



GWP Data for Products

Decarbonizing the Build Environment with LEC Solutions



GWP GUIDE



The information in this brochure describes the conditions and technical properties of the disclosed products, valid at the time of publication of this document and until replaced by the next printed or digital version.

The latest version of this brochure is always available on the Paroc Panel System's website. Our information material presents applications for which the functions and technical properties of our products have been approved.

However, the information does not mean a commercial guarantee. We do not assume liability of the use of third party components used in the application or the installation of our products. We cannot warrant the suitability of our products if used in an area or conditions which are not provided in our information material. As a result of constant further development of our products we reserve the right to make alterations to our information material at any time.

Contents

Our Commitment to Sustainability	4
Planet Passionate	5
Initiatives towards Net-Zero Manufacturing	6
Changes in EU building regulations	8
Environmental Product Declarations	9
BIM - Building Information Modeling	10
GWP-values for Products	11

Our Commitment to Sustainability

Commitment to Sustainability

With a number of significant advancements in the European climate change and energy performance agenda over the past years, it has never been more important for businesses to recognise and take responsibility for their impact on the environment. Paroc Panel System - member of Kingspan Group - has been leading the way with its dedication to sustainable business practice.

Our insulated panels are manufactured from the high quality materials, using state of the art production equipment to rigorous quality control, complying with ISO 9001:2015 Quality Management Systems standards, ensuring long term reliability and service life. The panels are also manufactured under Environmental Management System certification EN ISO 14001:2015, Energy management system certification EN ISO 50001:2018 and Occupational Health and Safety certification EN ISO 45001:2018.

Paroc Panel System products are CE marked to EN 14509:2013.

Our panels are free from CFC, HCFC, HFC and Halogenated Fire Retardants and are independently certified to the highest levels for low VOC emissions, ensuring that it is not harmful to building occupants and does not adversely impact indoor environment quality (IEQ).

We have developed third party verified EN 15804:2012+A2:2019/AC:2021 environmental product declarations (EPD's) for AST® insulated panels. EPD's provide technical and quantified environmental information across a product's lifespan. Our environmental product declarations are available on our website www.parocpanels.com and www.epd-norge.no under search term "Paroc Panel System".

<https://www.parocpanels.com/gb/en/downloads/>



Planet Passionate

Climate change is today the most significant threat to our planet. To protect our planet, we must limit the rise in global temperature to 1.5 degrees this century. That is why CO₂ emissions must be reduced to zero worldwide by 2050 - but we are clearly falling short of this target at the moment. We also face an unprecedented threat of biodiversity loss, with one million species at risk on our planet, generating 2 billion tones of waste a year.

How can we, and the construction industry, play our part?

We believe advanced materials, building systems and digital technologies hold the key to addressing these issues. Working in partnership with the industry, and through our new IKON innovation centre and our Planet

Passionate global sustainability programme, we are confident that together we can:

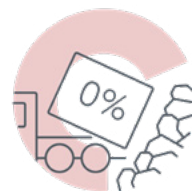
1. Move to a clean energy future
2. Manage the earth's resources more sustainably
3. Protect our natural environment

What is "Planet Passionate"?

Planet Passionate is our new 10-year global sustainable development program, which aims to address three major global issues: climate change, the circular economy and the protection of biodiversity.



Main Focus Areas:



ENERGY	CARBON	CIRCULARITY	WATER
Increase our direct use of renewable energy to 60% by 2030	Net Zero carbon manufacturing by 2030	1 billion PET bottles up-cycled into our manufacturing processes by 2025	5 active ocean clean-up projects by 2025
Increase our on site renewable energy to 20% by 2030	50% reduction in product CO ₂ intensity from our primary supply partners by 2030	All QuadCore insulation to utilise upcycled PET by 2025	100 million liters of rain-water harvested by 2030
Install Solar PV Panels on all owned facilities by 2030	Zero emission ready company cars by 2025	Zero company waste to landfill by 2030	

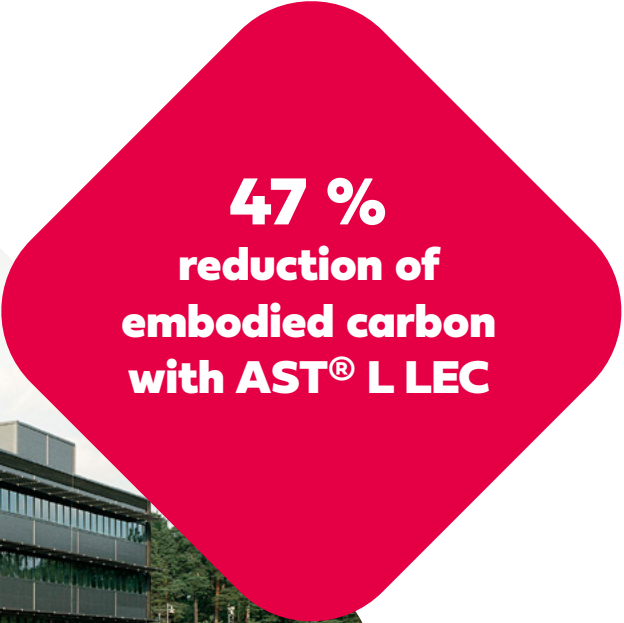
Initiatives towards Net-Zero Manufacturing

We have made many steps towards net-zero carbon manufacturing in our plants and decarbonisation of our products – all part of our exciting “Planet Passionate” initiative. Our Finnish manufacturing facilities in Parainen now boast a Photovoltaic (PV) rooftop system, generating up to 20% of the plant’s electricity while significantly reducing CO₂ emissions. This system also powers our innovative ‘AmbiHeat’ geothermal heat pump, which stores waste heat from manufacturing for use in winter and non-production weekends.

For our AST® sandwich panels we use stone wool produced in electric furnace powered by renewable energy. This allows for an 80% reduction of CO₂ and a 20% better energy efficiency in comparison to melting stone in cupola furnace. With the new LEC (Lower Embodied Carbon) solutions we are significantly reducing embodied carbon in our products through reduction of product CO₂e intensity of raw materials from our key suppliers.

Further reductions in the embodied carbon of the LEC insulated panel range are expected between now and 2030 and are underpinned by the business commitment to Net Zero Carbon manufacturing by 2030 and the investment in H2 Green steel – a company pioneering the manufacture of steel using hydrogen instead of fossil fuels.

AST® L LEC Wall panel is a part of our Lower Embodied Carbon solutions. AST® L LEC has an LCA (LifeCycle Assessment) that shows a 47% reduction in embodied carbon (measured by the Global Warming Potential ‘GWP’ kgCO₂e) between life cycle modules A1 – A3, and a 45% reduction in embodied carbon between life cycle modules A – C. The reduction percentage is created by comparing standard AST® L panel with AST® L LEC to the EN 15804:2012+A2:2019/AC:2021 standard for a 80mm thickness. Environmental Product Declarations (EPDs) for our panels are verified by a third party and available for download on www.epd-norge.no website.



47 %
reduction of
embodied carbon
with AST® L LEC

Our Decarbonisation Targets

Planet Passionate Decarbonisation Targets that impact our products

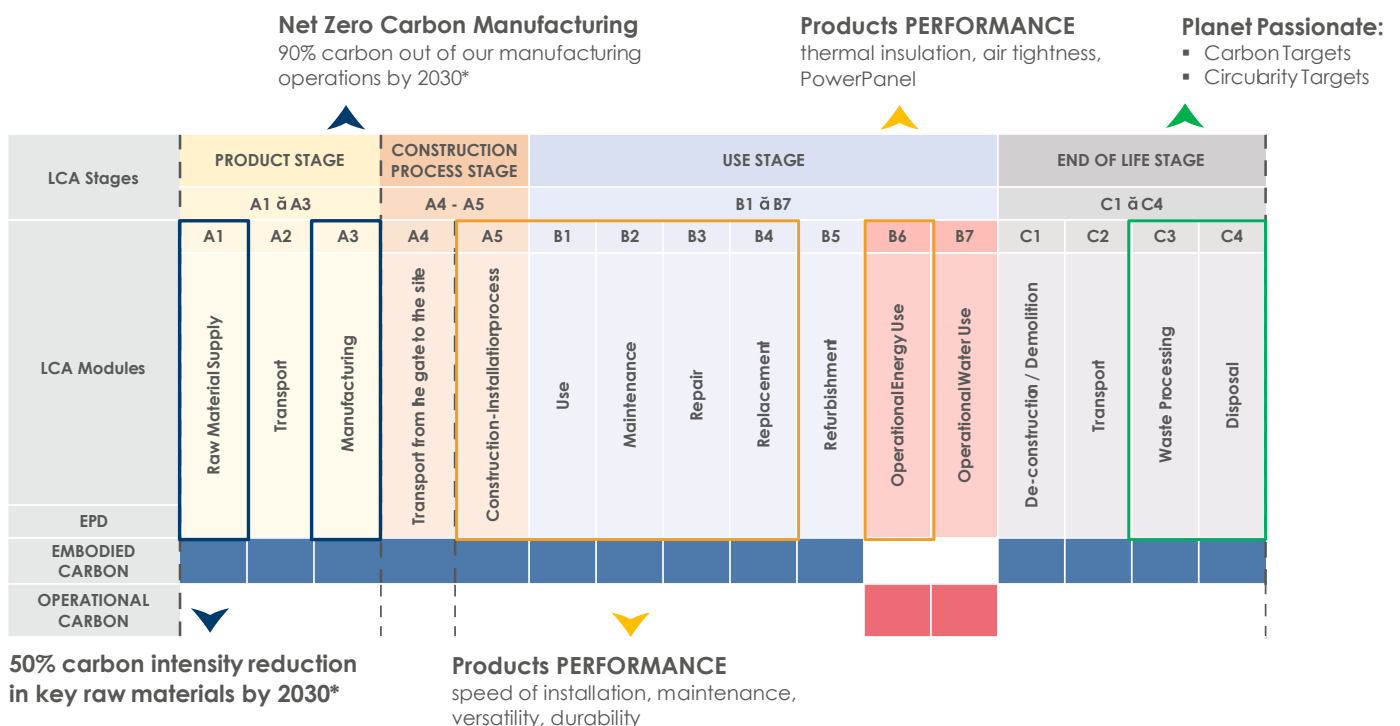
90% carbon out of our manufacturing operations by 2030

50% carbon intensity out of key raw materials by 2030*

* When compared with a 2020 baseline



How our Planet Passionate programme impacts a product life cycle?



Changes in EU building regulations

Revision of Energy Performance of Buildings Directive (EPBD)

On 12 of March 2024, the EU Parliament and EU Council approved revision of the Energy Performance of Buildings Directive (EPBD). This is a crucial step towards accelerating climate action on buildings and the end of a long negotiation process.

In the latest update to the EPBD, improvements are being made towards sustainability and energy efficiency of buildings in the EU's construction sector. They include:

1. Carbon footprint requirements

The updated EPBD mandates calculating and reporting buildings' carbon footprints in line with EN 15978 and Level(s), a significant expansion from the existing EPBD's focus on operational energy consumption. The implementation of this carbon footprint calculation will start with larger buildings exceeding 1000 square meters in 2028 — and extend to all buildings by 2030.

2. Zero-emission standard for new buildings

Among these changes is introducing a zero-emission standard for all new buildings. Starting January 1, 2028, for publicly-owned buildings and January 1, 2030, for all other new constructions, these buildings must have zero on-site fossil fuel emissions, with some specific exceptions allowed.

3. Improving energy efficiency in buildings

The updated EPBD outlines objectives for EU countries to boost the energy efficiency of buildings, particularly those that are currently least efficient. The directive requires a reduction in energy consumption for residential buildings by 16% by 2030 and 20%-22% by 2035, primarily through upgrading the least efficient buildings. The EPBD also introduces uniform Energy Performance Certificates (EPCs) across the EU.

4. Renovation initiatives

The updated EPBD presents strategies for EU member states to improve building renovations and lower emissions. It involves the development of national strategies to make buildings more energy-efficient, introducing renovation passport programs to assist owners in achieving zero-emission buildings, and establishing comprehensive support centers for homeowners and SMEs pursuing renovation. According to the new directive, member states will have to renovate 16% of worst-performing non-residential buildings by 2030 and, by 2033, the worst-performing 26% through minimum energy performance requirements.

Revised EPBD — timeline

- May 8, 2024 – Official publication of revised EPBD in OJEU.
- 20 days following publication in the Official Journal of the European Union: The revised EPBD will enter into force.
- During 2 years:: The EU member states must transpose the revised EPBD into national laws in 2 years.
- By 2050: The revised EPBD is essential in the EU's efforts to achieve net-zero emissions by 2050.

EPD – Environmental Product Declarations

What is an EPD?

An Environmental Product Declaration (EPD) is a comprehensive standardized document that tells the life cycle story of a product in a single, written report, focusing on information about a product's environmental impacts, such as global warming potential (GWP), smog creation, ozone depletion potential (ODP), and water pollution. EPD is based on the ISO 14025 standard and the scientific footprinting method Life Cycle Assessment (LCA). In other words, EPD is a short version of an LCA report, third party verified that is simpler to read and use in communication than an LCA report.

Old and new version of EN 15804

In July 2019, a major amendment, EN 15804:2012+A2:2019, was approved which changes EPDs significantly and has become mandatory since July 2022. With the amendment a change of the impact category array comes along. The categories which are taken into consideration are almost identical, however, the measurement units they are represented by, are different from the old ones in EN 15804:2012+A1:2013. At the moment there are existing EPD's on the market issued according to old and new EN 15804 standard: EN 15804+A1:2013 and EN 15804+A2:2020, both are still valid but EPD results from old version +A1 are not directly comparable to new version +A2.

Where to find EPDs of Paroc Panel System products?

Paroc Panel System has developed third party verified EPD's for its AST® sandwich panels according to the new norm EN 15804:2012+A2:2019/AC:2021. EPDs with GWP (Global Warming Potential) values are available for standard and LEC (Lower Embodied Carbon) solutions that have been developed specifically to help reduce the carbon footprint of the buildings they are used on.

EPDs for our products can be found in download hub on our parocpanels.com website and [epd-norway website](https://epd-norway.com).

The **GWP values** expressed as kg CO₂-eqv /m² of panel, are provided for Paroc Panel System products by panel type and thickness and can be found in:



Environmental Product Declarations



BIM Autodesk 360 Models



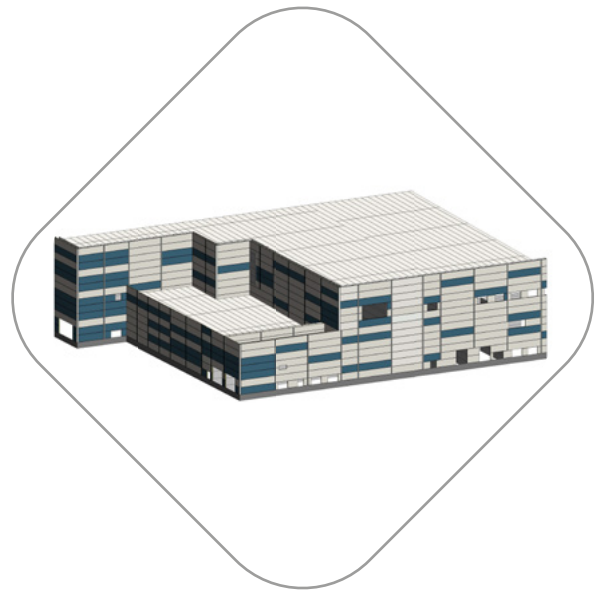
Product Finder WebApp

BIM - Building Information Modeling

Let our Revit BIM models do the CO₂ calculation for your building!

Paroc Panel System has developed new BIM Revit objects for its entire sandwich panel range, now also available through Autodesk BIM360™ application.

Autodesk BIM360™ offers a cloud-based platform for project teams to access the most recent 3D models and collaborate in real-time. To gain access to Revit files with built-in GWP values of our products, you need to just fill out the inquiry form on our website and have/create an Autodesk account. After submitting the form, we will set up access to our Revit files with your existing Autodesk account. All content will be delivered through Autodesk BIM360™ and can be accessed by logging in or registering at www.autodesk.com.

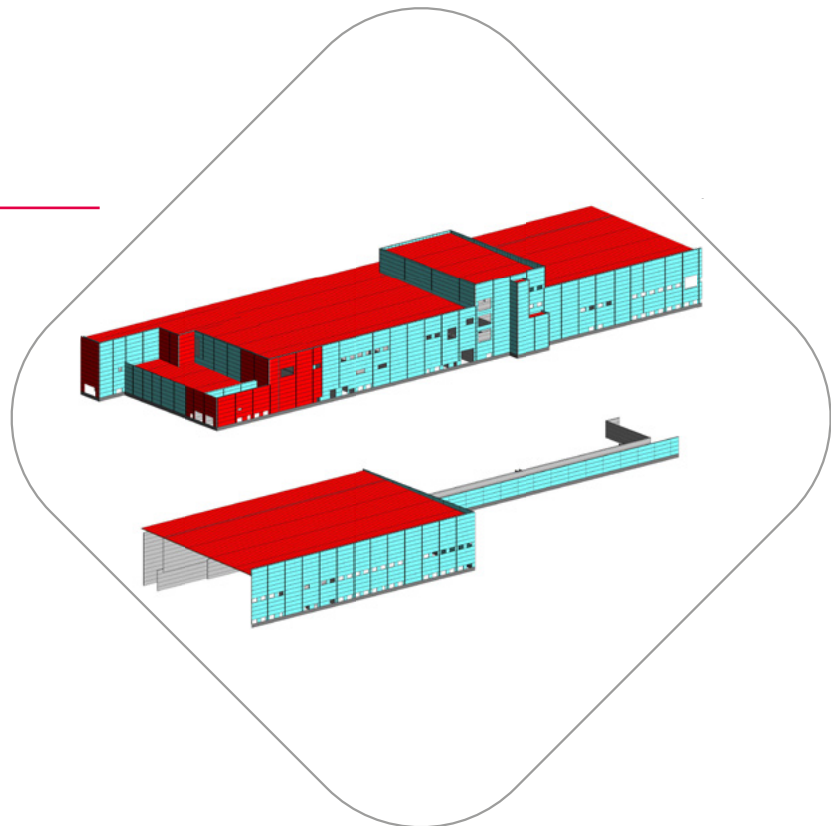


Maintenance-free, saving time, trouble and cost

As part of our Technical service, we offer a variety of options for collaborating on BIM360:

- BIM360 access form
- Overview of BIM360 workflow
- Access to Revit content bundles
- Additional content requests such as standard details pdf, dwg, rvt and ifc.
- Assistance to download content
- Modelling reviews

Contact Paroc Panel System Technical Support for more information.



GWP-total, Global Warming Potential

(kg CO₂ eq./m²)

AST® L LEC Wall Panel / AST® L LEC Delign Architectural Panel / AST® L LEC Shadow Architectural Wall Panel / AST® L LEC Built-On Wall Panel

Thickness	U-value	Panel Weight kg/m ²	A1-A3 kg CO ₂ eq./m ²	A-C kg CO ₂ eq./m ²	B1	B2	B3-B7	C1	C2	C3	C4	D
80	0,45	15,8	14,8	16,3	0,0	0,8	0,0	0,0	0,1	0,5	0,1	-1,0
100	0,37	17,2	15,5	17,0	0,0	0,8	0,0	0,0	0,1	0,5	0,1	-1,1
120	0,30	18,6	16,0	17,6	0,0	0,9	0,0	0,0	0,1	0,5	0,2	-1,1
150	0,24	20,7	16,8	18,5	0,0	0,9	0,0	0,0	0,1	0,5	0,2	-1,2
175	0,21	22,4	17,5	19,2	0,0	0,9	0,0	0,0	0,1	0,6	0,2	-1,2
200	0,18	24,2	18,1	20,0	0,0	1,0	0,0	0,0	0,1	0,6	0,2	-1,3
240	0,15	27,0	19,3	21,3	0,0	1,0	0,0	0,0	0,1	0,6	0,2	-1,3
300	0,12	31,2	21,0	23,1	0,0	1,1	0,0	0,0	0,1	0,7	0,2	-1,5

AST® S LEC Wall Panel / AST® S LEC Delign Architectural Panel / AST® S LEC Shadow Architectural Wall Panel / AST® S LEC Built-On Wall Panel

Thickness	U-value	Panel Weight kg/m ²	A1-A3 kg CO ₂ eq./m ²	A-C kg CO ₂ eq./m ²	B1	B2	B3-B7	C1	C2	C3	C4	D
80	0,48	17,0	15,3	16,8	0,0	0,8	0,0	0,0	0,1	0,5	0,2	-1,0
100	0,38	18,7	16,0	17,6	0,0	0,8	0,0	0,0	0,1	0,5	0,2	-1,1
120	0,32	20,4	16,7	18,3	0,0	0,9	0,0	0,0	0,1	0,5	0,2	-1,1
150	0,26	22,9	17,8	19,5	0,0	0,9	0,0	0,0	0,1	0,5	0,2	-1,2
175	0,22	25,1	18,7	20,5	0,0	1,0	0,0	0,0	0,1	0,6	0,2	-1,2
200	0,19	27,2	19,6	21,5	0,0	1,0	0,0	0,0	0,1	0,6	0,2	-1,3
240	0,16	30,6	21,0	23,0	0,0	1,1	0,0	0,0	0,1	0,6	0,2	-1,4
300	0,13	35,7	23,0	25,2	0,0	1,2	0,0	0,0	0,1	0,7	0,3	-1,5

GWP-total, Global Warming Potential

(kg CO₂ eq./m²)

AST® E LEC Wall Panel / AST® E LEC Delign Architectural Panel / AST® E LEC Shadow Architectural Wall Panel / AST® E LEC Built-On Wall Panel

Thickness	U-value	Panel Weight kg/m ²	A1-A3 kg CO ₂ eq./m ²	A-C kg CO ₂ eq./m ²	B1	B2	B3-B7	C1	C2	C3	C4	D
50	0,77	17,4	15,0	16,4	0,0	0,7	0,0	0,0	0,1	0,4	0,2	-0,9
80	0,53	21,0	16,4	18,0	0,0	0,8	0,0	0,0	0,1	0,4	0,2	-1,0
100	0,43	23,4	17,4	19,0	0,0	0,8	0,0	0,0	0,1	0,5	0,2	-1,0
120	0,36	25,8	18,4	20,1	0,0	0,8	0,0	0,0	0,1	0,5	0,3	-1,1
150	0,29	29,4	19,8	21,6	0,0	0,9	0,0	0,0	0,1	0,5	0,3	-1,2
175	0,25	32,4	21,0	22,9	0,0	1,0	0,0	0,0	0,1	0,6	0,3	-1,2
200	0,22	35,4	22,2	24,2	0,0	1,0	0,0	0,0	0,1	0,6	0,3	-1,3
240	0,18	40,2	24,2	26,4	0,0	1,1	0,0	0,0	0,1	0,7	0,3	-1,4
300	0,14	47,4	26,9	29,4	0,0	1,2	0,0	0,0	0,2	0,7	0,4	-1,6

AST® F LEC Wall Panel / AST® F LEC Delign Architectural Panel / AST® F LEC Shadow Architectural Wall Panel / AST® F LEC Built-On Wall Panel

Thickness	U-value	Panel Weight kg/m ²	A1-A3 kg CO ₂ eq./m ²	A-C kg CO ₂ eq./m ²	B1	B2	B3-B7	C1	C2	C3	C4	D
80	0,53	20,6	16,4	18,0	0,0	0,8	0,0	0,0	0,1	0,4	0,2	-1,0
100	0,43	22,9	17,4	19,0	0,0	0,8	0,0	0,0	0,1	0,5	0,2	-1,0
120	0,36	25,2	18,4	20,1	0,0	0,8	0,0	0,0	0,1	0,5	0,3	-1,1
150	0,29	28,6	19,8	21,6	0,0	0,9	0,0	0,0	0,1	0,5	0,3	-1,2
175	0,25	31,5	21,0	22,9	0,0	1,0	0,0	0,0	0,1	0,6	0,3	-1,2
200	0,22	34,4	22,2	24,2	0,0	1,0	0,0	0,0	0,1	0,6	0,3	-1,3
240	0,18	39,0	24,2	26,4	0,0	1,1	0,0	0,0	0,1	0,7	0,3	-1,4
300	0,14	45,9	26,9	29,4	0,0	1,2	0,0	0,0	0,2	0,7	0,4	-1,6

GWP-total, Global Warming Potential (kg CO₂ eq./m²)

AST® F+ LEC Wall Panel

Thickness	U-value	Panel Weight kg/m ²	A1-A3 kg CO ₂ eq./m ²	A-C kg CO ₂ eq./m ²	B1	B2	B3-B7	C1	C2	C3	C4	D
100	0,43	22,7	17,4	19,0	0,0	0,8	0,0	0,0	0,1	0,5	0,2	-1,0
120	0,36	24,9	18,4	20,1	0,0	0,8	0,0	0,0	0,1	0,5	0,3	-1,1

AST® L Wall Panel / AST® L Delign Architectural Panel / AST® L Shadow Architectural Wall Panel / AST® L Built-On Wall Panel

Thickness	U-value	Panel Weight kg/m ²	A1-A3 kg CO ₂ eq./m ²	A-C kg CO ₂ eq./m ²	B1	B2	B3-B7	C1	C2	C3	C4	D
80	0,45	15,8	28,1	29,7	0,0	0,9	0,0	0,0	0,1	0,5	0,2	-10,5
100	0,37	17,2	28,4	30,0	0,0	0,9	0,0	0,0	0,1	0,5	0,2	-10,6
120	0,30	18,6	29,0	30,7	0,0	0,9	0,0	0,0	0,1	0,5	0,2	-10,9
150	0,24	20,7	29,9	31,6	0,0	0,9	0,0	0,0	0,1	0,6	0,2	-11,2
175	0,21	22,4	30,5	32,3	0,0	0,9	0,0	0,0	0,1	0,6	0,2	-11,4
200	0,18	24,2	31,4	33,2	0,0	1,0	0,0	0,0	0,1	0,6	0,2	-11,8
240	0,15	27,0	32,3	34,2	0,0	1,0	0,0	0,0	0,1	0,6	0,2	-12,1
300	0,12	31,2	34,1	36,1	0,0	1,0	0,0	0,0	0,1	0,6	0,2	-12,8

GWP-total, Global Warming Potential

(kg CO₂ eq./m²)

AST® S Wall Panel / AST® S Delign Architectural Panel / AST® S Shadow Architectural Wall Panel / AST® S Built-On Wall Panel

Thickness	U-value	Panel Weight kg/m ²	A1-A3 kg CO ₂ eq./m ²	A-C kg CO ₂ eq./m ²	B1	B2	B3-B7	C1	C2	C3	C4	D
80	0,48	17,0	15,3	30,1	0,0	0,8	0,0	0,0	0,1	0,5	0,2	-1,0
100	0,38	18,7	16,0	30,8	0,0	0,8	0,0	0,0	0,1	0,5	0,2	-1,1
120	0,32	20,4	16,7	31,8	0,0	0,9	0,0	0,0	0,1	0,5	0,2	-1,1
150	0,26	22,9	17,8	32,8	0,0	0,9	0,0	0,0	0,1	0,5	0,2	-1,2
175	0,22	25,1	18,7	33,8	0,0	1,0	0,0	0,0	0,1	0,6	0,2	-1,2
200	0,19	27,2	19,6	34,7	0,0	1,0	0,0	0,0	0,1	0,6	0,2	-1,3
240	0,16	30,6	21,0	36,0	0,0	1,1	0,0	0,0	0,1	0,6	0,2	-1,4
300	0,13	35,7	23,0	38,3	0,0	1,2	0,0	0,0	0,1	0,7	0,3	-1,5

AST® E Wall Panel / AST® E Delign Architectural Panel / AST® E Shadow Architectural Wall Panel / AST® E Built-On Wall Panel

Thickness	U-value	Panel Weight kg/m ²	A1-A3 kg CO ₂ eq./m ²	A-C kg CO ₂ eq./m ²	B1	B2	B3-B7	C1	C2	C3	C4	D
50	0,77	17,4	28,0	29,6	0,0	0,8	0,0	0,0	0,1	0,5	0,2	-9,5
80	0,53	21,0	29,6	31,3	0,0	0,8	0,0	0,0	0,1	0,5	0,2	-10,1
100	0,43	23,4	30,6	32,3	0,0	0,8	0,0	0,0	0,1	0,5	0,3	-10,4
120	0,36	25,8	31,6	33,4	0,0	0,9	0,0	0,0	0,1	0,5	0,3	-10,8
150	0,29	29,4	32,9	34,8	0,0	0,9	0,0	0,0	0,1	0,6	0,3	-11,2
175	0,25	32,4	34,2	36,2	0,0	0,9	0,0	0,0	0,1	0,6	0,3	-11,6
200	0,22	35,4	35,2	37,2	0,0	1,0	0,0	0,0	0,1	0,6	0,3	-12,0
240	0,18	40,2	37,2	39,3	0,0	1,0	0,0	0,0	0,1	0,6	0,3	-12,7
300	0,14	47,4	40,1	42,4	0,0	1,1	0,0	0,0	0,1	0,7	0,3	-13,7

GWP-total, Global Warming Potential (kg CO₂ eq./m²)

AST® F Wall Panel / AST® F Delign Architectural Panel / AST® F Shadow Architectural Wall Panel / AST® F Built-On Wall Panel

Thickness	U-value	Panel Weight kg/m ²	A1-A3 kg CO ₂ eq./m ²	A-C kg CO ₂ eq./m ²	B1	B2	B3-B7	C1	C2	C3	C4	D
80	0,53	20,6	29,6	31,3	0,0	0,8	0,0	0,0	0,1	0,5	0,2	-10,1
100	0,43	22,9	30,6	32,3	0,0	0,8	0,0	0,0	0,1	0,5	0,3	-10,4
120	0,36	25,2	31,6	33,4	0,0	0,9	0,0	0,0	0,1	0,5	0,3	-10,8
150	0,29	28,6	32,9	34,8	0,0	0,9	0,0	0,0	0,1	0,6	0,3	-11,2
175	0,25	31,5	34,2	36,2	0,0	0,9	0,0	0,0	0,1	0,6	0,3	-11,6
200	0,22	34,4	35,2	37,2	0,0	1,0	0,0	0,0	0,1	0,6	0,3	-12,0
240	0,18	39,0	37,2	39,3	0,0	1,0	0,0	0,0	0,1	0,6	0,3	-12,7
300	0,14	45,9	40,1	42,4	0,0	1,1	0,0	0,0	0,1	0,7	0,3	-13,7

AST® F+ Wall Panel

Thickness	U-value	Panel Weight kg/m ²	A1-A3 kg CO ₂ eq./m ²	A-C kg CO ₂ eq./m ²	B1	B2	B3-B7	C1	C2	C3	C4	D
100	0,43	22,7	30,6	32,3	0,0	0,8	0,0	0,0	0,1	0,5	0,3	-10,4
120	0,36	24,9	31,6	33,4	0,0	0,9	0,0	0,0	0,1	0,5	0,3	-10,8



Paroc Panel System

Paroc Panel System
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