SYSTEM3E®

The only sustainable, self-insulating, jointless construction system from perlite in the world

Choose an ecological, economical and energy-efficient solution.

www.system3e.com

What we do?

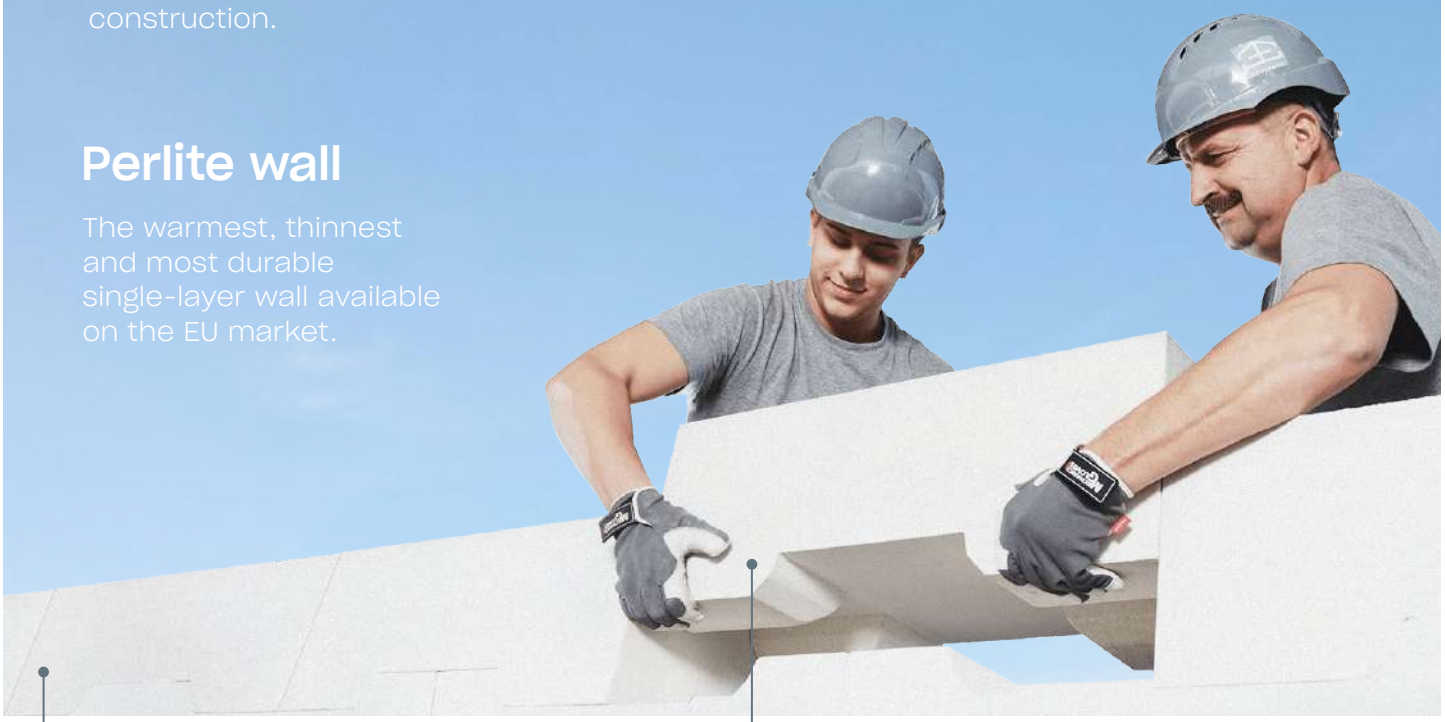
We provide an environmentally friendly product for building our clients' dream homes. We share know-how with architects and contractors, help with project adaptation and provide consultation during construction.

Who are we?

SYSTEM 3E is an innovative technology for building walls with 3E elements made of natural raw material - perlite. It is the biggest innovation in the construction industry in 100 years!

Perlite wall

The warmest, thinnest and most durable single-layer wall available on the EU market.



The modern production process makes the dimensions of the elements very precise and connect perfectly with each other. The structural durability of 3E walls has been confirmed by compression, bending and shear testing. SYSTEM 3E meets all European standards.

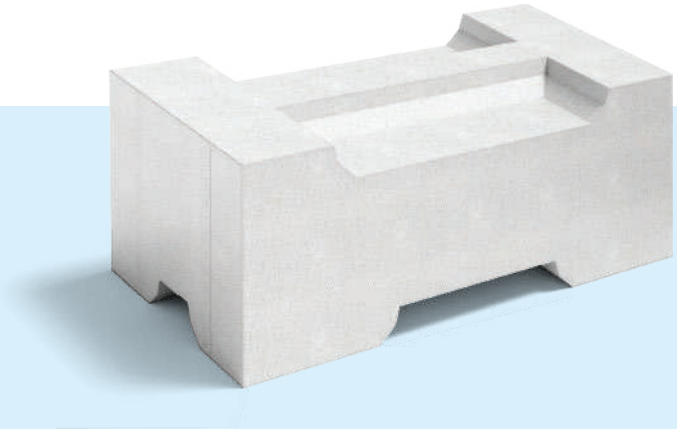
The 3E elements are assembled seamlessly, using the "click-click" method. This is possible thanks to the reference at the joints of the elements to the action of a Morse cone. This results in a self-anchoring wall structural system.

Perlite

The heart of SYSTEM 3E technology is perlite, a volcanic rock found all over the world.

Perlite has excellent thermal insulation properties.

The material is fireproof, lightweight, mineral, chemically and biologically inert.



Eco-friendly home is a healthy home

Healthy walls

No mortar or glue is used to build 3E walls, and they do not require any additional insulation. This means no chemicals or artificial materials - making your investment healthy and eco-friendly.

Healthy home microclimate

High water vapor permeability ensures easy air flow and makes the house "breathe". This results in a lack of moisture in the house, and you don't worry about mold or mildew. This solution is ideal for allergy sufferers and asthmatics.

Perfect temperature all year round

Thanks to the excellent properties of perlite, the house is warm during winter so it's energy requirement is lower. This not only helps lower heating bills, but also reduces emissions into the atmosphere. On the other hand, during hot weather, you can find comfort in a perlite house - even without air conditioning.

Eco-friendly production process

The production of 3E elements does not require high energy consumption and the entire process was developed according to sustainable principles. During production, CO_2 emissions into the atmosphere were significantly reduced and water consumption was cut by three times. Perlite elements can also be 100% recycled - the recycled raw material will still be ideal for other components of an eco-friendly building.

Designing in SYSTEM 3E

What your architect should know about?

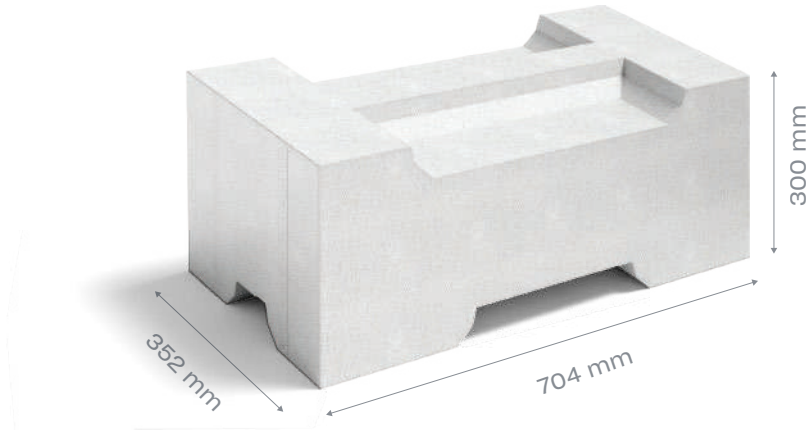
- single-family houses
- commercial buildings
- filling of high frame structures
- multi-family houses and housing estates
- public buildings
- load-bearing walls or filling

Modularity

When designing with SYSTEM 3E technology, we operate with a module of 352 mm. The length of the basic element (S1) is 704 mm.

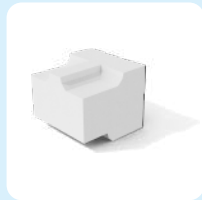
The effective height of the element is 250 mm.

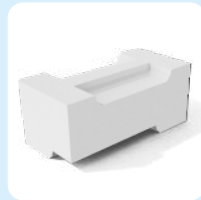
Basic element S1

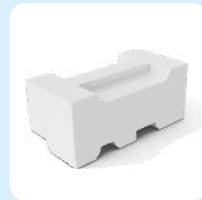


80% of the walls are built with 6 basic elements, the rest are used depending on the complexity of the project.

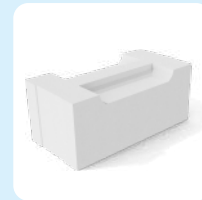

BASIC ELEMENT S1


HALF ELEMENT S1/2


LEFT CORNER ELEMENT SNL


RIGHT CORNER ELEMENT SNP


ENDING ELEMENT SZ/EO


STARTER ELEMENT SO

Design process

01

The shape of the element is ergonomic enough not to limit the freedom of designing the architecture.

02

It is best to design with the module from the beginning.

03

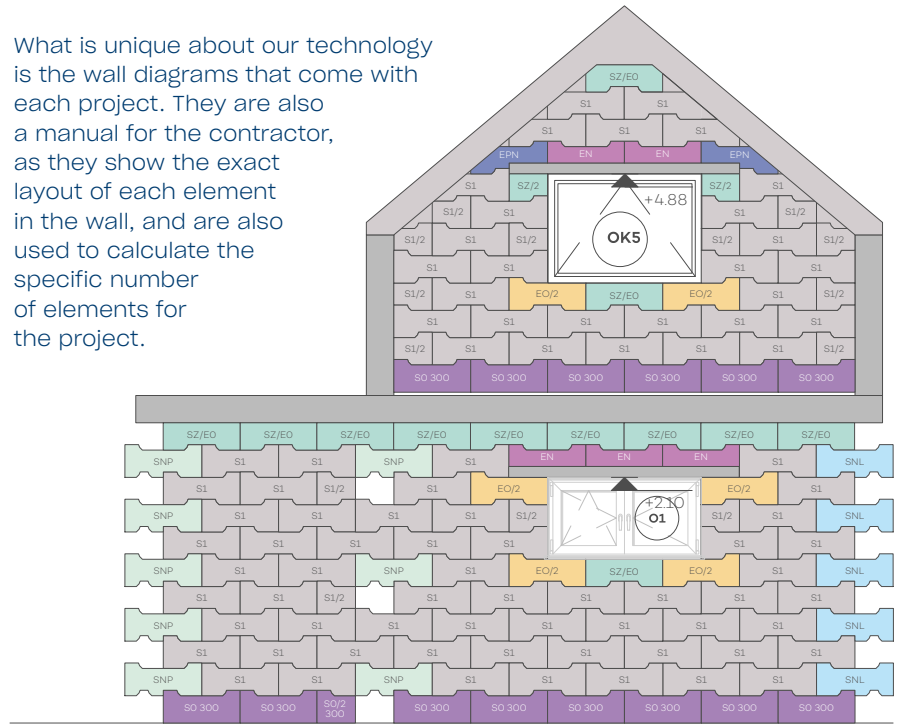
The module does not make it difficult to perform adaptation.

3E technology is compatible with all solutions used in the construction industry:

- INDIRECT AND DIRECT FOUNDATIONS
- MONOLITHIC AND PREFABRICATED LINTELS
- MONOLITHIC, THICK RIBBED, PREFABRICATED CEILING
- TRADITIONAL AND PREFABRICATED ROOF TRUSSES

Wall diagrams

What is unique about our technology is the wall diagrams that come with each project. They are also a manual for the contractor, as they show the exact layout of each element in the wall, and are also used to calculate the specific number of elements for the project.



Less reinforced concrete

SYSTEM 3E makes it possible to reduce the number of reinforced concrete elements in a building project.

The idea of prefabrication and healthy perlite walls comes first.

3E corner

We avoid reinforced concrete columns in the corners of the walls due to the fact that the elements connect perfectly at an angle of 90 degrees.

This advantage results from the shape and dimensional accuracy of the 3E elements.

SYSTEM3E

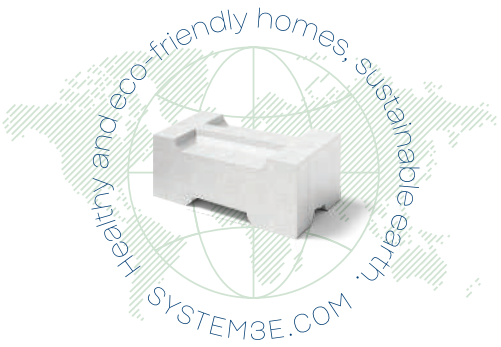
Discover the benefits of 3E

For you:

- thinnest, warmest and environmentally friendly house walls
- shorter construction time vs. traditional methods
- the only construction and insulation material made of perlite - safe for health and the environment
- the best choice for you and your family

For your architect:

- free training and technical advice
- starter files for designing in CAD environment
- database of recommended design details
- 3E architect support at the design stage



Questions? Contact us:

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Warsaw, Poland

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www.system3e.com

SYSTEM3E

TECHNICAL CARD

ELEMENTS 3E EKO+

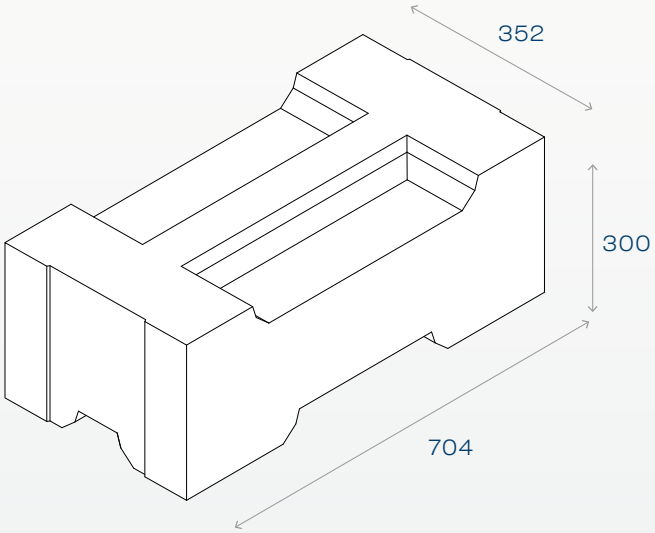
Elements designed for the erection
of single-layer structural walls.

ECO-FRIENDLY CONSTRUCTION

THE JOINTLESS SYSTEM COMPRISES 70 TYPES OF ELEMENTS GROUPED ACCORDING TO THEIR PURPOSE.

DIMENSIONS OF THE BASIC ELEMENT

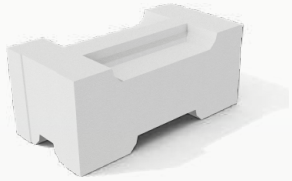
S1 WP



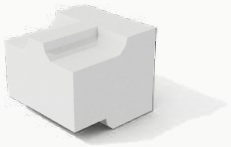
Deviations:	D4
Flatness of the laying surface:	≤ 1,0 mm
Parallelism of the laying surface:	≤ 1,0 mm
Mass of a single piece:	32 kg/el.

Declaration of Performance (DoP) S3E EKO+/.../01/23

6 BASIC ELEMENTS



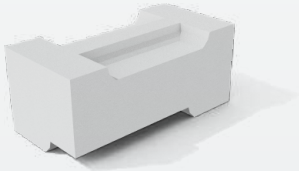
BASIC
ELEMENT **S1 WP**
purpose: infill



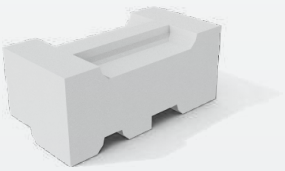
HALF
ELEMENT **S½ W**
purpose: infill

ENDING
ELEMENT **SZ/E0 WP**
purpose: top structure end

STARTING
ELEMENT **S0 WP**
purpose: foundation slab surface



LEFT
CORNERELEMENT **SNL**
purpose: corner laying



LEFT
CORNER ELEMENT **SNP**
purpose: corner laying

SYSTEM 3E EKO+ is currently the warmest material for building:

- energy-saving
- zero-energy
- plus-energy
- passive houses

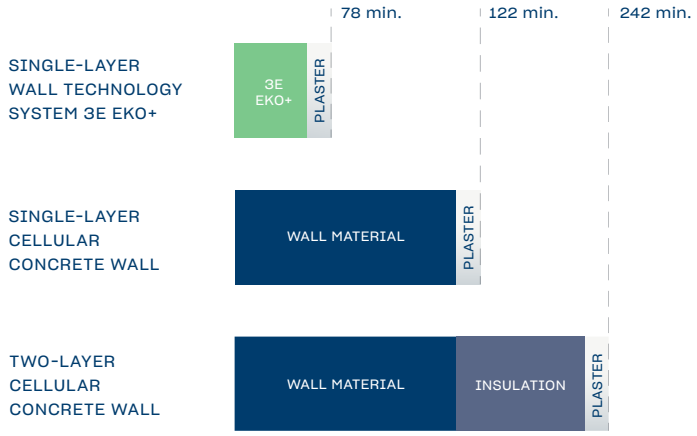
WITHOUT INSULATION

BONDING WITHOUT MORTAR AND GLUE

U=0,198 W/m²K

CONSTRUCTION OF 1 m² WALL IN 4.5 MINUTES

Building time comparison of a 1 m² wall



SYSTEM3E

TECHNICAL CARD

ELEMENTS 3E EKO+

Elements designed for the erection of single-layer structural walls.

ECO-FRIENDLY CONSTRUCTION

PERFORMANCE CHARACTERISTICS

Density	310 ± 10% kg/m^3
Characteristic compressive strength	≥ 1,5 N/mm^2
Water absorption due to capillary rise	after 10': ≤ 40 g/m^2 · s$^{0.5}$
Dimensional stability. Moisture expansion	≤ 0,30 mm/m
Reaction to fire	A1
Water vapour permeability, diffusion resistance factor	≤ 15
Freeze/thaw durability	20 cycles

Source: Technical recommendation SYSTEM 3E EKO+ RT2023/03/01

TECHNICAL CONSTRUCTION PARAMETERS

Characteristic compressive strength of masonry	f_k = 1,02 N/mm^2
Characteristic value of the tensile strength (when the upper edge is restrained) at bending in the case of failure in the perpendicular plane	$f_{xk\perp}$ = 0,11 N/mm^2
Characteristic value of the tensile strength (when the upper edge is restrained) at bending for failure in the parallel plane	$f_{xk\parallel}$ = 0,31 N/mm^2
Characteristic shear strength of masonry	f_{vk} = 0,07 N/mm^2

Source: Technical recommendation SYSTEM 3E EKO+ RT2023/03/01

LOGISTICAL DATA

Consumption of 1 m^2	5,71 el./m^2
Wall area per pallet	4,2 m^2
Number of elements per pallet	to 24 el.
Approximate weight of the pallet	800 - 900 kg
Weight of a single element	32 kg/el.
Weight of 1 m^2	182,7 kg/m^2

THERMAL PROPERTIES

Thermal conductivity coefficient (λ)	0,072 W/(m·K)
Thermal resistance coefficient R	4,89 (m^{2}K)/W
Heat transfer coefficient for unrendered walls U	0,198 W/(m^{2}K)
Heat transfer coefficient for rendered walls U*	0,196 W/(m^{2}K)

Source: Technical recommendation SYSTEM 3E EKO+ RT2023/03/01
*Wall covered with 1 cm thick gypsum plaster (λ=0,39 W/(m²·K)) on the inside and with 1 cm thick cement-lime plaster (λ=0,46 W/(m²·K)) on the outside

ACOUSTIC PROPERTIES

	R_w (C, C_{tr}) [dB]	$R_{A,1}$ [dB]	$R_{A,2}$ [dB]
Non-plastered wall	45 (-1;-4)	44	41
Plastered wall*	45 (-1;-4)	44	41

Source: Technical recommendation SYSTEM 3E EKO+ RT2023/03/01
*Wall covered on both sides with 1 cm thick cement-lime plaster

FIRE RESISTANCE CLASS

Loaded to 100% of the design resistance*	REI 240 + M

Source: Technical recommendation SYSTEM 3E EKO+ RT2023/03/01
*Non-plastered wall

Harmonised standard EN 771-3:2011+A1:2015, recognised by PKN as the Polish standard PN-EN 771-3+A1:2015-10, design with the requirements of the Eurocode 6 set of standards.

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SYSTEM3E

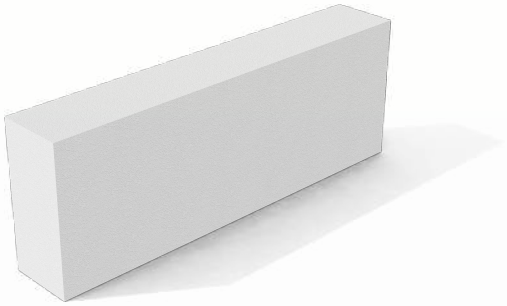
TECHNICAL CARD

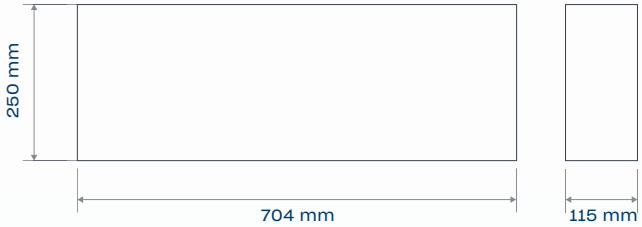
INTERNAL 115

Elements designed for the erection of partition walls in houses and commercial buildings.

ECO-FRIENDLY CONSTRUCTION

INTERNAL WALL BASE ELEMENT — D1 115

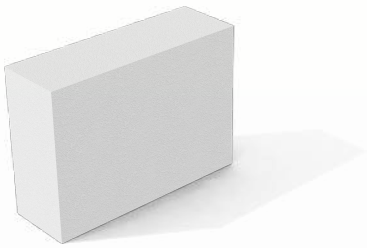


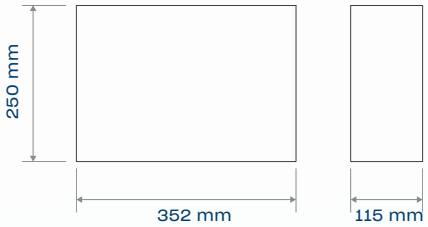


Properties of the **D1 115** element

Length:	704 mm
Height:	250 mm
Width:	115 mm
Weight of single piece:	10,8 kg/el.
Deviations:	D4
Flatness of laying surface:	≤ 1,0 mm
Parallelism of laying surface:	≤ 1,0 mm

INTERNAL WALL HALF ELEMENT — D½ 115





Properties of the **D½ 115** element

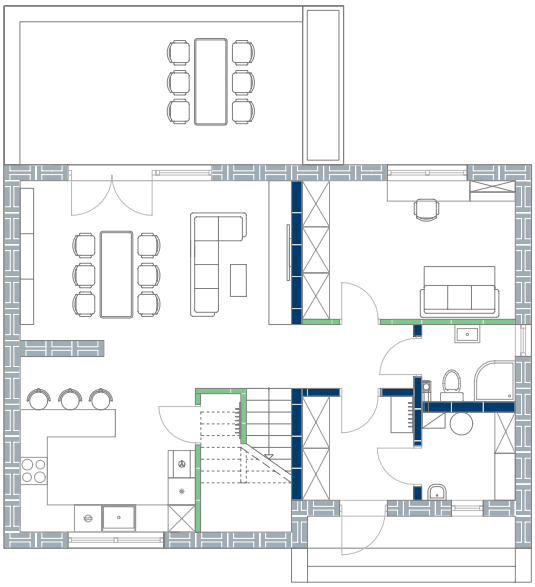
Length:	352 mm
Height:	250 mm
Width:	115 mm
Weight of single piece:	5,4 kg/el.
Deviations:	D4
Flatness of laying surface:	≤ 1,0 mm
Parallelism of laying surface:	≤ 1,0 mm

Source: Declaration of performance S3E.D1 115/I/01/21 and S3E.D1/2 115/I/01/21

SYSTEM 3E load-bearing wall

SYSTEM 3E INTERNAL 175 internal walls

SYSTEM 3E INTERNAL 115 internal walls



SYSTEM 3E technology in practice

- QUICK ASSEMBLY
- ACOUSTIC COMFORT
- ECOLOGICAL MATERIAL
- LIGHTWEIGHT WALL CONSTRUCTION

SYSTEM3E

TECHNICAL CARD

INTERNAL 115

Elements designed for the erection of partition walls in houses and commercial buildings.

ECO-FRIENDLY CONSTRUCTION

PERFORMANCE CHARACTERISTICS

Density	390 kg/m^3
Thermal conductivity coefficient (λ)	0,084 W/(m·K)
Characteristic compressive strength	≥ 2,0 N/mm^2
Water absorption due to capillary rise	after 10': ≤ 50 g/m^2 · s$^{0.5}$
Dimensional stability. Moisture expansion	≤ 0,35 mm/m
Reaction to fire	A1
Water vapour permeability, diffusion resistance factor	≤ 15
Freeze/thaw durability (20 cycles)	no damage

Source: Declaration of Performance S3E.D1 115/I/01/21 and S3E.D1/2 115/I/01/21

TECHNICAL CONSTRUCTION PARAMETERS

Characteristic value of the tensile strength (when the upper edge is restrained) at bending in the case of failure in the perpendicular plane	$f_{xk\perp}$ = 0,14 N/mm^2
Characteristic value of the tensile strength (when the upper edge is restrained) at bending for failure in the parallel plane	$f_{xk\parallel}$ = 0,10 N/mm^2
Characteristic shear strength of masonry	f_{vk} = 0,10 N/mm^2

Source: Declaration of Performance S3E.D1 115/I/01/21 and S3E.D1/2 115/I/01/21

LOGISTICAL DATA

Consumption of 1 m^2	5,65 el./m^2
Wall area per pallet	8,85 m^2
Number of elements per pallet	to 50 el.
Approximate weight of the pallet	550 kg
Weight of a single element D1 115	10,8 kg/el.
Weight of a single element D½ 115	5,4 kg/el.
Weight of 1 m^2	61,02 kg/m^2

ACOUSTIC PROPERTIES

	R_w (C, C_{tr}) [dB]	$R_{A,1}$ [dB]	$R_{A,2}$ [dB]
Non-plastered wall	39 (-1;-2)	38	37
Plastered wall*	40 (-1;-4)	39	36

*Wall covered with 1 cm thick gypsum plaster on both sides

FIRE RESISTANCE CLASS

Not loaded wall	EI 120

Harmonised standard EN 771-3:2011+A1:2015, recognised by PKN as the Polish standard PN-EN 771-3+A1:2015-10, design with the requirements of the Eurocode 6 set of standards

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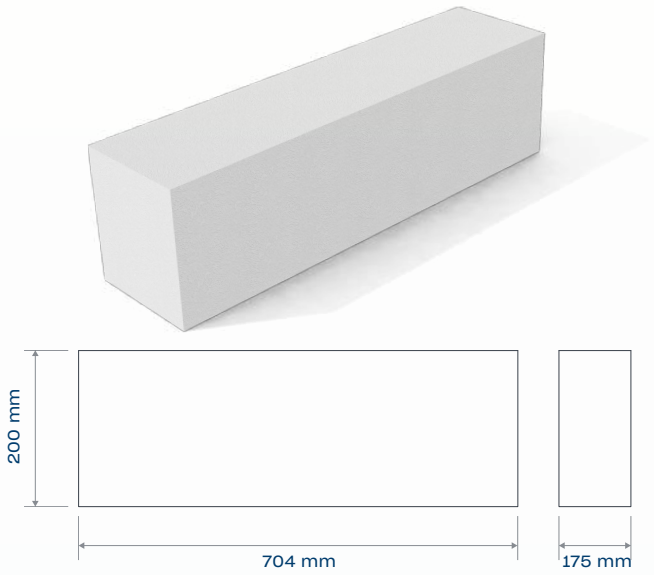
TECHNICAL CARD

INTERNAL 175

Elements designed for the erection of partition walls in houses and commercial buildings.

ECO-FRIENDLY CONSTRUCTION

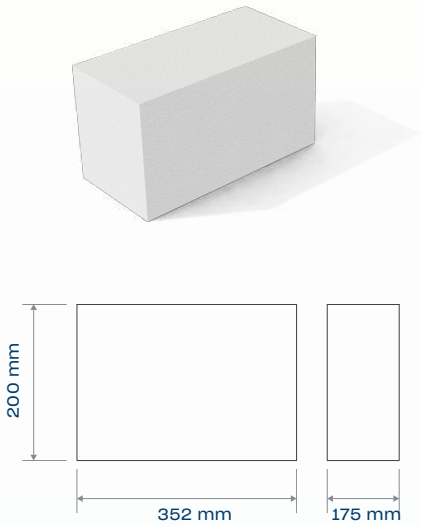
INTERNAL WALL BASE ELEMENT D1 175



Properties of the **D1 175** element

Length:	704 mm
Height:	200 mm
Width:	175 mm
Weight of single piece:	13,31 kg/el.
Deviations:	D4
Flatness of laying surface:	≤ 1,0 mm
Parallelism of laying surface:	≤ 1,0 mm

INTERNAL WALL HALF ELEMENT D½ 175



Properties of the **D½ 175** element

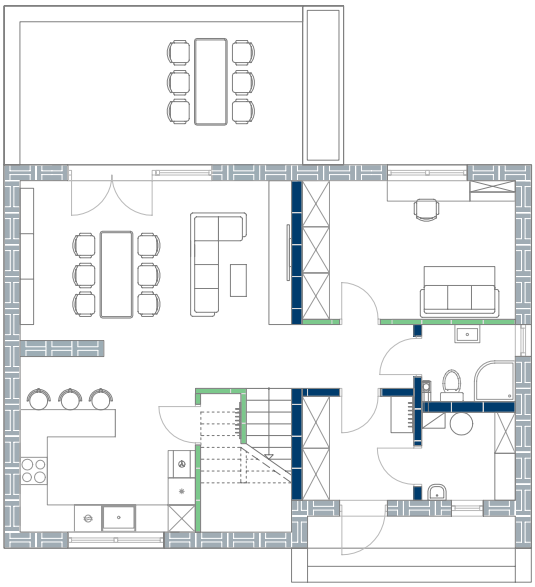
Length:	352 mm
Height:	200 mm
Width:	175 mm
Weight of single piece:	6,66 kg/el.
Deviations:	D4
Flatness of laying surface:	≤ 1,0 mm
Parallelism of laying surface:	≤ 1,0 mm

Source: Declaration of performance S3E.D1 175/I/01/21 and S3E.D1/2 175/I/01/21

SYSTEM 3E load-bearing wall

SYSTEM 3E INTERNAL 175 internal walls

SYSTEM 3E INTERNAL 115 internal walls



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Dimensional stability. Moisture expansion	≤ 0,35 mm/m
Reaction to fire	A1
Water vapour permeability, diffusion resistance factor	≤ 15
Freeze/thaw durability	20 cycles

Source: Declaration of Performance S3E.D1 175/I/01/21 and S3E.D1/2 175/I/01/21

TECHNICAL CONSTRUCTION PARAMETERS

Characteristic value of the tensile strength at bending in the case of failure in the perpendicular plane	$f_{xk\perp}$ = 0,14 N/mm²
Characteristic value of the tensile strength at bending for failure in the parallel plane	$f_{xk\parallel}$ = 0,10 N/mm²
Characteristic shear strength of masonry	f_{vk} = 0,11 N/mm²

Source: Declaration of Performance S3E.D1 175/I/01/21 and S3E.D1/2 175/I/01/21

LOGISTICAL DATA

Consumption of 1 m²	7,02 el./m²
Wall area per pallet	5,98 m²
Number of elements per pallet	to 40 el.
Approximate weight of the pallet	550 kg
Weight of a single element D1 175	13,31 kg/el.
Weight of a single element D½ 175	6,66 kg/el.
Weight of 1 m²	93,4 kg/m²

ACOUSTIC PROPERTIES

	Rw (C, Ctr) [dB]	RA,1, [dB]	RA,2 [dB]
Non-plastered wall	42 (-1;-5)	41	37
Plastered wall*	43 (-1;-3)	42	39

*Wall covered with 1 cm thick gypsum plaster on both sides

FIRE RESISTANCE CLASS

Non-load bearing wall	EI 120

Harmonised standard EN 771-3:2011+A1:2015, recognised by PKN as the Polish standard PN-EN 771-3+A1:2015-10, design with the requirements of the Eurocode 6 set of standards

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