



SOLBET autoclaved aerated concrete
Recipe for a warm and durable house



About SOLBET company

SOLBET company is the largest Polish manufacturer of top quality aerated concrete block. For over 72 years we have been fabricating building components from aerated concrete block. We have five plants for the fabrication of aerated concrete block masonry units, as well as plants fabricating construction chemicals and concrete precast, and two plants that manufacture process lines for the fabrication of autoclaved cellular concrete. Due to this, we have become an independent manufacturer of comprehensive system of building products called SOLBET Perfekt.

Our company's registered office in Solec Kujawski is the Europe's largest production plant of aerated concrete block. This modern factory is the European leader in the fabrication of this building material. Proven strategy of the company assures the optimization of production costs, which in turn has a positive effect on shaping our pricing policy towards customers. We are able to offer our customers high quality products for reasonable price. Excellent quality of SOLBET products, resulting from the experience gained over 72 years, enables us to achieve significant success on demanding European markets.

Our brand is present on many European markets. SOLBET blocks are sold e.g. in Great Britain, Denmark, Sweden, Norway, Belgium, Germany, Slovakia, the Czech Republic, Hungary, Croatia, Lithuania, Latvia and Ukraine. The quality of SOLBET materials and technological level of our production plants are comparable with other European manufacturers. We are pleased with the trust shown by new customers and constantly expanding circle of satisfied customers.

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Market offer

On the European market, we offer blocks of autoclaved aerated concrete, U-blocks and thin-layer mortars. Our products are tested in accredited laboratories in the country and abroad on a regular basis. They have been repeatedly tested by the Technical University in Cottbus and MPA KIWA in Berlin. First tests at the Technical University in Cottbus were conducted in 2004. Since then we possess all the required certificates authorizing the sale of our products on the German market. For few years MPA Berlin has regularly conducted tests of SOLBET products and has supervised the quality control units in our plants. As a result, our products are characterized by the highest quality and meet the requirements of national and European Standards (EN). In Poland, we offer a comprehensive system SOLBET Perfekt.

It provides a full product range of complementary products such as masonry units, plates, prefabricated lintels, U-blocks,

as well as different types of construction materials in the form of mortar, plaster and glue for insulation systems.

The properties of all products have been carefully selected and tested. Our broad and conceptual approach to the building process is aimed at improving the comfort of investors, designers and contractors, as well as to raise the standards of currently realized building facilities. Designing and building with SOLBET system is easy, and the built facility is characterized by high durability and energy efficiency.



SOLBET SYSTEM includes top quality materials

SOLBET Perfekt is the system for better building

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Why is it worth building with SOLBET SYSTEM?

With the use of SOLBET autoclaved aerated concrete it is possible to build various facilities: ranging from detached house and block of flats, through commercial/trading buildings to industrial facilities. SOLBET blocks can be used for the construction of single-layer, multi-layer, load-bearing and partition walls. High dimensional accuracy of our products allows for bricklaying with thin weld.

The buildings made of SOLBET materials are durable, healthy and modern. They meet the most stringent requirements and fit into energy-efficient construction trends. This is evidenced by highly energy-efficient and passive buildings built of our materials,

constructed in our not too friendly climate. Below you will find a few selected advantages of our materials.

1. SUSTAINABLE

The company SOLBET works in a closed ecological circuit, from the production to the disposal. We constantly invest in modern, efficient and environmentally friendly solutions. Two wind turbines, whose total power on windy days satisfies the plant's demand for electricity, is the company's contribution to pro-ecological activities. For the fabrication of cellular concrete we use only natural raw materials (limestone, quartz sand, water). In turn the low weight of our building materials saves energy consumed for transport purposes. Our materials are environmentally friendly and do not emit any harmful compounds. This enables trouble-free demolition of the facility and the recycling of SOLBET autoclaved aerated concrete allows for the reduction of the amount of waste going to landfill.

2. ENERGY-EFFICIENT BUILDING

Building with the use of SOLBET materials will save energy and heating costs. Special properties of autoclaved aerated concrete protect the interior of the building both from summer heat and winter cold. Due to the high thermal insulation, extreme temperatures prevailing outside will never reach the living quarters. In this way, SOLBET autoclaved aerated concrete provides high comfort of living and guarantees the saving of expensive energy. This is confirmed by renowned research laboratories and material control institutes in Poland and Germany. For our aerated concrete blocks PP2-0,35 we declare the value $\lambda = 0,090 \text{ W/mK}$.

3. SOLID CONSTRUCTION

SOLBET autoclaved aerated concrete guarantees sufficient stability of erected buildings without affecting the flexibility of architectural design. Compressive strength from 2,75 to 4,75 N/mm² makes the material suitable for erecting both load-bearing walls, as well as partition walls. Owing to the fact that SOLBET blocks are fairly light, their movement and bricklaying can be done in a very short time. In this way the building process runs quickly and smoothly.

4. OPTIMAL MICROCLIMATE OF ROOMS

The unique structure of SOLBET blocks creates a healthy and pleasant climate inside rooms. High thermal insulation of the building material allows to maintain uniform temperature in the interiors, despite temperature fluctuations outside the building. In turn, autoclaved aerated concrete porosity makes it collect excess moisture indoors and releases it only when the air is too dry.

5. SAFETY

SOLBET autoclaved aerated concrete is non-combustible. This material is fireproof and can serve as a barrier for a spreading fire. It does not emit any harmful substances. Even 11,5 cm thick partition wall has fire-resistance class EI 120. Higher fire resistance class REI 240 can be achieved by building 17,5 cm thick walls. In this way SOLBET materials guarantee the highest safety, without any additional installations against fire. Regularly conducted fire resistance tests of our materials in research laboratories clearly confirm the high level of safety.

Their resistance to high temperatures is evidenced by the fact

that the chambers, where fire tests of other building materials are performed, are made of autoclaved aerated concrete.

6. THE HIGHEST RESISTANCE TO ADVERSE FACTORS

SOLBET blocks are the building material resistant to all weather conditions. The chemical composition of the autoclaved aerated concrete also prevents the growth of dangerous microorganisms. Because of the strong alkaline level of the material and rapid evaporation of moisture, there will be no bacteria, mould or fungi on the surface of our autoclaved aerated concrete.

7. FLEXIBILITY

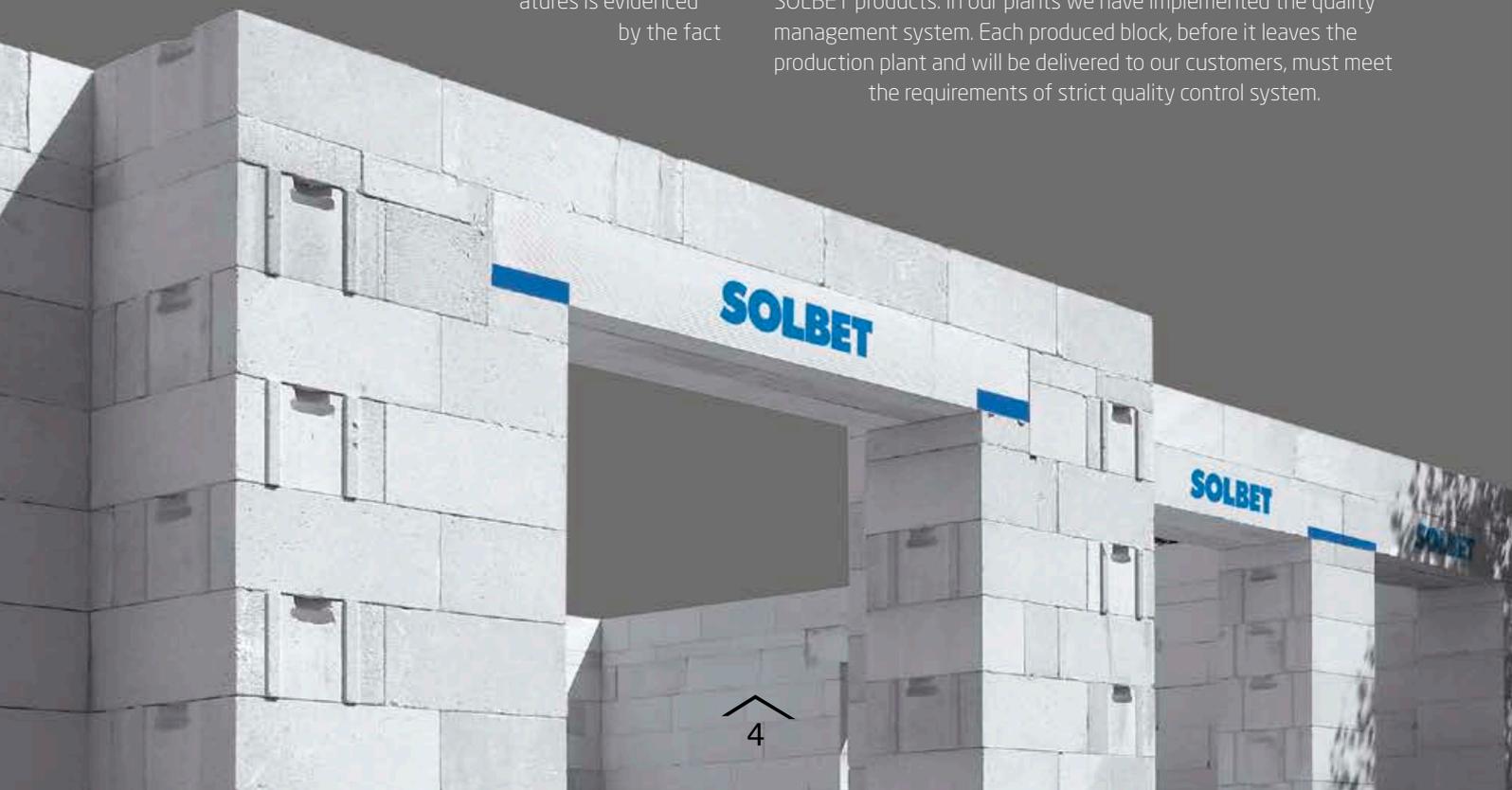
Each product of the SOLBET company is manufactured with high dimensional accuracy. Blocks, plates and precast lintels are available in many dimensions. Thanks to this, the construction of a wall can be carried out solely with the use of SOLBET materials. Due to the ease of use of our autoclaved aerated concrete, there are no architectural barriers starting from the basement up to the roof of the building. It can be used to build e.g. partition walls extending along a curve, and even impressive body of a fireplace or a bath.

8. SAVING CONSTRUCTION COSTS

Thanks to the lightweight and relatively big dimensions of SOLBET blocks, building works run in an easy and smooth way. Their use reduces construction time, which translates into lower costs. Due to contoured side surfaces of the blocks, there is no need to fill horizontal welds with mortar, which accelerates building works and saves the costs of purchasing mortar. Another advantage of blocks is their high dimensional accuracy, which makes the bricklaying with the use of thin layer mortar possible. Precise bricklaying is child's play, single elements of blocks can be easily, individually trimmed, and the construction requires the use of the simplest of tools only. The best confirmation of this fact is the building of the International Foundation "Habitat for Humanity", made from our materials by volunteers.

9. THE HIGHEST QUALITY

Our long experience, educated employees, modern production system and high ambitions serve only to create the highest quality SOLBET products. In our plants we have implemented the quality management system. Each produced block, before it leaves the production plant and will be delivered to our customers, must meet the requirements of strict quality control system.



BLOCKS

Offered autoclaved aerated concrete blocks are key and most widely used building element for erecting external, internal, partition and load-bearing walls. They can also be used to construct single-layer and multilayer walls with a layer of insulation.

SOLBET PLATES

Area of application of SOLBET plates is very wide. The plates are used to construct a single-layer external wall in the place of concrete tie beam formwork. In this way it is possible to obtain uniform surface of the wall which facilitates further performance of plastering works. With the use of SOLBET plates in this place, a layer of tie beam insulation from hydrophobic mineral wool (non water-absorbent) or polystyrene should be considered. The material used for insulation should be placed between plates and ceiling.

TABLE 1: RANGE OF SOLBET BLOCKS AND PLATES

Name	Density [kg/m³]	Thickness [mm]										
		50	75	100	115	150	175	200	240	300	365	420
PP2-0,35	325 (±25)						x				x	
PP2-0,4	375 (±25)						x		x	x	x	x
PP2-0,5	475 (±25)	x	x	x		x		x				
PP4-0,6	575 (±25)				x		x		x	x	x	

U - BLOCKS

U-blocks are used as formwork when making beams, lintels, tie beams or concrete pillars. With the use of U-blocks in single-layer walls it is necessary to additionally place from the inside the insulating layer from hydrophobic (non water-absorbent) mineral wool or polystyrene.

TABLE 2: RANGE OF SOLBET U-BLOCKS

Name	Density [kg/m³]	Thickness [mm]						
		150	175	200	240	300	365	420
PP2-0,4	375 (±25)		x		x	x	x	x
PP2-0,5	475 (±25)	x		x				

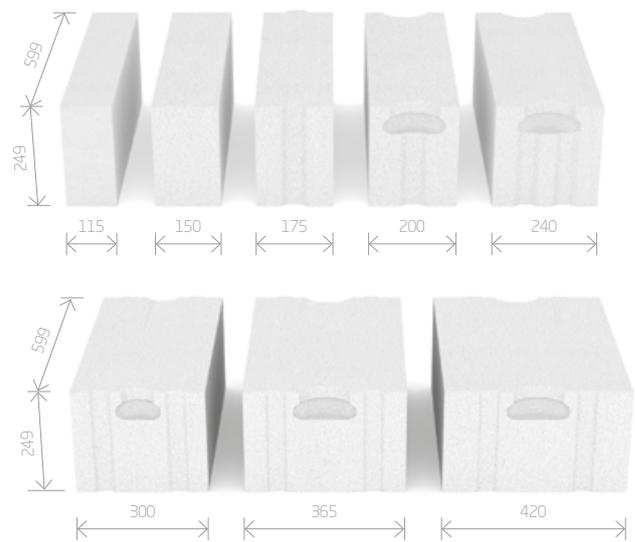
THIN LAYER MORTAR

Thin-layer mortar is fabricated in our plant in Aleksandrów Kujawski and is an integral part of the system SOLBET Perfekt. Characteristics of the mortar has been selected in a way adapted to the masonry unit, in order to obtain a stable wall with excellent technical parameters.

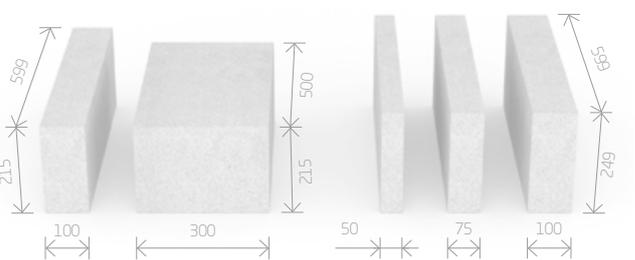
TABLE 3: USE OF THIN LAYER MORTAR PER 1 m² WALL

Block thickness [cm]	Tongue and groove blocks [kg]	Blocks without tongue and groove [kg]
5	-	0,9
7,5	-	1,4
10	-	1,8
11,5	-	2,1
15	-	2,8
17,5	-	3,2
20	2,6	3,6
24	3,0	4,3
30	4,0	5,6
36,5	4,6	6,6
42	5,3	7,6

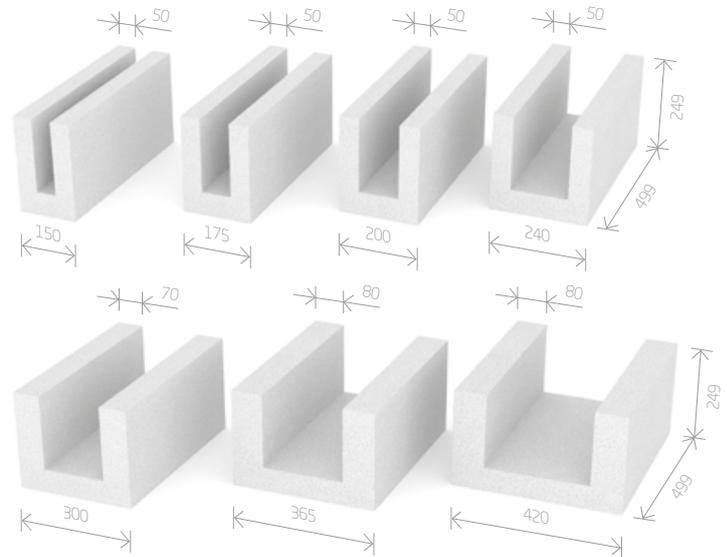
BLOCKS



BLOCKS



U-BLOCKS



THIN LAYER MORTAR



3 | Technical data

DIMENSIONS

TABLE 4: BLOCKS AND PLATES

Width	Height	Length	Weight of 1 piece	Number on the pallet	Number on the pallet	Pallet weight	Tongue and groove with an assembly
[mm]	[mm]	[mm]	[kg]	[pcs.]	[m ²]	[t]	
PP2-0,35							
175	249	599	13,10	64	9,54	0,80	N+F
365			27,20	32	4,77	0,84	2N+F,G
PP2-0,4							
175	249	599	14,41	64	9,54	0,97	N+F
240			19,76	48	7,16	1,00	2N+F,G
300			24,70	40	5,96	1,04	2N+F,G
365			28,55	32	4,77	1,01	2N+F,G
420			30,26	24	3,58	0,89	2N+F,G
PP2-0,5							
50	249	599	4,68	200	29,83	0,95	no
75			7,02	160	23,86	1,23	no
100			9,35	120	17,89	1,23	no
150			14,03	80	11,93	1,23	no
200			18,71	56	8,35	1,20	N+F,G
PP4-0,6							
115	249	599	13,18	104	15,51	1,37	no
175			20,06	64	9,54	1,28	N+F
240			27,51	48	7,16	1,32	2N+F,G
300			31,01	40	5,96	1,37	2N+F,G
365			37,73	32	4,77	1,34	2N+F,G

TABLE 5: U-BLOCKS

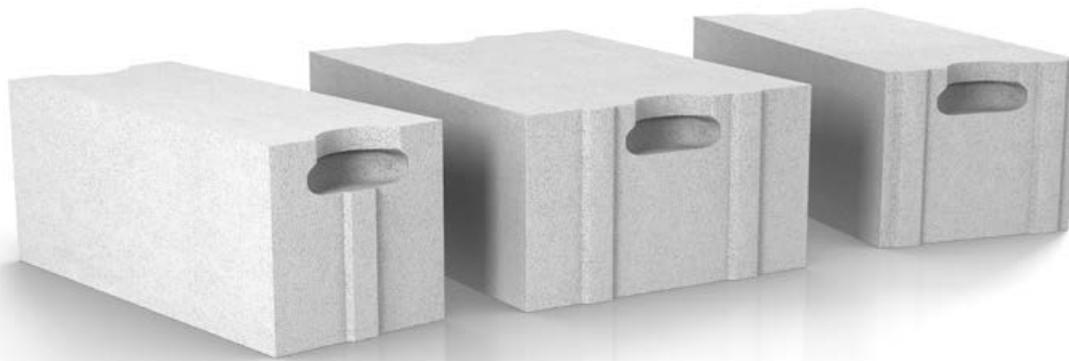
Width	Height	Length	Range	Weight of 1 piece	Number on the pallet	Linear metre on the pallet	Pallet weight
[mm]	[mm]	[mm]		[kg]	[pc]	[m]	[t]
150	249	499	PP2-0,5	8,35	48	24	0,41
175			PP2-0,4	8,80	50	25	0,45
200			PP2-0,5	9,25	50	25	0,47
240			PP2-0,4	9,95	40	20	0,41
300			PP2-0,4	10,65	30	15	0,33
365			PP2-0,4	13,47	24	12	0,34
420			PP2-0,4	14,52	20	10	0,31

Tolerance for length: ±3,0 mm, height and width: ±2,0 mm. Autoclaved aerated concrete is available on non-returnable pallets 120 x 100 cm.

COMPRESSIVE STRENGTH

TABLE 6: AVERAGE COMPRESSIVE STRENGTH DETERMINED ON CUBES 100x100x100 mm

Density	Average compressive strength [N/mm ²]
PP2-0,35, PP2-0,4	≥ 2,75
PP2-0,5	≥ 2,75
PP4-0,6	≥ 4,70



THERMAL INSULATION

TABLE 7: VALUE OF TRANSMISSION COEFFICIENT U [W/m²K] FOR WALL THICKNESS WITH NO PLASTER [mm]

Density	Thermal conductivity $\lambda_{1,0,dry,unit} S2$ [W/mK]	Thermal conductivity value (calculated value) λ_R [W/mK]	Value U [W/m ² K] for wall thickness with no plaster [mm]										
			50	70	100	115	150	175	200	240	300	365	420
PP2-0,35	0,900	0,095	-	-	-	-	-	0,50	-	-	-	0,25	-
PP2-0,4	0,100	0,105	-	-	-	-	-	0,55	-	0,41	0,34	0,28	0,24
PP2-0,5	0,130*	0,135	1,86	1,46	1,10	-	0,79	-	0,61	-	-	-	-
PP4-0,6	0,160*	0,170	-	-	-	1,19	-	0,84	-	0,64	0,52	0,44	-

* $\lambda_{1,0,dry,unit} S1$

FIRE-RESISTANCE

TABLE 8: FIRE CLASSIFICATION OF WALLS MADE OF SOLBET BLOCKS ACCORDING TO EN 1996-1-2

Width [mm]	EI (according to N.B.4.1 EN 1006-1-2)				REI (according to N.B.4.2 EN 1996-1-2)							
	non-plastered walls		plastered walls		non-plastered walls				plastered walls			
					wall load proportions				wall load proportions			
					$\alpha \leq 1$		$\alpha \leq 0,6$		$\alpha \leq 1$		$\alpha \leq 0,6$	
	lower limit	upper limit	lower limit	upper limit	lower limit	upper limit	lower limit	upper limit	lower limit	upper limit	lower limit	upper limit
60	EI 60	EI 90	EI 90	EI 120	-				-			
80	EI 90	EI 180	EI 120	EI 180	-				-			
100	EI 90	EI 240	EI 180	EI 240	REI 30	REI 120	REI 30	REI 120	REI 30	REI 120	REI 30	REI 180
120	EI 240				REI 60	REI 120	REI 90	REI 120	REI 90	REI 120	REI 120	
180	EI 240				REI 90	REI 240	REI 180	REI 240	REI 90	REI 240	REI 180	REI 240
240	EI 240				REI 180	REI 240	REI 240		REI 180	REI 240	REI 240	
300	EI 240				REI 180	REI 240	REI 240		REI 240			
365	EI 240				EI 240							
420	EI 240				EI 240							

Notes to the table:

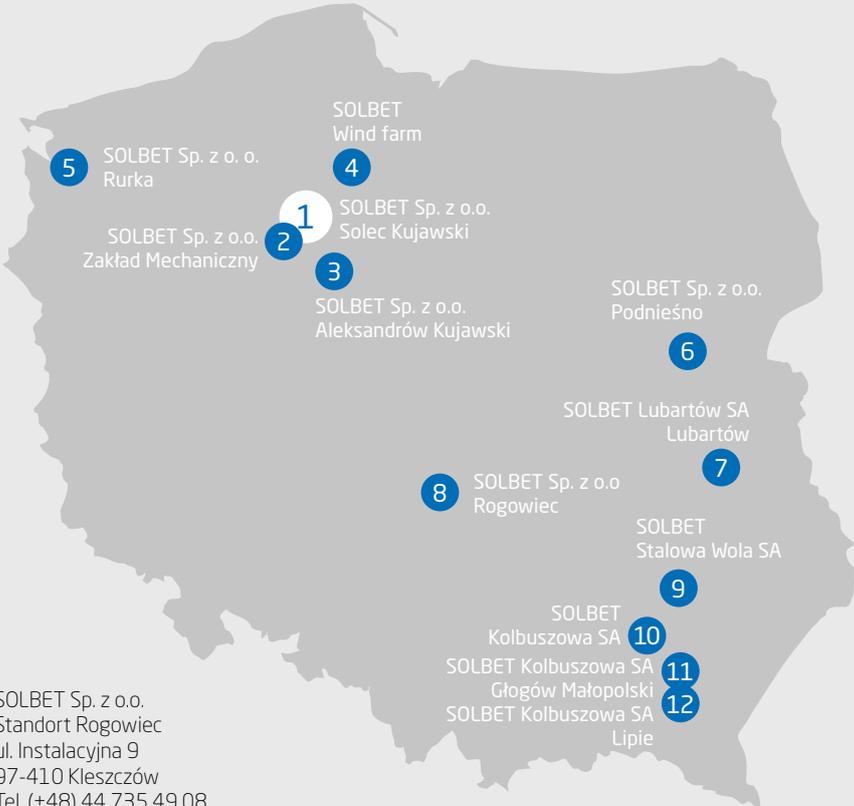
- The thickness in the table refers to the thickness of the wall without finishing, i.e. used blocks.
- The term plastered wall means the wall plastered on both sides with the use of gypsum plaster or 10 mm thick heat-insulating mortar or plastered on one side, the side exposed to fire.
- The coefficient α - means the proportion of load bearing capacity of the wall.

ACOUSTIC RESISTANCE

TABLE 9: THE INDICATOR OF ACOUSTIC RESISTANCE ASSESSMENT R_{A1R} AND R_{A2R} [dB] FOR WALLS MADE OF BLOCKS DEPENDING ON THE WALL DENSITY AND THICKNESS CLASS IN ACCORDANCE WITH EN 20140-3

Density class	The value of single number ratios R_{A1R} and R_{A2R} [dB] for wall thickness without plaster [mm]																			
	R_{A1R} - for interior wall										R_{A2R} - for exterior wall									
	75	100	115	150	175	200	240	300	365	420	75	100	115	150	175	200	240	300	365	420
350	-	-	-	-	37	-	-	-	45	-	-	-	-	34	-	-	-	41	-	
400	-	-	-	-	38	-	41	44	46	47	-	-	-	35	-	38	40	42	44	
500	31	35	-	39	-	42	-	-	-	-	30	33	-	36	-	39	-	-	-	
600	-	-	37	-	43	-	46	48	50	-	-	-	35	-	39	-	42	45	47	-

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