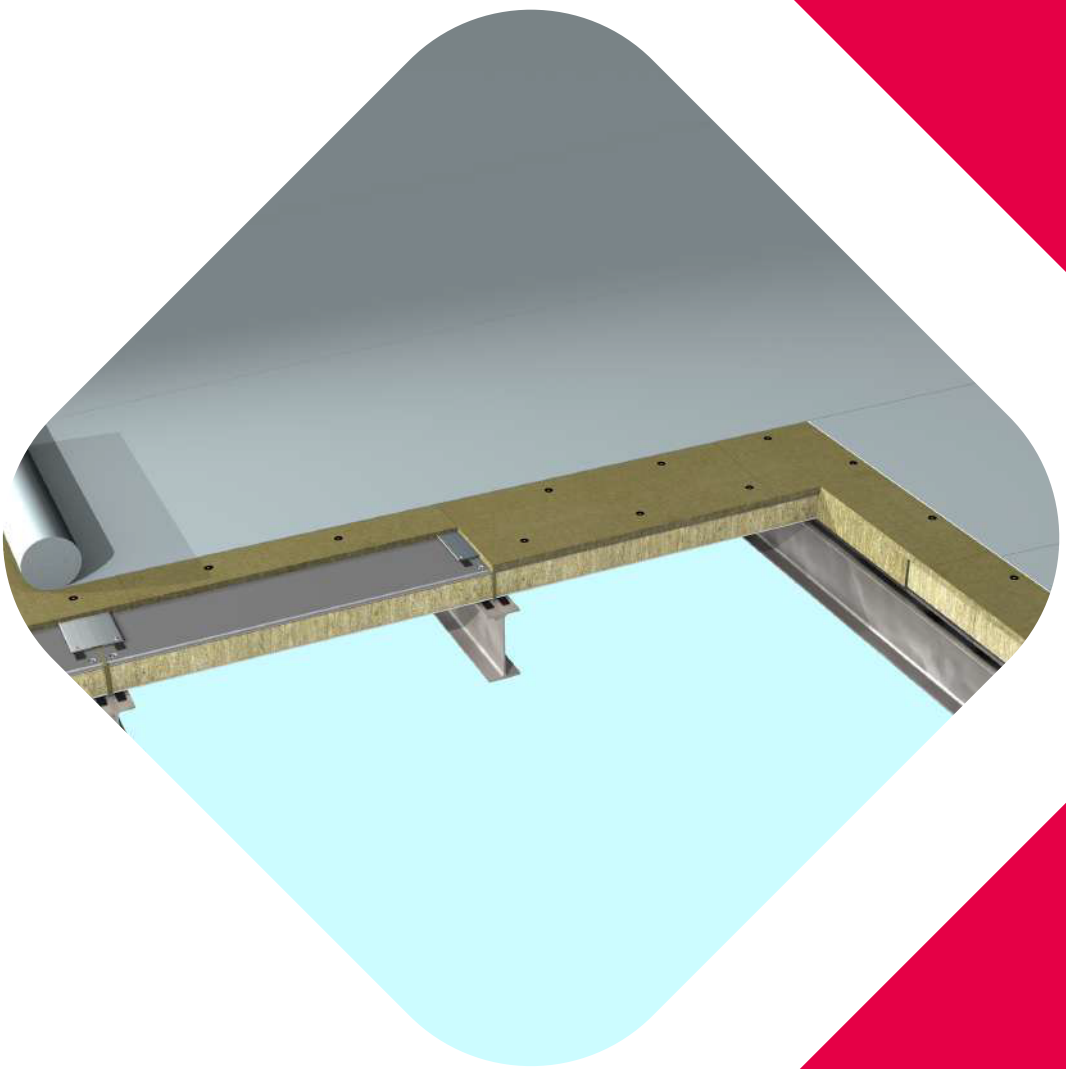
Paroc Panel System

ROOF SYSTEM

Paroc Panel System Built-Up Roof Solution

ROOF SYSTEM



Our Commitment to Sustainability

Towards Net-Zero Manufacturing

We have made many steps towards net-zero carbon manufacturing in our plants and de-carbonisation 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 CO_2 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.

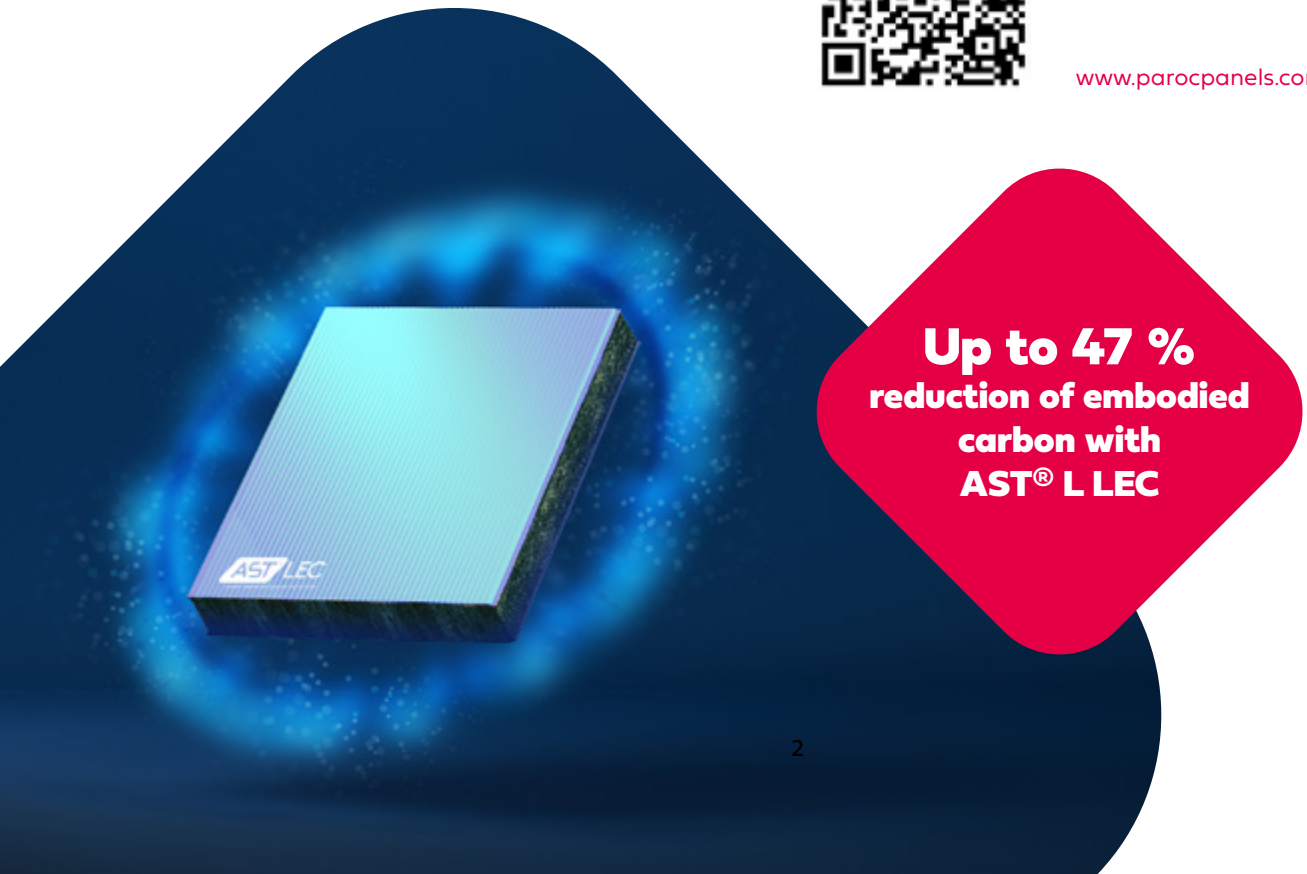
For our AST® sandwich panels we use stone wool produced in electric furnace powered by renewable energy. This allows for an 80% reduction of CO_2 and a 20% better energy efficiency in comparison to melting stone in cupola furnace.

Lower Embodied Carbon Products

Our LEC (Lower Embodied Carbon) products represent a new generation of sandwich panels with a significantly lower carbon footprint, a reduction of up to 47% depending on panel type and thickness, compared to standard AST® products.

For example our AST® L LEC panel with 80mm thickness has an LCA (Life Cycle Assessment) that shows a 47% reduction in embodied carbon (measured by the Global Warming Potential 'GWP' kgCO_2e) between life cycle modules A1 – A3, and a 45% reduction in embodied carbon between life cycle modules A – C, according the EN 15804:2012+A2:2019/AC:2021 standard. This was possible thanks to the use of low-carbon steel and renewable energy in the manufacture of both, stone wool and sandwich panels. Our Insulated Panels Environmental Product Declarations (EPDs) are available on our website.

www.parocpanels.com

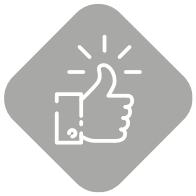


Up to 47 %
reduction of embodied carbon with AST® L LEC

Panel Roof System

Our Panel Roof System is versatile and can be used in industrial, commercial, logistics, data centres and many other buildings where high fire resistance, thermal and acoustic insulation and aesthetics are required. The base of the system is a Paroc AST E sandwich panel with structural stone wool insulation core and high compression strength. In addition, the system includes a layer of Paroc stone wool slab, a waterproofing membrane and fasteners.

Key Features:



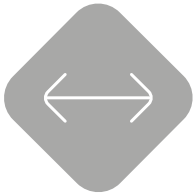
Quick Assembly

thanks to prefabricated sandwich panels, which are the basis of the system



Durable & Efficient

Our Roof Panels offer highly fire resistant, and thermally efficient solution, ensuring long-term performance with minimal maintenance



Longer Spans

The high-strength composite panel enables longer spans than a conventional built-up system



Airtight Installation

Our panels are installed to be airtight, ensuring energy efficiency and preventing air leakage.



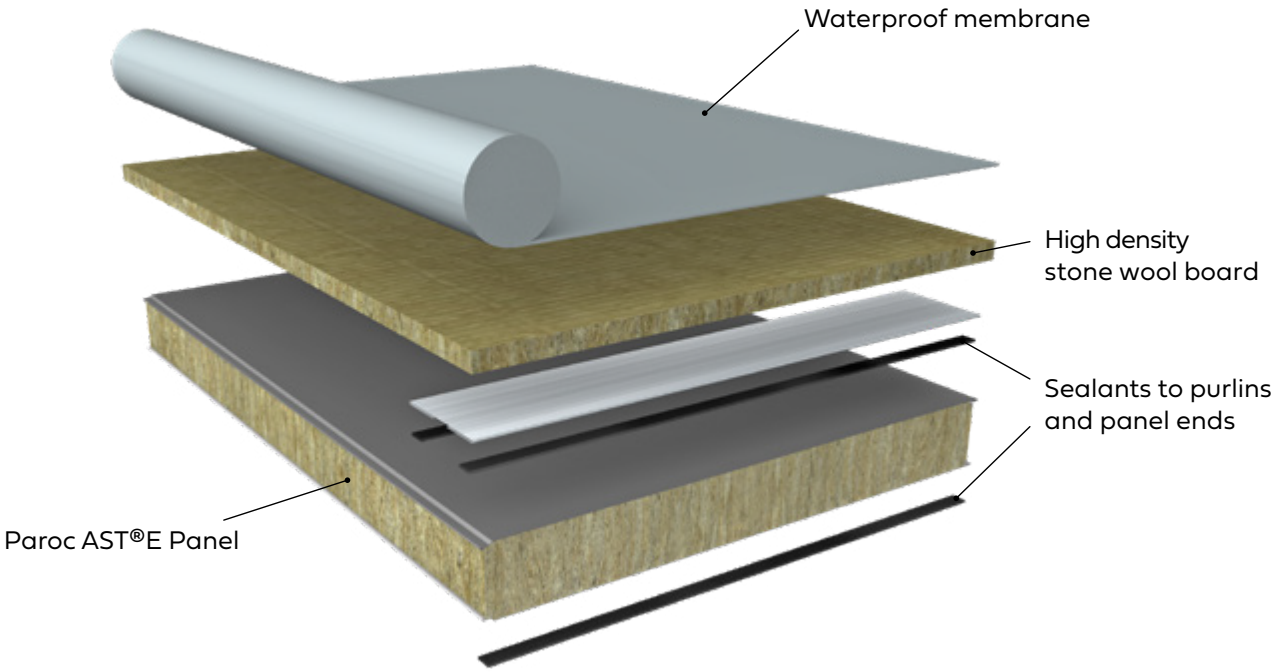
Waterproof Protection

The system includes a high-quality waterproof membrane that guarantees long-lasting protection against water damage

NOTE

Our system components are designed to work together seamlessly, but it's important to note that the responsibility for specific tasks, such as airtightness and waterproofing, lies with the respective installation teams.
We recommend professional installation to ensure the roof meets all performance standards, including waterproofing and airtightness.

System Components



Waterproof Membrane

A roof made of Paroc Roof Panels requires a separate waterproof membrane. Membrane layer shall be filmy, waterproof andfulfill the requirements regarding strength, durability and fire properties set by the customer. Manufacturer or installer of themembrane gives further information. Paroc Panel System does not supply membranes.

Paroc stone wool board (ROB80)

Paroc ROB80 is a dimensionally stable roofing board consisting of high-density stone wool. It is a fire-resistant A1-classified solution for the top layer of flat roof thermal insulation. It can be delivered with (ROB80t) or without (ROB80) glass tissue facing. It is also a protective element against foot traffic on panels, lowers the surface temperature of the panel, prevents condensation and improves the thermal insulation of the total structure.

Paroc Sandwich Panel

The AST® E panel provides a load-bearing structure, acts as a vapor barrier, offers thermal and acoustic insulation, is fire rated, and delivers a flat surface inside the building. It features a structural core made of PAROC stone wool, specifically designed for use in panels. Its surfaces are composed of hot-dip galvanized steel sheets, with a minimum thickness of 0.6 mm on the upper side and 0.5 mm on the lower side.

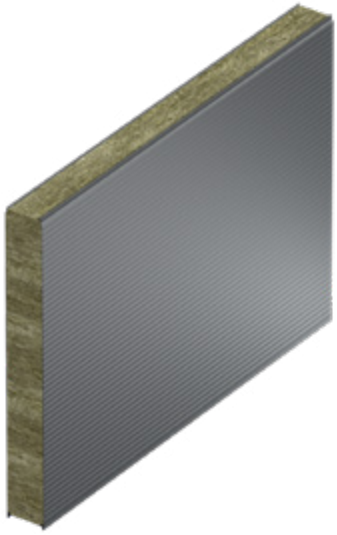
System Characteristics

Paroc AST-E Panel

AST® E through-fix sandwich panels are designed especially for high strength requirements and long spans. The AST® E stone wool core ensures a very high tensile strength of 0.230 MPa, reliable longevity, and very good fire resistance.

Product Highlights

- AST® stone wool insulation core
- U-value down to 0.14 W/m²·K for 300 mm
- Reaction to fire: A2-s1, d0
- Visible fixing
- Panel width (module/cover): 1,200 mm / 1,196 mm
- Panel lengths: 1500-12100 mm
- Product specific EPD and GWP values available



Dimensions and Weights

Paroc Panels are manufactured with modular width of 1200 mm and are delivered in specified lengths up to 12 meters. In practice the length may be limited to ensure safe handling.

Paroc stone wool board ROB80 standard thicknesses is 20- and 30-mm. Thicknesses 40 and 50 mm are also available, but then the product name changes to ROS80. The standard board size in stock is 1200x1800 mm, but also 1200x600, 1200x900 and 2400x1200 are available.

Weigths

Panel thickness	50	80	100	120	150	175	200	240	300
Panel (AST® E)	16	20	22	25	29	32	35	40	46
Panel + 20 mm ROB80	21	24	27	29	33	35	39	44	50
Panel + 30 mm ROB80	23	26	29	31	35	38	41	46	52
Panel + 40 mm ROS80	26	29	31	34	37	40	44	48	54
Panel + 50 mm ROS80	28	31	34	36	40	42	46	51	57

Thermal insulation

U-values for Paroc AST® E panels together with Paroc ROB80 boards (ROS80 slabs), calculated in accordance with **EN ISO 6946**

	λD [W/mK]	U-value [W/m²K] (A surface resistance Rsi+Rse=0,13 m2K/W is included)								
Panel thickness		50	80	100	120	150	175	200	240	300
Panel (AST® E)	0,045	0,77	0,53	0,43	0,36	0,29	0,25	0,22	0,18	0,14
Panel + 20 mm ROB80	0,045	0,55	0,42	0,35	0,30	0,25	0,22	0,20	0,17	0,13
	0,039									
Panel + 30 mm ROB80	0,045	0,48	0,38	0,32	0,28	0,24	0,21	0,19	0,16	0,13
	0,039									
Panel + 40 mm ROS80	0,045	0,43	0,35	0,30	0,26	0,22	0,20	0,18	0,15	0,13
	0,039									
Panel + 50 mm ROS80	0,045	0,39	0,32	0,28	0,25	0,21	0,19	0,17	0,15	0,12
	0,039									

Panel Strength

Design values for Paroc AST® E panel

Wrinkling strength [MPa]	Compression strength [KPa]	Shear strength [KPa]	Shear modulus [MPa]
165	110	90	9,0

Fire performance

Roofs are usually not partitioning structures, therefore there aren't usually fire resistance requirements for roof structures. Instead, the roofing material and its underlayer have normally requirements regarding reaction to fire. The underlayer in Paroc Panel System roof solution is Paroc ROB board or ROS slab which are A1 fire classified. The Paroc Panel is classified as A2-s1, d0. Fire resistance data can be found on our website: www.parocpanels.com. Fire classification of roof membranes is given by the manufacturer. Paroc Panel System recommends using membrane roofings that don't support the spread of flames.

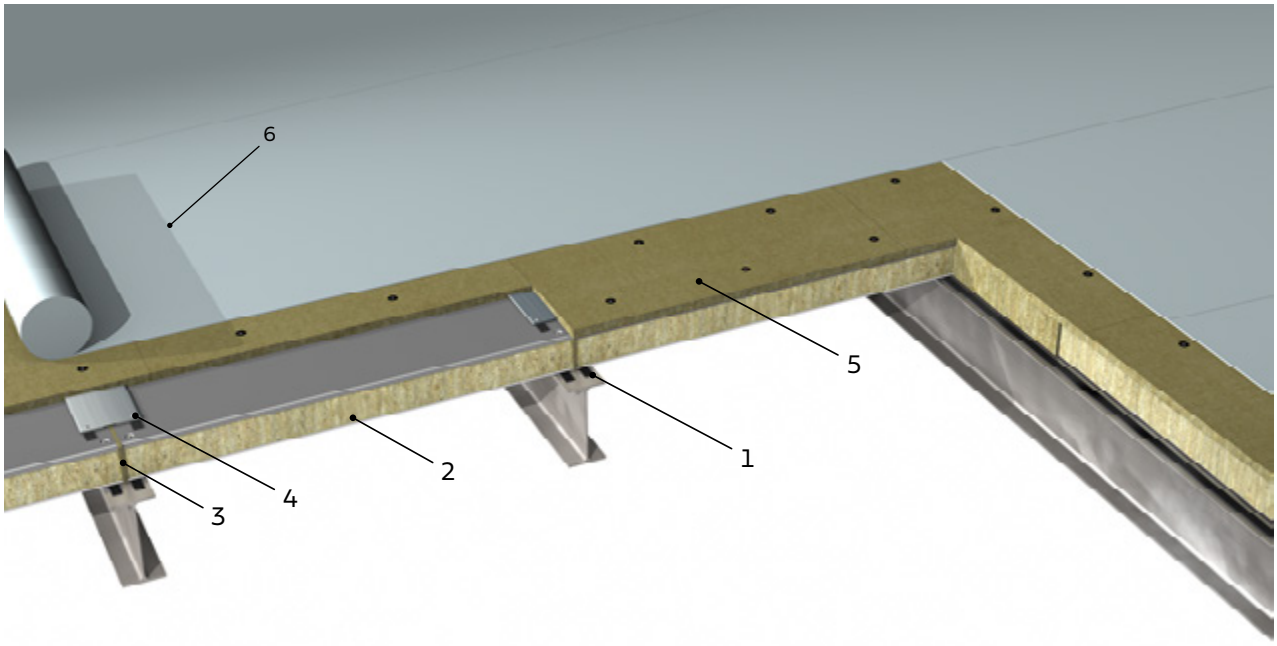
	Fire classification (EN 13501-1:2002
Paroc AST® E Panel	A2-s1, d0
Paroc ROB80 wool board/ Paroc ROB80 wool slab	A1

In case of fire Paroc Panel functions as a catenary structure, because exposed steel sheet detaches in an early phase of fire. To prevent panels from falling down, they shall be fixed from both ends according to the principles presented in the picture on page 7: Roof *System Installation*.

Acoustics & Hygiene

Acoustic properties of the panels and information about using Paroc Panels in buildings with high hygienic requirements are presented in Technical Guide that can be found on website: www.parocpanels.com or by scanning QR code.

System Characteristics



NOTE

Detailed design and installation information and technical drawings are available from Paroc Panel System's Technical Department.

1. Attach a sealant to the surface of purlin at panel ends. It is recommended to use special "crunch hinder" strips on intermediate purlins to reduce the crunching caused by panels' movements.
2. Measure the starting point for the first panel carefully. Lift the panel into its position by using LiftAid. Remember to use safety lifting line around the panel. Install the panel and fix it. The distance of the fixing from panel end should be at minimum 20 mm. The screws shall not be too tight, use screwdriver or drilling machine with depth limiter. The correct number of fasteners can be found in the installation drawing or dimensioning documents available from Paroc Panel System's Technical Department.
3. Put stone wool to panel end to insulate the end joints. Install the next panel and ensure that joints are airtight. A quick grip and hand suction pads can be used to press the panels together. Note: **Panel installation company is responsible for panel layer's air tightness**.
4. Join panel ends with a steel sheet on top. Use sealants on both panel ends. Make roof penetrations if necessary. They shall be insulated and made airtight. **Installation company is responsible for the air tightness of penetrations**.
5. Lift the wool pallets to the roof. Try to avoid lifting them on top of panels. If it cannot be avoided, lift them on top of the purlins. Maximum allowed weight of the pallet to be put on top of the panels is 360 kg (check from dimensioning documents, if the pallet weight is included in the panel dimensioning calculations). Install and fix rigid wool boards on top of panels directly after panel installation.
6. Install waterproof membrane layer directly after wool slab installation. **Membrane installation company is responsible for waterproofness**.

Paroc
Panel
System

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However, Paroc Panel System reserve the right to modify product specifications without prior notice to reflect advancements or improvements.
For applications not explicitly covered within this brochure, consultation with our Technical Advisory Service is strongly advised to ensure the product meets your specific requirements.

Users are responsible for verifying the product's suitability for their particular needs and for ensuring compliance with all applicable laws and regulations.
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