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Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

For national standards, comments will be reviewed by the relevant UK national committee and the resulting standards published as a British Standard.

UK Vote

Please indicate whether you consider the UK should submit a negative (with supporting technical reasons) or positive vote on this draft. Please indicate if you are aware of any reason why this draft standard should not be published as a British Standard.

Submission of Comments

- **Annotated drafts are not acceptable and will be rejected.**
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Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/ Figure/Table/Note	Type of comment	Comment (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	

English Version

Precast autoclaved aerated concrete products

Produits préfabriqués en béton cellulaire autoclavé

Vorgefertigte bewehrte Bauteile aus dampfgehärtetem
Porenbeton

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 177.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

This draft European Standard was established by CEN in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (prEN 12602:2025) has been prepared by Technical Committee CEN/TC 177 “Prefabricated reinforced elements of autoclaved aerated concrete or lightweight aggregate concrete with open structure”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This document supersedes EN 12602:2016.

prEN 12602:2025 includes the following significant technical changes with respect to EN 12602:2016:

- the text has been adjusted in accordance with PCR;
- the text has been adjusted to the Standardization request to the European Committee for Standardization as regards precast concrete products in support of Regulation (EU) No 305/2011;
- terms and definitions have been updated;
- the order of clauses has been changed;
- autoclaved aerated concrete parameters have been adapted;
- normative references have been added
- normative references have been dated;
- properties and requirements of elements have been adapted, e.g. acoustic properties, thermal resistance;
- Annex A, Annex B, Annex C, Annex D, Annex E, Annex F, Annex G and Annex H have been deleted and Annex ZA adapted;

This document has been prepared under a standardization request addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

For the relationship with EU Legislation, see informative Annex ZA, which is an integral part of this document.

1 Scope

This document shall cover, regardless if manufactured in factories or in temporary plants on site under the same conditions, prefabricated reinforced components of autoclaved aerated concrete with a dry density between 250 and 1000 kg/m³ to be used in building construction as:

- solid, hollow core and multilayer wall elements intended to be used as structural elements;
- solid, hollow core and multilayer wall elements intended to be used as non-structural elements and if relevant for applications in contact with soil and ground water;
- retaining walls intended to be used as structural elements and if relevant for applications in contact with soil and ground water;
- solid, hollow core and multilayer roof elements intended to be used as structural elements;
- solid, hollow core and multilayer floor elements intended to be used as structural elements;
- solid, hollow core beams intended to be used as structural elements;
- solid piers intended to be used as structural elements and if relevant for applications in contact with soil and ground water;
- cladding elements intended to be used as non-loadbearing elements;
- rectangular cross-section box culverts intended not to be used as structural elements and if relevant for applications in contact with soil and ground water;
- components for noise barriers intended not to be used as structural elements and if relevant for applications in contact with soil and ground water.

This document does not cover:

- retaining walls intended to retain tanks or reservoirs of liquids;
- precast diaphragm walls (concrete sheet piling);
- ribbed floor elements;
- lintels.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 678:1993, *Determination of the dry density of autoclaved aerated concrete*

EN 679:2005, *Determination of the compressive strength of autoclaved aerated concrete*

EN 680:2005, *Determination of the drying shrinkage of autoclaved aerated concrete*

EN 990:2002, *Test methods for verification of corrosion protection of reinforcement in autoclaved aerated concrete and lightweight aggregate concrete with open structure*

EN 1352:1996, *Determination of static modulus of elasticity under compression of autoclaved aerated concrete or lightweight aggregate concrete with open structure*

EN 1355:1996, *Determination of creep strains under compression of autoclaved aerated concrete or lightweight aggregate concrete with open structure*

EN 1356:1996, *Performance test for prefabricated reinforced components of autoclaved aerated concrete or lightweight aggregate concrete with open structure under transverse load*

EN 1363-2:1999, *Fire resistance tests - Part 2: Alternative and additional procedures*

EN 1364-1:2015, *Fire resistance tests for non-loadbearing elements - Part 1: Walls*

EN 1365-1:2012, *Fire resistance tests for loadbearing elements - Part 1: Walls*

EN 1365-2:2014, *Fire resistance tests for loadbearing elements - Part 2: Floors and roofs*

EN 1365-3:1999, *Fire resistance tests for loadbearing elements - Part 3: Beams*

EN 1365-4:1999, *Fire resistance tests for loadbearing elements - Part 4: Columns*

EN 1739:2007, *Determination of shear strength for in-plane forces of joints between prefabricated components of autoclaved aerated concrete or lightweight aggregate concrete with open structure*

EN 1740:1998, *Performance test for prefabricated reinforced components made of autoclaved aerated concrete or lightweight aggregate concrete with open structure under predominantly longitudinal load (vertical components)*

EN 1741:1998, *Determination of shear strength for out-of-plane forces of joints between prefabricated components made of autoclaved aerated concrete or lightweight aggregate concrete with open structure*

EN 1745:2020, *Masonry and masonry products - Methods for determining thermal properties*

EN 12664:2001, *Thermal performance of building materials and products - Determination of thermal resistance by means of guarded hot plate and heat flow meter methods - Dry and moist products of medium and low thermal resistance*

EN 13501-1:2018, *Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests*

EN 13501-2:2023, *Fire classification of construction products and building elements - Part 2: Classification using data from fire resistance and/or smoke control tests, excluding ventilation services*

EN 15304:2010, *Determination of the freeze-thaw resistance of autoclaved aerated concrete*

EN 15804:2012+A2:2019,¹ *Sustainability of construction works — Environmental product declarations — Core rules for the product category of construction products*

EN 16516:2017+A1:2020, *Construction products: Assessment of release of dangerous substances - Determination of emissions into indoor air*

¹ As impacted by EN 15804:2012+A2:2019/AC:2021.

EN 16637-1:2023, *Construction products: Assessment of release of dangerous substances - Part 1: Guidance for the determination of leaching tests and additional testing steps*

EN 16637-2:2023, *Construction products: Assessment of release of dangerous substances - Part 2: Horizontal dynamic surface leaching test*

prEN 18185:2025, *Sustainability of construction works - Environmental product declarations - Product Category Rules for precast lightweight concrete with an open structure and precast autoclaved aerated concrete*

EN ISO 354:2003, *Acoustics - Measurement of sound absorption in a reverberation room (ISO 354:2003)*

EN ISO 717-1:2020, *Acoustics - Rating of sound insulation in buildings and of building elements - Part 1: Airborne sound insulation (ISO 717-1:2020)*

EN ISO 717-2:2020, *Acoustics - Rating of sound insulation in buildings and of building elements - Part 2: Impact sound insulation (ISO 717-2:2020)*

EN ISO 10140-1:2021, *Acoustics - Laboratory measurement of sound insulation of building elements - Part 1: Application rules for specific products (ISO 10140-1:2021)*

EN ISO 10140-2:2021, *Acoustics - Laboratory measurement of sound insulation of building elements - Part 2: Measurement of airborne sound insulation (ISO 10140-2:2021)*

EN ISO 10140-3:2021, *Acoustics - Laboratory measurement of sound insulation of building elements - Part 3: Measurement of impact sound insulation (ISO 10140-3:2021)*

EN ISO 10140-5:2021, *Acoustics - Laboratory measurement of sound insulation of building elements - Part 5: Requirements for test facilities and equipment (ISO 10140-5:2021)*

EN ISO 10456:2007,² *Building materials and products — Hygrothermal properties — Tabulated design values and procedures for determining declared and design thermal values (ISO 10456)*

EN ISO 12354-2:2017, *Building acoustics - Estimation of acoustic performance of buildings from the performance of elements - Part 2: Impact sound insulation between rooms (ISO 12354-2:2017)*

ISO 16269-6:2014, *Statistical interpretation of data — Part 6: Determination of statistical tolerance intervals*

3 Terms and definitions, symbols and abbreviations

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp/>
- IEC Electropedia: available at <https://www.electropedia.org/>

² As impacted by EN ISO 10456:2007/AC:2009.

3.1.1**autoclaved aerated concrete****AAC**

concrete with a dry density between 250 and 1000 kg/m³ that is manufactured from binders such as cement and/or lime combined with fine siliceous based material, recycled aggregates, cell generating material and water whereby the raw materials are mixed together and cast into moulds where the mix is allowed to rise and set into cakes

Note 1 to entry: After this part of the process, the cake is cut into the required sizes of components and cured with high pressure steam in autoclaves.

3.1.2**raw materials**

constituents which combined with additives and agents, where appropriate, can be used in the manufacturing process

3.1.3**reinforcement**

strengthening material that is commonly composed of steel mats, cages and/or steel bars

Note 1 to entry: Other types of reinforcement can be used. Depending on the function of the components, the reinforcement can be structural or non-structural.

Note 2 to entry: Structural reinforcement is reinforcement which is necessary for the loadbearing function of the component as part of the structure. It consists of steel.

Note 3 to entry: Non-structural reinforcement is reinforcement which is necessary in order to ensure adequate resistance of the component during handling, transportation and construction. Any suitable kind of reinforcement may be used for this purpose.

3.1.4**corrosion protective coating**

coating applied on the surface of the reinforcement to protect the reinforcement against corrosion

3.1.5**pier**

vertical loadbearing part of the wall between or besides openings

3.1.6**fire wall**

wall separating two spaces (generally two fire compartments or buildings) that is designed for fire resistance and structural stability

Note 1 to entry: A fire wall may include resistance to horizontal loading (criterion M) such that in case of fire and failure of the structure on one side of the wall, fire spread beyond the wall is avoided (so that a fire wall is designated REI-M or EI-M).

3.2 Symbols**3.2.1 General symbols**

<i>b</i>	width of component
<i>d</i>	effective depth or thickness of component, diameter (e.g. of a bar)
<i>E</i>	modulus of elasticity

f	strength
F	force
h	depth or thickness of component
k	coefficient, factor
l	length, height of wall component, span length of roof or floor components
M	bending moment
N	axial force
R	resistance, loadbearing capacity
V	shear force
ε	strain

3.2.2 Subscripts

c	concrete parameter, compression
comp	component
cr	critical
dry	in the dry state
g	declared value
k	characteristic value
l	longitudinal
m	mean or mass
R	resistance
s	steel parameter, shear
t	tension
test	in testing
u	ultimate
y	yield value (for steel)

3.2.3 Symbols used in this European Standard

d	effective depth of a component
f_{ck}	characteristic compressive strength of AAC
$f_{ck,g}$	declared characteristic compressive strength of AAC
f_{st}	tensile strength of reinforcing steel
f_y	yield strength of reinforcing steel
f_{yk}	characteristic yield strength of reinforcing steel
f_{ywk}	characteristic yield strength of the stirrups
$f_{0,2k}$	characteristic 0,2 % proof stress of reinforcing steel
N	axial force (compression positive)

$\varepsilon_{cs,ref}$	mean conventional reference value of shrinkage
$\varepsilon_{cs,tot}$	total value of drying shrinkage
ε_0	short-term prestrain
λ_{10dry}	thermal conductivity in the dry state at a mean test temperature of 10 °C
μ	water vapour resistance factor
μ_m	mass related moisture content
ρ	dry density of AAC
ρ_k	characteristic dry density of AAC (95 % – quantile)
ρ_m	mean value of the dry density of AAC
$\rho_{m,g}$	mean of the upper and lower limit of the density class
$\Delta\rho_g$	declared tolerance of the dry density of AAC
ρ_{trans}	density to be used for calculation of transportation weight of AAC-components
φ	final creep coefficient

3.2.4 Abbreviations

AAC	autoclaved aerated concrete
FPC	factory production control
NDP	Nationally Determined Parameter
RH	relative humidity

4 Characteristics

4.1 Autoclaved aerated concrete (AAC)

4.1.1 Characteristic compressive strength

The characteristic compressive strength is applicable for all products mentioned in the scope but not for solid, hollow core and multilayer non-load bearing wall elements and cladding elements.

The characteristic value of the compressive strength of AAC shall be determined in accordance with 5.1.1 and expressed in MPa, rounded to the nearest 0,1.

The characteristic compressive strength of AAC shall be classified as compressive strength class in accordance with Table 1.

Table 1 — Compressive strength classes

Strengths in MPa

Strength class	AAC 1,5	AAC 2	AAC 2,5	AAC 3	AAC 3,5	AAC 4	AAC 4,5	AAC 5	AAC 6	AAC 7	AAC 8	AAC 9	AAC 10
f_{ck}	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0	6,0	7,0	8,0	9,0	10,0

4.1.2 Dry density

The dry density is applicable for all products mentioned in the scope.

The dry density shall be determined in accordance with 5.1.2 and expressed as a class as specified in Table 2 and expressed in kg/m³, rounded to the nearest 10.

The expression ($\rho_{m,g} + \Delta\rho_g$) shall be taken as the upper limit and the expression ($\rho_{m,g} - \Delta\rho_g$) as the lower limit of the mean dry density, ρ_m as specified in Table 2.

Table 2 — Density classes

Dry densities in kg/m ³								
Density class	300	350	400	450	500	550	600	650
Mean dry density ρ_m	> 250 ≤ 300	> 300 ≤ 350	> 350 ≤ 400	> 400 ≤ 450	> 450 ≤ 500	> 500 ≤ 550	> 550 ≤ 600	> 600 ≤ 650
Density class	700	750	800	850	900	950	1000	
Mean dry density ρ_m	> 650 ≤ 700	> 700 ≤ 750	> 750 ≤ 800	> 800 ≤ 850	> 850 ≤ 900	> 900 ≤ 950	> 950 ≤ 1 000	

4.1.3 Modulus of elasticity

4.1.3.1 Modulus of elasticity – testing

The modulus of elasticity is applicable for all products mentioned in the scope.

The modulus of elasticity E_{cm} , shall be determined in accordance with 5.1.3.1. The modulus of elasticity shall be expressed in MPa and rounded to the nearest 100.

4.1.3.2 Modulus of elasticity – calculation

When assessed the mean value of the modulus of elasticity shall be obtained in accordance with 5.1.3.2. The modulus of elasticity shall be expressed in MPa and rounded to the nearest 100

4.1.4 Drying shrinkage – testing

The drying shrinkage is applicable for all products mentioned in the scope.

The value of drying shrinkage shall be determined in accordance with 5.1.4. and shall be expressed as shrinkage class as specified in Table 3.

Table 3 — Drying shrinkage classes for AAC

Drying shrinkage in mm/m						
Drying shrinkage class	0,15	0,20	0,25	0,30	0,35	0,40
$\epsilon_{cs,ref}$ mm/m	≤ 0,15	≤ 0,20	≤ 0,25	≤ 0,30	≤ 0,35	≤ 0,40

4.1.5 Creep – testing

Creep is applicable for all products mentioned in the scope but not for solid, hollow core and multilayer non-load bearing wall elements, cladding elements, box culverts and components for noise barriers.

The creep coefficient shall be indicated by the manufacturer on the basis of results of tests according to 5.1.5. The performance of creep shall be expressed in ‰ and rounded to 0,01.

4.1.6 Freeze–thaw resistance

The freeze–thaw resistance is applicable for all products mentioned in the scope.

The assessment of the freeze–thaw resistance is in accordance with 5.1.6 The performance shall be expressed by the number of the executed freeze–thaw cycles.

4.1.7 Corrosion protection

The corrosion protection is applicable for all products mentioned in the scope.

The assessment of the corrosion protection is in accordance with 5.1.7. The performance is expressed by the proportion of the corroded surface area of the steel, expressed in % and rounded to 1.

4.2 Reinforcing steel

4.2.1 General

The characteristics for the reinforcing steel are applicable for all products mentioned in the scope.

4.2.2 Elongation at maximum load

The elongation at maximum load of reinforcing steel (A_{gt}) shall be determined in accordance with 5.2.1. The performance of elongation at maximum load of reinforcing steel shall be expressed as a ratio, rounded to the nearest 0,1.

4.2.3 Elongation after fracture

When assessing the elongation after fracture this shall be in accordance with 5.2.2 and expressed as a percentage, rounded to the nearest 0,1 %.

4.2.4 Stress ratio

When assessing the stress ratio of steel or stainless steel, the this shall be in accordance with 5.2.3 and expressed as a percentage, rounded to the nearest 0,01 %.

4.2.5 Tensile yield strength

When assessing the tensile yield strength of reinforcing steel (R_e) this shall be determined in accordance with 5.2.4. The performance of tensile yield strength of reinforcing steel shall be expressed in MPa, rounded to the nearest integer.

4.2.6 Ultimate tensile strength

When assessing the ultimate tensile strength of reinforcing steel (R_m) this shall be determined in accordance with 5.2.5. The performance of ultimate tensile strength of reinforcing steel shall be expressed in MPa, rounded to the nearest integer.

4.3 Mechanical performance

4.3.1 Mechanical strength – testing – flexural strength

The flexural strength is applicable for all products mentioned in the scope.

When assessing the mechanical strength of elements for bending this shall be determined in accordance with 5.3.2.

4.3.2 Mechanical strength – testing – longitudinal load

The mechanical strength for longitudinal load is applicable for all products mentioned in the scope but not for solid, hollow core and multilayer non-load bearing wall elements, retaining wall elements, solid, hollow core and multilayer roof elements, solid, hollow core and multilayer floor elements, cladding elements, box culverts and components for noise barriers.

When assessing the mechanical strength of elements under longitudinal load this shall be determined following 5.3.3.

4.3.3 Mechanical strength – testing – loadbearing capacity under transverse load

The mechanical strength under transverse load is applicable for all products mentioned in the scope but not for solid, hollow core and multilayer loadbearing wall elements.

When assessing the loadbearing capacity under transverse load this shall be determined following 5.3.4.

4.3.4 Mechanical strength – testing – rigidity of joints – in-plane shear

The rigidity of joints – in-plane shear is applicable for all products mentioned in the scope but not for solid, hollow core beams, solid piers, box culverts and components for noise barriers.

When using the rigidity of joints in design the mechanical strength of joints under in-plane-shear shall be determined in accordance with 5.3.5.

4.3.5 Mechanical strength – testing – rigidity of joints – out-of-plane shear

The rigidity of joints – in-plane shear is applicable for all products mentioned in the scope but not for solid, hollow core beams, solid piers, box culverts and components for noise barriers.

When using the rigidity of joints in design the mechanical strength of joints under in-plane-shear shall be determined following 5.3.6.

4.4 Reaction to fire – class declaration

4.4.1 General

The reaction to fire is applicable for all products mentioned in the scope.

AAC shall be tested in accordance with 5.4 and classified as specified in EN 13501-1:2018. If the content of equally distributed organic material is less than 1 % by mass or volume (whichever is the more onerous), the AAC is classified in Euroclass A1 without the need for testing [7].

4.4.2 Classification without testing

Whether products covered by this document fulfil the conditions, under which they have demonstrated of having a stable reaction to fire performance in a given reaction to fire class, based on testing to the appropriate EN test methods, the established assigned class applies to these products without the need of carrying out further reaction to fire tests.

NOTE The rules to apply this classification are published as Commission Decisions or Commission Delegated Regulations.

4.5 Resistance to fire

4.5.1 General

The resistance to fire is the capability of the product to provide, in the event of fire and for a given time, one or more of the following behaviours:

- load-bearing capacity (R);
- integrity (E);
- insulation (I);
- mechanical action (M) When tested in accordance with the test method indicated in 5.5, the result is expressed as class in minutes according to the classification published in the Official Journal of the European Union on this specific matter, completed by the established suffixes.

NOTE The applicable document at the time this document was drafted is Commission Delegated Regulation (EU) 2024/1681 of 6 March 2024. http://data.europa.eu/eli/reg_del/2024/1681/oj

When assessing the fire resistance this shall be classified by testing or by using tabulated data:

- a) Classification of resistance to fire by testing shall be done in accordance with 5.5.
- b) Classification of resistance to fire using tabulated data shall be done in accordance with 4.5.2 to 4.5.6.

4.5.2 Resistance to fire EI – class declaration – testing

(1) The minimum wall thickness should not be less than the values given in Table 4 for resistance to fire EI.

(2) To avoid excessive thermal deformations and subsequent failure of integrity between walls, the ratio of clear height of wall to wall thickness (L/h) should not exceed 40 for vertical wall components.

Table 4 — Minimum wall thickness of non-loadbearing AAC walls with a dry density between 350 kg/m³ and 700 kg/m³

Standard fire resistance	Minimum wall thickness
	mm
EI 30	50
EI 60	50
EI 90	75
EI 120	75
EI 180	100
EI 240	150
EI 360	150

4.5.3 Resistance to fire R – class declaration – testing

(1) For solid, hollow core and multilayer load bearing wall elements the minimum dimensions and minimum axis distances should not be less than the values given in Table 5 for resistance to fire R.

(2) To avoid excessive thermal deformations and subsequent failure of integrity between walls, the ratio of clear height of wall to wall thickness (L/h) should not exceed 30 for vertical wall components.

(3) For solid and hollow core beams the minimum dimensions and minimum axis distances in relation to the maximum span length should not be less than the values given in Table 6 for resistance to fire R when beams are designed as simply supported.

(4) Table 6 applies for beams which can be exposed to fire on three sides and not on the upper side.

Table 5 — Minimum wall thickness and minimum axis distance $a_{\min}$ for non-separating loadbearing AAC walls supported on at least two opposite ends of the components. AAC dry density 350 kg/m³ to 700 kg/m³ and structural or non-structural reinforcement for resistance to fire R

Standard fire resistance	Non-structural reinforced wall components Minimum wall Thickness mm	Structural reinforced wall components Minimum wall thickness/ axis distance $a_{\min}$ mm
R 30	100	100/10
R 60	100	125/15
R 90	125	150/20
R 120	150	175/25
R 180	175	200/30
R 240	200	250/35

Table 6 — Minimum dimensions (height $h_{\min}$ and width $b_{\min}$) in mm and minimum axis distance $a_{\min}$ in mm to the bottom side and to the vertical sides of AAC beams in relation to the maximum span length

Minimum density in kg/m ³								450	550	650
Minimum dimensions in mm		$h_{\min}$			$b_{\min}$			$a_{\min}$		
Maximum span length in m		2	4	6	2	4	6			
Fire Resistance	R 30	150	200	250	100	200	200	20	20	20
	R 60	175	200	300	100	200	250	30	25	20
	R 90	200	250	300	200	250	300	50	40	30

4.5.4 Resistance to fire REI – class declaration – testing

(1) For solid, hollow core and multilayer load bearing wall elements the minimum dimensions and minimum axis distances should not be less than the values given in Table 7 for resistance to fire REI.

(2) To avoid excessive thermal deformations and subsequent failure of integrity between walls, the ratio of clear height of wall to wall thickness (L/h) should not exceed 30 for vertical wall components.

(3) For solid, hollow core and multilayer roof elements the minimum dimensions and minimum axis distances in relation to the maximum span length should not be less than the values given in Table 8 for resistance to fire REI when reinforced floor and roof components are designed as simply supported one-way slabs.

Table 7 — Minimum wall thickness and axis distance $a_{\min}$ for separating load bearing AAC walls.
AAC dry density 350 kg/m³ to 700 kg/m³ and structural or non-structural reinforcement for resistance to fire REI

Standard fire resistance	Non-structural reinforced wall components	Structural reinforced wall components
	Minimum wall thickness mm	Minimum wall thickness/ axis distance $a_{\min}$ mm
REI 30	100	100/10
REI 60	100	100/15
REI 90	100	125/20
REI 120	100	150/25
REI 180	150	175/30
REI 240	200	200/35

Table 8 — Minimum thickness $h_{\min}$ in mm and minimum axis distance $a_{\min}$ in mm of AAC floor and roof components in relation to maximum span length

Minimum density 350 kg/m ³								
Maximum span length	3 m		4,5 m		6 m		7,5 m	
Fire resistance	$h_{\min}$	$a_{\min}$	$h_{\min}$	$a_{\min}$	$h_{\min}$	$a_{\min}$	$h_{\min}$	$a_{\min}$
REI 30	100	15	150	15	175	20	240	20
REI 60	100	25	150	25	200	25	240	35
REI 90	150	45	150	45	200	45	240	45
REI 120	175	50	175	55	200	55	240	55
Minimum density 450 kg/m ³								
Maximum span length	3 m		4,5 m		6 m		7,5 m	
Fire resistance	$h_{\min}$	$a_{\min}$	$h_{\min}$	$a_{\min}$	$h_{\min}$	$a_{\min}$	$h_{\min}$	$a_{\min}$
REI 30	100	15	150	15	175	15	240	20
REI 60	100	22	150	22	200	22	240	30
REI 90	150	35	150	35	200	35	240	35
REI 120	175	40	175	45	200	45	240	45
Minimum density 550 kg/m ³								
Maximum span length	3 m		4,5 m		6 m		7,5 m	
Fire resistance	$h_{\min}$	$a_{\min}$	$h_{\min}$	$a_{\min}$	$h_{\min}$	$a_{\min}$	$h_{\min}$	$a_{\min}$
REI 30	100	15	150	15	175	15	240	15
REI 60	100	20	150	20	200	20	240	20
REI 90	150	30	150	30	200	30	240	30

REI 120	175	35	175	35	200	35	240	35
Minimum density 700 kg/m³								
Maximum span length	3 m		4,5 m		6 m		7,5 m	
Fire resistance	$h_{\min}$	$a_{\min}$	$h_{\min}$	$a_{\min}$	$h_{\min}$	$a_{\min}$	$h_{\min}$	$a_{\min}$
REI 30	100	15	150	15	175	15	240	15
REI 60	100	20	150	20	200	20	240	20
REI 90	150	25	150	25	200	25	240	25
REI 120	175	30	175	30	200	30	240	35
Interpolation between dry densities may be used.								

4.5.5 Resistance to fire EI-M – class declaration – testing

(1) The resistance to fire EI-M – class declaration – is applicable for solid, hollow core and multilayer non-load bearing wall elements.

(2) Minimum dimensions and minimum axis distances should not be less than the values given in Table 9 for resistance to fire EI-M. Table 9 is valid on the condition that the requirements for the minimum amount of reinforcement for AAC components given in Table 10 are fulfilled.

(3) To avoid excessive thermal deformation and subsequent failure of integrity between walls, the ratio of clear height of wall to wall thickness (L/h) should not exceed 40 for vertical non-loadbearing wall components.

Table 9 — Minimum wall thickness and minimum axis distance $a_{\min}$ of AAC walls with mechanical impact (fire walls) supported on at least two opposite ends; AAC dry density 450 kg/m³ to 700 kg/m³ with structural or non-structural reinforcement for resistance to fire EI-M

Standard fire resistance	Minimum wall thickness/minimum axis distance $a_{\min}$	
	mm/mm	
	Minimum density 450 kg/m ³	Minimum density 550 kg/m ³
EI-M 30	200/30	175/20
EI-M 60	200/30	175/20
EI-M 90	200/30	175/20
EI-M 120	240/30	240/30
EI-M 180	240/30	240/30

Table 10 — Minimum amount of reinforcement for AAC components used in walls with mechanical impact

Minimum amount of tensile reinforcement ^a depending on the thickness h and the length L of AAC component			
Length L	$d \geq 175$ mm	$d \geq 200$ mm	$d \geq 225$ mm
mm	mm ² /m	mm ² /m	mm ² /m
$\leq 4\,000$	≥ 102	≥ 102	≥ 102

Minimum amount of tensile reinforcement ^a depending on the thickness h and the length L of AAC component			
Length L	$d \geq 175$ mm	$d \geq 200$ mm	$d \geq 225$ mm
mm	mm ² /m	mm ² /m	mm ² /m
4 000 – 5 000	≥ 131	≥ 112	≥ 102
5 000 – 6 000	≥ 190	≥ 162	≥ 146
6 000 – 7 000	≥ 258	≥ 220	≥ 195
7 000 – 7 600	-	≥ 252	≥ 222
7 600 – 8 000	-	≥ 265	≥ 245
^a Tensile reinforcement for the mechanical action (M).			

4.5.6 Resistance to fire REI-M – class declaration – testing

(1) The resistance to fire REI-M – class declaration – is applicable for solid, hollow core and multilayer load bearing wall elements.

(2) Minimum dimensions and minimum axis distances should not be less than the values given in Table 11 for resistance to fire EI-M. Table 11 is valid on the condition that the requirements for the minimum amount of reinforcement for AAC components given in Table 10 are fulfilled.

(3) To avoid excessive thermal deformation and subsequent failure of integrity between walls, the ratio of clear height of wall to wall thickness (L/h) should not exceed 30 for vertical loadbearing wall components.

Table 11 — Minimum wall thickness and minimum axis distance $a_{\min}$ of AAC walls with mechanical impact (fire walls) supported on at least two opposite ends; AAC dry density 450 kg/m³ to 700 kg/m³ with structural or non-structural reinforcement for resistance to fire REI-M

Standard fire resistance	Minimum wall thickness/minimum axis distance $a_{\min}$	
	mm/mm	
	Minimum density 450 kg/m ³	Minimum density 550 kg/m ³
REI-M 30	200/30	200/20
REI-M 60	200/30	200/20
REI-M 90	200/40	200/30
REI-M 120	250/40	250/30
REI-M 180	300/60	300/50

4.6 Thermal performance

4.6.1 General

Thermal performance is applicable for all products mentioned in the scope but not for retaining wall elements, box culverts and components for noise barriers.

The thermal conductivity of AAC shall be declared for the oven-dry state expressed as $\lambda_{10\text{dry}}$ along with the dry density. Declared thermal conductivity values shall either be calculated from the results of measurements carried out on test specimens or taken from EN 1745:2020, Table A.10.

4.6.2 Thermal conductivity – testing

The thermal conductivity of AAC shall be determined in accordance with 5.6.2 and expressed as $\lambda_{10,dry}$ in W/(mK), rounded to the nearest 0,001.

4.6.3 Thermal conductivity – tabulated values

The thermal conductivity in the dry state shall be determined in accordance with EN 1745:2020, method S1.

4.7 Water performance

4.7.1 General

The specifications for the water performance are applicable for all products mentioned in the scope.

4.7.2 Water vapour permeability – resistance factor – testing

Values for the water vapour resistance factor shall be determined by tests according to 5.7.1 and rounded to the nearest integer.

4.7.3 Water vapour permeability – resistance factor – tabulated value

Values for the water vapour resistance factor shall be determined using EN 1745:2020, Table A.10

4.8 Acoustic performance

4.8.1 General

The determination of sound insulation properties shall be based on the mean of the upper and the lower limit of the mean dry density in accordance with Table 2.

The specifications for the airborne sound insulation are applicable for the products listed below.

Airborne sound insulation index – calculation and airborne sound insulation index – testing:

- hollow core and multilayer load bearing wall elements;
- solid, hollow core and multilayer non-load bearing wall elements;
- solid, hollow core and multilayer roof elements;
- solid, hollow core and multilayer floor elements;
- cladding elements;
- components for noise barriers.

Sound absorption coefficient building elements:

- hollow core and multilayer load bearing wall elements;
- solid, hollow core and multilayer non-load bearing wall elements;
- retaining wall elements;
- hollow core and multilayer roof elements;
- solid, hollow core and multilayer floor elements;

- solid and hollow core beams;
- solid piers;
- cladding elements;
- components for noise barriers.

Sound absorption coefficient traffic elements:

- hollow core and multilayer load bearing wall elements;
- solid, hollow core and multilayer non-load bearing wall elements;
- retaining wall elements;
- solid and hollow core beams;
- solid piers.

Impact sound insulation – calculation and impact sound insulation – testing:

- hollow core and multilayer roof elements;
- solid, hollow core and multilayer floor elements.

4.8.2 Airborne sound insulation index – testing

The airborne sound reduction of walls, floors and roofs constructed of components shall be measured according to 5.8.1 and expressed as single number quantity for rating according to EN ISO 717-1:2020.

4.8.3 Airborne sound insulation index – calculation

The airborne sound reduction shall be determined in accordance with 5.8.2 and expressed in dB, rounded to the nearest 0,1.

4.8.4 Impact sound insulation – testing

The impact sound insulation shall be measured in accordance with 5.8.3 and expressed as single number quantity for rating in accordance with EN ISO 717-2:2020 and expressed in dB, rounded to the nearest 0,1.

4.8.5 Impact sound insulation – calculation

The airborne sound reduction shall be determined in accordance with 5.8.4 and expressed in dB, rounded to the nearest 0,1.

4.8.6 Sound absorption coefficient building elements

The sound absorption will mainly depend on the surface texture. The sound absorption coefficient shall be determined in accordance with 5.8.5 and expressed in dB, rounded to the nearest 0,01.

4.8.7 Sound absorption coefficient traffic elements

For road traffic noise reducing devices the sound absorption characteristic shall be determined in accordance with 5.8.6 and expressed in dB, rounded to the nearest 0,01.

4.9 Other performances – Mass of element

The specifications for the mass of the element are applicable for all products mentioned in the scope.

When assessing the mass of an element the values shall be determined according to 5.9.1. The performance shall be expressed in kg/m³ rounded to the nearest 5.

For the determination of transportation weight, except for beams (see note), the following equation shall be used in the absence of information from the manufacturer:

$$\rho_{\text{trans}} = 1,4 \cdot \rho_{\text{m,g}} + 40 \text{ kg/m}^3 \quad (3)$$

where

ρ_{trans} is the density to be used for calculation of transportation weight of AAC-components, in kilograms per cubic metre;

$\rho_{\text{m,g}}$ is the the mean of the upper and lower limit of the mean dry density ρ_{m} according to Table 2.)

NOTE In the case of beams, the amount of reinforcement can be higher than 40 kg/m³.

4.10 Release of dangerous substances – indoor air

The release of the substances listed in Table 12 indicates the air concentration of the substance in the reference room for walls or floor, and ceiling. When tested following the test method given in 5.10, the test result is expressed as a value and rounded as indicated in Table 12.

Table 12 — Release of dangerous substances to indoor air

Substance	Unit	Rounding
acetaldehyde	µg/m ³	nearest integer
benzene	µg/m ³	nearest 10
dibutyl phthalate	µg/m ³	nearest 10
ethylhexyl phthalate	µg/m ³	nearest 10
formaldehyde	µg/m ³	nearest 10
toluene	µg/m ³	nearest 10
trichlorethylene	µg/m ³	nearest 10

4.11 Release of dangerous substances – soil and ground water

The specifications for the release of dangerous substances – soil and ground water are applicable for the products solid, hollow core and multilayer load bearing wall elements, solid, hollow core and multilayer non-load bearing wall elements, retaining wall elements, solid piers and components for noise barriers and which are planned for an application where the elements are in contact with soil and ground water.

The release of the substances listed in Table 12 indicates the concentration of the substance in the eluates. When tested following the test method given in 5.11, the test result is expressed as a value in rounded as indicated in Table 13.