable primary energy as energy carrier	MJ	1.17E+01	2.02E-01	2.16E+00	8.22E-03	7.91E-01
Renewable primary energy resources as material utilisation	MJ	8.01E+00	0.00E+00	1.271E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources	MJ	1.97E+01	2.02E-01	3.435E+00	8.22E-03	7.91E-01
Non-renewable primary energy as energy carrier	MJ	2.94E+01	2.51E+00	7.63E+00	4.57E-01	8.38E+00
Non-renewable primary energy as material utilisation	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources	MJ	2.94E+01	2.51E+00	7.631E+00	4.57E-01	8.38E+00
Use of secondary material	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m^3	2.03E-02	4.490E-04	4.208E-03	4.43E-06	7.37E-04

Waste categories and output flows	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Hazardous waste disposed	kg	8.88E-07	2.12E-10	1.637E-07	3.15E-11	1.49E-08
Non-hazardous waste disposed	kg	4.02E-02	4.55E-05	7.769E-01	2.28E-06	6.10E+00
Radioactive waste disposed	kg	1.29E-04	5.51E-08	5.357E-05	7.44E-09	6.33E-05
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	1.62E-01	0.00E+00	3.463E-01	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported electrical energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported thermal energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

RELATIVE CONTRIBUTIONS		Production	Distribution	Installation	End-of-life	
Environmental impact		**A1-A3**	**A4**	**A5**	**C2**	**C4**
Global warming potential (total)		32.3%	4.9%	15.0%	0.9%	47.0%
Global warming potential (fossil)		60.1%	5.5%	16.1%	1.0%	17.4%
Global warming potential (biogenic)		-148.0%	1.0%	7.6%	0.2%	239.1%
Depletion potential of the stratospheric ozone layer		78.6%	0.0%	19.6%	0.0%	1.8%
Acidification potential of land and water		62.2%	5.5%	16.6%	1.2%	14.5%
Eutrophication potential		55.9%	7.7%	15.6%	1.7%	19.2%
Photochemical ozone creation potential		75.9%	-33.7%	17.7%	-7.5%	47.6%
Abiotic depletion potential – elements		64.0%	0.3%	32.8%	0.0%	2.9%
Abiotic depletion potential – fossil fuels		60.9%	5.3%	15.7%	1.0%	17.2%

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		Production	Distribution	Installation	End-of-life	
Environmental impact	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Global warming potential (total)	kg CO_2-eq.	1.61E+00	2.36E-01	6.747E-01	4.24E-02	1.99E+00
Global warming potential (fossil)	kg CO_2-eq.	2.39E+00	2.30E-01	6.340E-01	4.12E-02	7.39E-01
Global warming potential (biogenic)	kg CO_2-eq.	-7.75E-01	6.52E-03	4.07E-02	1.20E-03	1.25E+00
Depletion potential of the stratospheric ozone layer	kg CFC11-eq.	1.34E-11	2.53E-15	3.266E-12	4.09E-16	3.69E-13
Acidification potential of land and water	kg SO_2-eq.	9.69E-03	8.84E-04	2.519E-03	1.83E-04	2.32E-03
Eutrophication potential	kg PO_4^{3-}-eq.	1.46E-03	2.05E-04	3.924E-04	4.35E-05	4.68E-04
Photochemical ozone creation potential	kg C_2H_4-eq.	7.52E-04	-3.49E-04	1.607E-04	-7.69E-05	4.39E-04
Abiotic depletion potential – elements	kg Sb-eq.	1.20E-06	6.18E-09	5.398E-07	5.91E-10	5.59E-08
Abiotic depletion potential – fossil fuels	MJ	3.54E+01	3.19E+00	9.053E+00	5.75E-01	1.06E+01

Resource use	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Renewable primary energy as energy carrier	MJ	1.24E+01	2.57E-01	2.32E+00	1.03E-02	1.02E+00
Renewable primary energy resources as material utilisation	MJ	8.21E+00	0.00E+00	1.298E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources	MJ	2.06E+01	2.57E-01	3.614E+00	1.03E-02	1.02E+00
Non-renewable primary energy as energy carrier	MJ	3.58E+01	3.19E+00	9.20E+00	5.75E-01	1.08E+01
Non-renewable primary energy as material utilisation	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources	MJ	3.58E+01	3.19E+00	9.201E+00	5.75E-01	1.08E+01
Use of secondary material	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m^3	2.39E-02	5.709E-04	4.886E-03	5.58E-06	9.08E-04

Waste categories and output flows	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Hazardous waste disposed	kg	1.10E-06	2.70E-10	2.009E-07	3.96E-11	1.92E-08
Non-hazardous waste disposed	kg	4.72E-02	5.78E-05	9.965E-01	2.87E-06	7.75E+00
Radioactive waste disposed	kg	1.43E-04	7.01E-08	5.854E-05	9.37E-09	8.15E-05
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	2.01E-01	0.00E+00	4.395E-01	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported electrical energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported thermal energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

RELATIVE CONTRIBUTIONS		Production	Distribution	Installation	End-of-life	
Environmental impact		**A1-A3**	**A4**	**A5**	**C2**	**C4**
Global warming potential (total)		35.4%	5.2%	14.8%	0.9%	43.7%
Global warming potential (fossil)		59.2%	5.7%	15.7%	1.0%	18.3%
Global warming potential (biogenic)		-147.6%	1.2%	7.7%	0.2%	238.3%
Depletion potential of the stratospheric ozone layer		78.7%	0.0%	19.2%	0.0%	2.2%
Acidification potential of land and water		62.1%	5.7%	16.2%	1.2%	14.9%
Eutrophication potential		56.8%	8.0%	15.3%	1.7%	18.3%
Photochemical ozone creation potential		81.3%	-37.8%	17.4%	-8.3%	47.4%
Abiotic depletion potential – elements		66.6%	0.3%	29.9%	0.0%	3.1%
Abiotic depletion potential – fossil fuels		60.2%	5.4%	15.4%	1.0%	18.0%

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		Production	Distribution	Installation	End-of-life	
Environmental impact	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Global warming potential (total)	kg CO_2-eq.	1.19E+00	1.86E-01	5.631E-01	3.37E-02	1.79E+00
Global warming potential (fossil)	kg CO_2-eq.	1.94E+00	1.80E-01	5.242E-01	3.27E-02	5.74E-01
Global warming potential (biogenic)	kg CO_2-eq.	-7.55E-01	5.12E-03	3.89E-02	9.56E-04	1.22E+00
Depletion potential of the stratospheric ozone layer	kg CFC11-eq.	1.23E-11	1.99E-15	3.053E-12	3.24E-16	2.87E-13
Acidification potential of land and water	kg SO_2-eq.	7.67E-03	6.95E-04	2.064E-03	1.45E-04	1.82E-03
Eutrophication potential	kg PO_4^{3-}-eq.	1.16E-03	1.61E-04	3.227E-04	3.45E-05	3.99E-04
Photochemical ozone creation potential	kg C_2H_4-eq.	6.02E-04	-2.74E-04	1.411E-04	-6.11E-05	3.88E-04
Abiotic depletion potential – elements	kg Sb-eq.	9.61E-07	4.86E-09	4.954E-07	4.69E-10	4.34E-08
Abiotic depletion potential – fossil fuels	MJ	2.83E+01	2.51E+00	7.364E+00	4.57E-01	8.21E+00

Resource use	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Renewable primary energy as energy carrier	MJ	1.16E+01	2.02E-01	2.16E+00	8.21E-03	7.91E-01
Renewable primary energy resources as material utilisation	MJ	8.02E+00	0.00E+00	1.273E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources	MJ	1.96E+01	2.02E-01	3.430E+00	8.21E-03	7.91E-01
Non-renewable primary energy as energy carrier	MJ	2.87E+01	2.51E+00	7.50E+00	4.57E-01	8.37E+00
Non-renewable primary energy as material utilisation	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources	MJ	2.87E+01	2.51E+00	7.497E+00	4.57E-01	8.37E+00
Use of secondary material	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m^3	2.02E-02	4.487E-04	4.194E-03	4.43E-06	7.37E-04

Waste categories and output flows	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Hazardous waste disposed	kg	8.87E-07	2.12E-10	1.635E-07	3.15E-11	1.49E-08
Non-hazardous waste disposed	kg	3.85E-02	4.54E-05	7.756E-01	2.28E-06	6.09E+00
Radioactive waste disposed	kg	1.23E-04	5.51E-08	5.254E-05	7.43E-09	6.33E-05
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	1.60E-01	0.00E+00	3.458E-01	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported electrical energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported thermal energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

RELATIVE CONTRIBUTIONS		Production	Distribution	Installation	End-of-life	
Environmental impact		**A1-A3**	**A4**	**A5**	**C2**	**C4**
Global warming potential (total)		31.5%	4.9%	15.0%	0.9%	47.7%
Global warming potential (fossil)		59.7%	5.5%	16.1%	1.0%	17.6%
Global warming potential (biogenic)		-148.1%	1.0%	7.6%	0.2%	239.3%
Depletion potential of the stratospheric ozone layer		78.6%	0.0%	19.6%	0.0%	1.8%
Acidification potential of land and water		61.9%	5.6%	16.6%	1.2%	14.7%
Eutrophication potential		55.8%	7.8%	15.6%	1.7%	19.2%
Photochemical ozone creation potential		75.7%	-34.5%	17.7%	-7.7%	48.8%
Abiotic depletion potential – elements		63.9%	0.3%	32.9%	0.0%	2.9%
Abiotic depletion potential – fossil fuels		60.5%	5.4%	15.7%	1.0%	17.5%

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		Production	Distribution	Installation	End-of-life	
Environmental impact	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Global warming potential (total)	kg CO_2-eq.	2.06E+00	2.61E-01	7.587E-01	4.67E-02	1.99E+00
Global warming potential (fossil)	kg CO_2-eq.	2.84E+00	2.54E-01	7.177E-01	4.54E-02	7.39E-01
Global warming potential (biogenic)	kg CO_2-eq.	-7.75E-01	7.21E-03	4.10E-02	1.33E-03	1.25E+00
Depletion potential of the stratospheric ozone layer	kg CFC11-eq.	1.40E-11	2.80E-15	3.370E-12	4.50E-16	3.67E-13
Acidification potential of land and water	kg SO_2-eq.	1.40E-02	9.78E-04	3.306E-03	2.01E-04	2.34E-03
Eutrophication potential	kg PO_4^{3-}-eq.	1.94E-03	2.26E-04	4.820E-04	4.79E-05	4.71E-04
Photochemical ozone creation potential	kg C_2H_4-eq.	1.04E-03	-3.86E-04	2.053E-04	-8.48E-05	4.41E-04
Abiotic depletion potential – elements	kg Sb-eq.	1.38E-06	6.83E-09	5.704E-07	6.51E-10	5.57E-08
Abiotic depletion potential – fossil fuels	MJ	4.10E+01	3.53E+00	1.010E+01	6.34E-01	1.06E+01

Resource use	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Renewable primary energy as energy carrier	MJ	1.34E+01	2.84E-01	2.51E+00	1.14E-02	1.02E+00
Renewable primary energy resources as material utilisation	MJ	8.22E+00	0.00E+00	1.300E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources	MJ	2.17E+01	2.84E-01	3.812E+00	1.14E-02	1.02E+00
Non-renewable primary energy as energy carrier	MJ	4.16E+01	3.53E+00	1.03E+01	6.34E-01	1.08E+01
Non-renewable primary energy as material utilisation	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources	MJ	4.16E+01	3.53E+00	1.029E+01	6.34E-01	1.08E+01
Use of secondary material	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m^3	2.57E-02	6.311E-04	5.222E-03	6.15E-06	9.06E-04

Waste categories and output flows	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Hazardous waste disposed	kg	1.23E-06	2.98E-10	2.240E-07	4.37E-11	1.91E-08
Non-hazardous waste disposed	kg	6.00E-02	6.39E-05	1.116E+00	3.16E-06	8.64E+00
Radioactive waste disposed	kg	2.26E-04	7.75E-08	7.320E-05	1.03E-08	8.12E-05
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	2.27E-01	0.00E+00	4.866E-01	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported electrical energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported thermal energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

RELATIVE CONTRIBUTIONS		Production	Distribution	Installation	End-of-life	
Environmental impact		**A1-A3**	**A4**	**A5**	**C2**	**C4**
Global warming potential (total)		40.3%	5.1%	14.8%	0.9%	38.9%
Global warming potential (fossil)		61.8%	5.5%	15.6%	1.0%	16.1%
Global warming potential (biogenic)		-147.0%	1.4%	7.8%	0.3%	237.6%
Depletion potential of the stratospheric ozone layer		78.9%	0.0%	19.0%	0.0%	2.1%
Acidification potential of land and water		67.3%	4.7%	15.9%	1.0%	11.2%
Eutrophication potential		61.2%	7.1%	15.2%	1.5%	14.9%
Photochemical ozone creation potential		85.6%	-31.8%	16.9%	-7.0%	36.3%
Abiotic depletion potential – elements		68.5%	0.3%	28.4%	0.0%	2.8%
Abiotic depletion potential – fossil fuels		62.3%	5.4%	15.3%	1.0%	16.1%

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		Production	Distribution	Installation	End-of-life	
Environmental impact	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Global warming potential (total)	kg CO_2-eq.	3.19E+00	3.64E-01	1.005E+00	6.46E-02	2.20E+00
Global warming potential (fossil)	kg CO_2-eq.	3.99E+00	3.54E-01	9.616E-01	6.27E-02	9.07E-01
Global warming potential (biogenic)	kg CO_2-eq.	-8.01E-01	1.01E-02	4.38E-02	1.83E-03	1.30E+00
Depletion potential of the stratospheric ozone layer	kg CFC11-eq.	1.60E-11	3.90E-15	3.731E-12	6.22E-16	4.48E-13
Acidification potential of land and water	kg SO_2-eq.	1.99E-02	1.36E-03	4.480E-03	2.78E-04	2.88E-03
Eutrophication potential	kg PO_4^{3-}-eq.	2.63E-03	3.15E-04	6.312E-04	6.62E-05	5.49E-04
Photochemical ozone creation potential	kg C_2H_4-eq.	1.50E-03	-5.38E-04	2.660E-04	-1.17E-04	4.98E-04
Abiotic depletion potential – elements	kg Sb-eq.	1.92E-06	9.53E-09	6.687E-07	8.99E-10	6.81E-08
Abiotic depletion potential – fossil fuels	MJ	5.74E+01	4.92E+00	1.356E+01	8.75E-01	1.30E+01

Resource use	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Renewable primary energy as energy carrier	MJ	1.53E+01	3.96E-01	2.88E+00	1.57E-02	1.24E+00
Renewable primary energy resources as material utilisation	MJ	8.49E+00	0.00E+00	1.336E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources	MJ	2.38E+01	3.96E-01	4.215E+00	1.57E-02	1.24E+00
Non-renewable primary energy as energy carrier	MJ	5.82E+01	4.92E+00	1.38E+01	8.75E-01	1.32E+01
Non-renewable primary energy as material utilisation	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources	MJ	5.82E+01	4.92E+00	1.380E+01	8.75E-01	1.32E+01
Use of secondary material	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m^3	3.29E-02	8.799E-04	6.549E-03	8.49E-06	1.08E-03

Waste categories and output flows	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Hazardous waste disposed	kg	1.66E-06	4.16E-10	3.013E-07	6.03E-11	2.33E-08
Non-hazardous waste disposed	kg	9.52E-02	8.91E-05	1.572E+00	4.37E-06	1.20E+01
Radioactive waste disposed	kg	3.29E-04	1.08E-07	9.362E-05	1.43E-08	9.91E-05
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	3.21E-01	0.00E+00	6.794E-01	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported electrical energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported thermal energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

RELATIVE CONTRIBUTIONS		Production	Distribution	Installation	End-of-life	
Environmental impact		**A1-A3**	**A4**	**A5**	**C2**	**C4**
Global warming potential (total)		46.7%	5.3%	14.7%	0.9%	32.3%
Global warming potential (fossil)		63.6%	5.6%	15.3%	1.0%	14.5%
Global warming potential (biogenic)		-145.5%	1.8%	8.0%	0.3%	235.4%
Depletion potential of the stratospheric ozone layer		79.2%	0.0%	18.5%	0.0%	2.2%
Acidification potential of land and water		68.8%	4.7%	15.5%	1.0%	10.0%
Eutrophication potential		62.8%	7.5%	15.0%	1.6%	13.1%
Photochemical ozone creation potential		93.2%	-33.6%	16.6%	-7.3%	31.0%
Abiotic depletion potential – elements		72.0%	0.4%	25.1%	0.0%	2.6%
Abiotic depletion potential – fossil fuels		64.0%	5.5%	15.1%	1.0%	14.5%

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		Production	Distribution	Installation	End-of-life	
Environmental impact	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Global warming potential (total)	kg CO_2-eq.	3.65E+00	4.37E-01	1.128E+00	7.72E-02	2.41E+00
Global warming potential (fossil)	kg CO_2-eq.	4.47E+00	4.25E-01	1.082E+00	7.50E-02	1.07E+00
Global warming potential (biogenic)	kg CO_2-eq.	-8.26E-01	1.21E-02	4.57E-02	2.19E-03	1.33E+00
Depletion potential of the stratospheric ozone layer	kg CFC11-eq.	1.72E-11	4.68E-15	3.952E-12	7.44E-16	5.30E-13
Acidification potential of land and water	kg SO_2-eq.	2.51E-02	1.64E-03	5.518E-03	3.33E-04	3.39E-03
Eutrophication potential	kg PO_4^{3-}-eq.	3.43E-03	3.78E-04	7.937E-04	7.91E-05	6.24E-04
Photochemical ozone creation potential	kg C_2H_4-eq.	1.74E-03	-6.46E-04	2.966E-04	-1.40E-04	5.51E-04
Abiotic depletion potential – elements	kg Sb-eq.	2.29E-06	1.14E-08	7.360E-07	1.08E-09	8.05E-08
Abiotic depletion potential – fossil fuels	MJ	6.64E+01	5.91E+00	1.565E+01	1.05E+00	1.54E+01

Resource use	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Renewable primary energy as energy carrier	MJ	1.67E+01	4.75E-01	3.16E+00	1.88E-02	1.47E+00
Renewable primary energy resources as material utilisation	MJ	8.71E+00	0.00E+00	1.364E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources	MJ	2.54E+01	4.75E-01	4.528E+00	1.88E-02	1.47E+00
Non-renewable primary energy as energy carrier	MJ	6.74E+01	5.91E+00	1.59E+01	1.05E+00	1.57E+01
Non-renewable primary energy as material utilisation	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources	MJ	6.74E+01	5.91E+00	1.592E+01	1.05E+00	1.57E+01
Use of secondary material	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m^3	3.75E-02	1.056E-03	7.416E-03	1.02E-05	1.25E-03

Waste categories and output flows	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Hazardous waste disposed	kg	1.99E-06	4.99E-10	3.597E-07	7.21E-11	2.75E-08
Non-hazardous waste disposed	kg	9.29E-02	1.07E-04	1.898E+00	5.23E-06	1.45E+01
Radioactive waste disposed	kg	3.97E-04	1.30E-07	1.081E-04	1.70E-08	1.17E-04
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	3.59E-01	0.00E+00	8.110E-01	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported electrical energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported thermal energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

RELATIVE CONTRIBUTIONS		Production	Distribution	Installation	End-of-life	
Environmental impact		**A1-A3**	**A4**	**A5**	**C2**	**C4**
Global warming potential (total)		47.4%	5.7%	14.7%	1.0%	31.3%
Global warming potential (fossil)		62.8%	6.0%	15.2%	1.1%	15.1%
Global warming potential (biogenic)		-145.6%	2.1%	8.1%	0.4%	235.0%
Depletion potential of the stratospheric ozone layer		79.3%	0.0%	18.3%	0.0%	2.4%
Acidification potential of land and water		69.8%	4.5%	15.3%	0.9%	9.4%
Eutrophication potential		64.7%	7.1%	15.0%	1.5%	11.7%
Photochemical ozone creation potential		96.6%	-35.9%	16.5%	-7.8%	30.6%
Abiotic depletion potential – elements		73.4%	0.4%	23.6%	0.0%	2.6%
Abiotic depletion potential – fossil fuels		63.6%	5.7%	15.0%	1.0%	14.7%

GIB TOUGHLINE® 13MM

		Production	Distribution	Installation	End-of-life	
Environmental impact	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Global warming potential (total)	kg CO_2-eq.	4.55E+00	3.21E-01	1.211E+00	5.71E-02	2.00E+00
Global warming potential (fossil)	kg CO_2-eq.	5.33E+00	3.12E-01	1.169E+00	5.55E-02	7.42E-01
Global warming potential (biogenic)	kg CO_2-eq.	-7.73E-01	8.87E-03	4.22E-02	1.62E-03	1.26E+00
Depletion potential of the stratospheric ozone layer	kg CFC11-eq.	1.77E-11	3.44E-15	4.030E-12	5.50E-16	3.66E-13
Acidification potential of land and water	kg SO_2-eq.	3.05E-02	1.20E-03	6.261E-03	2.46E-04	2.39E-03
Eutrophication potential	kg PO_4^{3-}-eq.	3.20E-03	2.78E-04	7.150E-04	5.86E-05	4.79E-04
Photochemical ozone creation potential	kg C_2H_4-eq.	2.17E-03	-4.75E-04	3.893E-04	-1.04E-04	4.47E-04
Abiotic depletion potential – elements	kg Sb-eq.	2.50E-06	8.40E-09	7.699E-07	7.96E-10	5.55E-08
Abiotic depletion potential – fossil fuels	MJ	7.83E+01	4.34E+00	1.684E+01	7.75E-01	1.06E+01

Resource use	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Renewable primary energy as energy carrier	MJ	1.80E+01	3.49E-01	3.33E+00	1.39E-02	1.01E+00
Renewable primary energy resources as material utilisation	MJ	8.24E+00	0.00E+00	1.302E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources	MJ	2.62E+01	3.49E-01	4.629E+00	1.39E-02	1.01E+00
Non-renewable primary energy as energy carrier	MJ	8.11E+01	4.34E+00	1.74E+01	7.75E-01	1.08E+01
Non-renewable primary energy as material utilisation	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources	MJ	8.11E+01	4.34E+00	1.742E+01	7.75E-01	1.08E+01
Use of secondary material	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m^3	3.80E-02	7.762E-04	7.418E-03	7.52E-06	9.03E-04

Waste categories and output flows	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Hazardous waste disposed	kg	1.49E-06	3.67E-10	2.709E-07	5.34E-11	1.90E-08
Non-hazardous waste disposed	kg	2.51E-01	7.86E-05	1.430E+00	3.87E-06	1.07E+01
Radioactive waste disposed	kg	1.10E-03	9.53E-08	2.271E-04	1.26E-08	8.07E-05
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	2.83E-01	0.00E+00	5.992E-01	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported electrical energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported thermal energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

RELATIVE CONTRIBUTIONS		Production	Distribution	Installation	End-of-life	
Environmental impact		**A1-A3**	**A4**	**A5**	**C2**	**C4**
Global warming potential (total)		55.9%	3.9%	14.9%	0.7%	24.6%
Global warming potential (fossil)		70.0%	4.1%	15.4%	0.7%	9.8%
Global warming potential (biogenic)		-144.3%	1.7%	7.9%	0.3%	234.5%
Depletion potential of the stratospheric ozone layer		80.1%	0.0%	18.2%	0.0%	1.7%
Acidification potential of land and water		75.1%	3.0%	15.4%	0.6%	5.9%
Eutrophication potential		67.6%	5.9%	15.1%	1.2%	10.1%
Photochemical ozone creation potential		89.4%	-19.6%	16.0%	-4.3%	18.4%
Abiotic depletion potential – elements		75.0%	0.3%	23.1%	0.0%	1.7%
Abiotic depletion potential – fossil fuels		70.6%	3.9%	15.2%	0.7%	9.6%

GIB SUPERLINE® 13MM

		Production	Distribution	Installation	End-of-life	
Environmental impact	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Global warming potential (total)	kg CO_2-eq.	4.33E+00	3.21E-01	1.169E+00	5.71E-02	1.98E+00
Global warming potential (fossil)	kg CO_2-eq.	5.10E+00	3.12E-01	1.128E+00	5.55E-02	7.43E-01
Global warming potential (biogenic)	kg CO_2-eq.	-7.61E-01	8.86E-03	4.09E-02	1.62E-03	1.24E+00
Depletion potential of the stratospheric ozone layer	kg CFC11-eq.	1.47E-11	3.44E-15	3.489E-12	5.50E-16	3.66E-13
Acidification potential of land and water	kg SO_2-eq.	2.98E-02	1.20E-03	6.139E-03	2.46E-04	2.39E-03
Eutrophication potential	kg PO_4^{3-}-eq.	3.13E-03	2.78E-04	7.034E-04	5.85E-05	4.77E-04
Photochemical ozone creation potential	kg C_2H_4-eq.	2.08E-03	-4.75E-04	3.727E-04	-1.04E-04	4.43E-04
Abiotic depletion potential – elements	kg Sb-eq.	3.52E-06	8.40E-09	9.500E-07	7.95E-10	5.55E-08
Abiotic depletion potential – fossil fuels	MJ	7.67E+01	4.34E+00	1.657E+01	7.74E-01	1.06E+01

Resource use	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Renewable primary energy as energy carrier	MJ	1.78E+01	3.49E-01	3.30E+00	1.39E-02	1.01E+00
Renewable primary energy resources as material utilisation	MJ	8.15E+00	0.00E+00	1.291E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources	MJ	2.60E+01	3.49E-01	4.594E+00	1.39E-02	1.01E+00
Non-renewable primary energy as energy carrier	MJ	7.95E+01	4.34E+00	1.71E+01	7.74E-01	1.08E+01
Non-renewable primary energy as material utilisation	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources	MJ	7.95E+01	4.34E+00	1.714E+01	7.74E-01	1.08E+01
Use of secondary material	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m^3	3.37E-02	7.758E-04	6.656E-03	7.51E-06	9.01E-04

Waste categories and output flows	**Unit**	**A1-A3**	**A4**	**A5**	**C2**	**C4**
Hazardous waste disposed	kg	1.51E-06	3.66E-10	2.731E-07	5.33E-11	1.90E-08
Non-hazardous waste disposed	kg	2.40E-01	7.85E-05	1.429E+00	3.87E-06	1.08E+01
Radioactive waste disposed	kg	1.10E-03	9.52E-08	2.273E-04	1.26E-08	8.08E-05
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	2.63E-01	0.00E+00	5.955E-01	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported electrical energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported thermal energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

RELATIVE CONTRIBUTIONS		Production	Distribution	Installation	End-of-life	
Environmental impact		**A1-A3**	**A4**	**A5**	**C2**	**C4**
Global warming potential (total)		55.2%	4.1%	14.9%	0.7%	25.2%
Global warming potential (fossil)		69.5%	4.3%	15.4%	0.8%	10.1%
Global warming potential (biogenic)		-144.9%	1.7%	7.8%	0.3%	235.1%
Depletion potential of the stratospheric ozone layer		79.2%	0.0%	18.8%	0.0%	2.0%
Acidification potential of land and water		74.9%	3.0%	15.4%	0.6%	6.0%
Eutrophication potential		67.4%	6.0%	15.1%	1.3%	10.2%
Photochemical ozone creation potential		89.7%	-20.5%	16.1%	-4.5%	19.1%
Abiotic depletion potential – elements		77.6%	0.2%	20.9%	0.0%	1.2%
Abiotic depletion potential – fossil fuels		70.4%	4.0%	15.2%	0.7%	9.7%

ADDITIONAL ENVIRONMENTAL INFORMATION

Winstone Wallboards is committed to pursuing high standards of environmental performance and have identified a number of practical ways to contribute to more sustainable construction.

These include:

— Promoting architectural trends and practices to encourage the design of healthy and sustainable buildings
— Developing products and services to support better use of existing materials, reuse and recycling (e.g. local manufacture in Auckland and Christchurch, GIB® cut-to-length service to reduce waste and composting plasterboard waste)
— Preventing health risks related to products for construction workers and end users

GIB® plasterboard is made up of naturally occurring gypsum, 100% recycled paper, and a small quantity of other ingredients (which includes approved glues and additives required to improve the quality of the finished board).

Our plasterboard manufacturing plants in Auckland and Christchurch have put in place measures to reduce their environmental impacts by:

— Controlling discharges to water including suspended solids
— Removing CFC/halons in the production process
— Not using solvents containing halogenated hydrocarbons
— Implementing an effective energy management policy
— Reducing greenhouse gas emissions by 20% over the past 15 years
— Minimising waste and diverting all plasterboard production waste away from landfill into compost

GREENTAG

In recognition of our efforts to continuously improve the sustainability of our products, we're thrilled to have received GreenTag certification for our GIB® plasterboards 13mm or greater in thickness.

GreenTag labelling applies to the following range of GIB® plasterboard products:

— 10mm and 13mm GIB® Standard
— 10mm and 13mm GIB® Wideline
— 10mm and 13mm GIB Braceline® GIB Noiseline®
— 10mm, 13mm, 16mm and 19mm GIB Fyreline®
— 13mm GIB Toughline®

GIB® plasterboard is compostable and can be spread directly onto land as a soil conditioner, helping to reduce waste to landfill. Our plasterboard is well suited for this purpose due to its low percentage of binders, additives and surface treatments[1]. Gypsum is a natural fertiliser and soil conditioner (Shainberg et al. 1989). Returning ground plasterboard to soil can provide similar benefits due to its high gypsum content (Naeth & Wilkinson 2013).

Winstone Wallboards works with industrial composters who blend plasterboard waste with their compost and return it to soils throughout the country. We also supply information on suitable paint types to be used with GIB® plasterboard that don't compromise its ability to be composted.

We already divert a large share of plasterboard waste from landfill to industrial composting:

— 100% of plasterboard waste from Winstone Wallboards' manufacturing plants
— 25% of offcuts from installation of GIB® plasterboard

You can help us to do even better. On larger projects, waste plasterboard can be separated on site and diverted to approved composting operations. For smaller projects, it can be ground up and spread around the building site reducing the volumes of construction waste going to landfill.

GIB® plasterboard contributes to a healthier living environment in a number of important ways:

— No toxins - consisting largely of natural gypsum and 100% recycled paper, GIB® plasterboard does not contain the toxins inherent to a number of other manufactured building products

[1] GIB Toughline® and GIB Superline® include fibreglass mesh reinforcing for strength. Industrial composters can remove this mesh. Where industrial composting is not available, Winstone Wallboards recommends that these products be sent to landfill.

— Thermally responsive - the nature of GIB® plasterboard composite allows it to respond quickly to heating and cooling effects
— Fire safety - the chemical composition of plasterboard makes it an ideal material for use in fire resisting construction. GIB Fyreline® is widely used in fire-rated walls and ceilings
— Acoustic properties - GIB Noiseline® is used to reduce noise levels within residential and commercial buildings for the comfort of building occupants.

DECLARE

Declare is a database of non-toxic, sustainably sourced building products that meet the stringent requirements of the International Living Future Institute's Living Building Challenge.

Considered the most advanced sustainability certification in the built environment, Declare is like a nutritional label for building products, offering specifiers, contractors and building users insight into the ingredients used in the manufacture of building products.

The following products have all achieved Red List Free status (the highest Declare status possible), meaning that these products meet the strict Declare materials standards:

— GIB Aqualine®
— GIB Fyreline®
— GIB® Standard
— GIB Toughline®
— GIB Braceline® GIB Noiseline®

GIB® plasterboard is 100% recyclable as well as having Declare status and can positively contribute to Green Star certification.

HOMESTAR

Homestar is New Zealand's environmental and energy efficiency rating for both new and existing homes. It's a voluntary rating system developed by BRANZ and the New Zealand Green Building Council (NZGBC).

The Homestar rating scale goes from 1 (for very poor) through to 10 (world class). A typical house built to the New Zealand building code would achieve a 3 – 4 Homestar. To achieve a high Homestar rating beyond the standard building code, engage a Homestar Assessor before you get your plans agreed by your local council.

Within the Homestar tool, GIB® can contribute to achieving points in the following areas out of a total 100 available points.

GREEN STAR

Green Star is the NZGBC's rating tool for commercial buildings. Green Star v3 has an Innovation Challenge for Environmental Product Declarations.

Points for EPDs: 1 point is available where 2 different products hold current EPDs. 2 points are available where 6 or more different products hold current EPDs.

This EPD meets NZGBC's requirements of being "a product-specific, third-party EPD" issued in accordance with ISO 14025 and EN 15804.

Homestar Credit	Maximum Points Available in Credit	GIB®
EHC-9 Sound Insulation	2 points	Contributing to improved sound insulation in ceilings and internal walls.
WST-1 Construction Waste Management	3 points	Waste minimisation and recycling strategies written into a REBRI compliant site waste management plan
WST-2 Construction Waste Reduction	3 points	Achievement of waste minimisation or recycling strategies.
MAT-1 Materials Selection	9 points	GreenTag certification of GIB® is recognised and awarded
MAT-2 VOCs & Toxic Materials	3 points	Low VOC adhesives such as GIBFix® One are eligible for points as a dry wall adhesive.

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VERSION HISTORY

V1.0: Initial release.

V1.1: Results updated to correct an error in allocation of thermal energy, leading to a reduction in impacts of between 0% and 11%, depending on the product and indicator.

GIB®

FOR MORE INFORMATION VISIT

gib.co.nz