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Non-load bearing light weight thermal insulation concrete masonry units of foamed concrete, light weight aggregates or made of a mixture of polystyrene granules with foam concrete (lightweight aerated concrete) or sandwich insulation layer.

1. SCOPE AND FIELD OF APPLICATION

This Saudi standard specifies the definition, classification and characteristics, sampling, inspection and testing and market release requirements of the lightweight masonry units which incorporate an interior or exterior insulation layer (hollow or non-hollow) or made of foamed concrete (which possesses cellular pores) or made of concrete manufactured from lightweight aggregates such as pozzolanic aggregates for manufacturing volcanic concrete units or other type of lightweight aggregates such as (blast-furnace slag, clay, diatomite, fly ash, shale, slate, pumice ..etc.) or aggregates from schist, quartz, feldspar, or mica powder or made of lightweight concrete manufactured using polystyrene and incorporating a concrete layer on its exterior, or made of a mixture of polystyrene granules with foam concrete (lightweight aerated concrete) intended to be used on the non-loadbearing masonry parts of other structures for building and civil engineering.

In this standard, the expression “masonry unit” refers to lightweight masonry units with insulation layer.

2. COMPLEMENTARY REFERENCES

This standard has references to other standards and/or documents. These references are specified inside the text in relevant places and listed below.

Standards No	Standards Name
SASO 2856/2014	Thermal Transmittance Values for Residential Buildings
SASOASTM C578 :2014	Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation
EN 680	Determination of drying shrinkage of autoclaved aerated concrete
EN 772-1	Methods of test for mortar for masonry units - Part 1: Determination of compressive strength
EN 772-2	Methods of test for masonry units - Part 2: Determination of percentage area of voids in aggregate concrete masonry units (by paper indentation)
EN 772-11	Methods of test for masonry units – Part 11: Determination of water absorption of aggregate concrete, manufactured stone and natural stone masonry units due to capillary action and the initial rate of water absorption of clay masonry units
EN 772-13	Methods of test for masonry units – Part 13: Determination of net and gross dry density of masonry units (except for natural stone)
EN 772-14	Methods of test for masonry units – Part 14: Determination of moisture movement of aggregate concrete and manufactured stone masonry units

EN 772-16	Methods of test for masonry units – Part 16: Determination of dimensions
EN 772-20	Methods of test for masonry units- Part 20: Determination of flatness of faces of aggregate concrete manufactured stone and natural stone masonry units
EN 1052-3	Methods of test for masonry – Part 4 : Determination of initial shear strength
EN 1602	Thermal insulating products for building applications- Determination of apparent density
EN 1745	Masonry and masonry products – Methods for determining thermal properties
EN 13501-1	Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests
ISO 140-4	Acoustics - Measurement of sound insulation in buildings and of building elements - Part 4: Field measurements of airborne sound insulation between rooms
ISO 6946	Building components and building elements - Thermal resistance and thermal transmittance - Calculation method
ISO 12572	Hygrothermal performance of building materials and products - Determination of water vapour transmission properties (ISO 12572:2001)
ISO/IEC 17025	General requirements for the competence of testing and calibration laboratories
ISO 10140-2	Acoustics - Laboratory measurement of sound insulation of building elements – Part 2: Measurement of airborne sound insulation

3. TERMS AND DEFINITIONS

For the use of this standard the following terms and definitions apply.

3.1 Masonry unit

Pre-shaped component for use in masonry structures.

3.1.1 Category I masonry units

Units with a declared compressive strength with a probability of failure to reach it not exceeding 5 %

NOTE: This may be determined via the mean or characteristic value.

3.1.2 Category II masonry units

Units not intended to comply with the level of confidence of Category I units

3.2 Lightweight sandwich masonry units with insulation layer

Masonry unit, which is obtained by applying a single line of hollow or non-hollow insulation material to the core or the exterior surface of lightweight concrete, manufactured using lightweight aggregates or is a unit, which incorporates single, or multiple number of perforations in its concrete section.

3.3 Foamed concrete masonry unit

Masonry unit obtained by applying a single line of hollow or non-hollow insulation material to the core or the exterior surface of foamed concrete manufactured by means of mixing hydraulic binders like cement and/or lime, and silicium-based fine material, vesicant material, water and foam agent.

NOTE: Foamed concrete masonry units may have pocketed or tongue and groove systems or other interlocking features.

3.4 Masonry unit made of polystyrene concrete

Masonry unit with or without a single or multiple number of perforations in its concrete section which is made of lightweight concrete manufactured using polystyrene together with lightweight or normal weight aggregates, and may also be formed by applying a single line of hollow or non-hollow insulation material to its core or the exterior surface or has a concrete layer outside, or made of a mixture of polystyrene granules with foam concrete (lightweight aerated concrete).

4. CLASSIFICATION AND REQUIREMENTS

4.1 Classification

Lightweight sandwich masonry units with insulation layer consist of a single class and seven types (see Figures (1a, 1b, 1c, 1d, 1e, 1f)) as follows:

- 1) Unit, which incorporates the insulation layer in its core, hollow or non-hollow,
- 2) Unit, which incorporates the insulation layer on its exterior surface, hollow or non-hollow,
- 3) Unit with or without a single or multiple number of perforations in its concrete section which is made of lightweight concrete manufactured by using polystyrene together with lightweight aggregates, or has a concrete layer outside,
- 4) Unit with or without a single or multiple number of perforations in its concrete section which is made of lightweight concrete manufactured by using polystyrene together with lightweight aggregates, and incorporates the insulation layer in its core,
- 5) Unit with or without a single or multiple number of perforations in its concrete section which is made of lightweight concrete manufactured by using polystyrene together with lightweight aggregates, and incorporates the insulation layer on its exterior surface,
- 6) Unit with or without a single or multiple number of perforations in its foamed concrete (cellular lightweight concrete) , lightweight pozzolanic aggregates concrete or any other type of lightweight aggregates concrete,
- 7) Unit made of foamed concrete (cellular lightweight concrete) , lightweight pozzolanic aggregates concrete or any other type of lightweight aggregates concrete and incorporates the insulation layer on its interior or exterior surface.

- 8) Units made of a mixture of polystyrene granules, foam concrete (aerated light concrete), light pozzolanic concrete, or light concrete manufactured from any other type of light aggregate.

4.2 REQUIREMENTS

4.2.1 Configuration and appearance

Masonry units shall be shaped as rectangular parallelepiped. Faces of masonry units shall be regular and when inspected as described in Clause 5.2.1, deviation from both the flatness and the plane parallelism of bed faces shall not exceed 3 mm.

4.2.2 Insulation material in the core or on the exterior facing of masonry unit

Rigid, Cellular Polystyrene Thermal Insulation shall conform to the requirements of the Saudi standard SASO ASTM C578:2014 mentioned in Clause 2. The insulation layer must be extended over the entire longitudinal section. The manufacturer shall declare the reaction to fire class and the density of the insulation material used as the core or the exterior facing material. The manufacturer shall also declare the reaction to fire class and the density of the polystyrene and the foam, which are used during lightweight concrete manufacturing. Reaction to fire class determined according to Clause 5.3.3.1 and the density determined according to Clause 5.3.3.2 shall provide the declared reaction to fire class and declared density, respectively.

4.2.3 Gross dry density

The gross dry density of the masonry units shall be declared by the manufacturer, in kg/m³. Test results determined by the test in accordance with the Clause 5.3.1 shall not deviate by more than $\pm 10\%$ the declared value.

4.2.4 Net dry density

The net dry density of the masonry units shall be declared by the manufacturer, in kg/m³. Test results determined by the test in accordance with the Clause 5.3.2 shall not deviate by more than $\pm 10\%$ the declared value.

4.2.5 Compressive strength

The compressive strength of the masonry units shall be declared by the manufacturer, in N/mm². Mean compressive strength determined by the test in accordance with the Clause 5.3.4 shall not be lower than the declared value. In any case, at the time of delivery to the purchaser, the compressive strength shall not be less than 3.45 N/mm² for single unit and 4.14 N/mm² for the average of three units.

4.2.6 Capillary water absorption

The manufacturer shall declare the maximum capillary water absorption coefficient in g/(m² x s^{0.5}), for the exposed face of the units exposed to weather conditions and the masonry units intended to be used on the market relevant to this particular property.

Results obtained from the specified number of masonry units tested in accordance with Clause 5.3.5 using an immersion (in water) period of $(10 \pm 0,2)$ minutes, shall not exceed the declared value.

4.2.7 Thermal conductivity

The manufacturer shall declare the information related to the thermal behavior of the masonry units or units intended to be used in elements exposed to thermal conditions, in accordance with the Clause 5.3.6. In any case, the coefficient of thermal conductivity shall not exceed than $0.5 \text{ W / m}^2.\text{k}$, and shall be achieves the thermal transmittance value required by the Saudi standard 2856/2014 mentioned in item (2).

4.2.8 Sound insulation

Sound insulation value shall be equal to the declared minimum value when masonry unit samples are tested in accordance with the Clause 5.3.7.If it is agreed to between the purchaser and the manufacturer.

4.2.9 Initial shear strength

The initial shear strength determined when masonry units are tested in accordance with the Clause 5.3.8 shall not be lower than the declared value.

4.2.10 Shrinkage

The shrinkage of the concrete masonry unit determined as specified in Clause 5.3.9 shall not exceed the declared values. In any case, at the time of delivery to the purchaser, the total linear drying shrinkage of units shall not exceed than 0.065%.

4.2.11 Moisture movement

The individual value and the mean value of the moisture expansion of the masonry unit made of styrene concrete, determined as specified in Clause 5.3.10 shall not exceed the declared values.

4.2.12 Water vapor permeability

Water vapor permeability (water vapor diffusion resistance factor) of the masonry unit determined as specified in Clause 5.3.11 shall not exceed the declared values.

4.3 Dimensions and tolerances

The manufacturer shall declare the dimensions of the masonry unit; as the length, the width and the height respectively, in millimeters. These dimensions shall be declared as nominal dimensions.

Tolerances according to the nominal dimensions of the masonry unit shall be in accordance with the Table 1.

Tighter tolerances may be declared for one or more dimensions. The manufacturer shall declare the tolerance classes for the masonry units.

Table 1 - Characteristics, inspections and tests

Tolerance class	D1	D2	D3	D4
Length	+ 3 mm - 5 mm	+ 1 mm - 3 mm	+ 1 mm - 3 mm	+ 1 mm - 3 mm
Height	+ 3 mm - 5 mm	+ 1 mm - 3 mm	+ 1 mm - 3 mm	+ 1 mm - 3 mm
Width	+ 3 mm - 5 mm	± 2 mm	± 1.5 mm	± 1.0 mm

Test results determined by the test in accordance with the Clause 5.2.2 shall be in accordance with the declared tolerance category.

4.3.1 Configuration and appearance

The manufacturer shall declare the configuration for the masonry units. The declaration may include one or more items such as those in the following list, as relevant:

Each declared value shall be given as either an upper limit or a lower limit or, as a range of values. When samples from a consignment are tested in accordance with EN 772-16 and EN 772-2, if necessary, the mean value derived from measurements of the test sample shall be within the range or limit declared.

- shape and features, including the direction of any formed voids (by means of a drawing or illustration, when relevant) if any,
- Volume of all formed voids as a percentage of the length × width × height of the unit,
- Volume of the largest of any formed voids as a percentage of the length × width × height of the unit,
- Volume of grip holes as a percentage of the length × width × height of the unit,
- Thickness of webs;
- Thickness of shells;
- Combined thickness of webs and shells from face to face;
- Combined thickness of webs and shells from header to header;
- Area of voids on a bed face as a percentage of the length × width of the unit.

4.4 Clause numbers of the characteristics, inspections and tests

Clause numbers of the characteristics envisaged in this standard, and their inspections and tests are given in Table 2.

Table 2 - Characteristics, inspections and tests

Characteristic Clause No	Characteristic	Clause no. of the inspection and test
4.2.1	Configuration and appearance	5.2.1
4.2.2	Core or the facing material of the masonry unit	5.3.3
4.2.3	Gross dry density	5.3.1
4.2.4	Net dry density	5.3.2
4.2.5	Compressive strength	5.3.4
4.2.6	Capillary water absorption	5.3.5
4.2.7	Thermal conductivity	5.3.6
4.2.8	Sound insulation	5.3.7
4.2.9	Initial shear strength	5.3.8
4.2.10	Shrinkage	5.3.9
4.2.11	Moisture movement	5.3.10
4.2.12	Water vapour permeability	5.3.11
4.3	Dimensions and tolerances	5.2.2
4.3.1	Configuration and appearance	5.2.2
6.2	Marking	5.2.1

5. SAMPLING, INSPECTION AND TESTS

5.1 Consignment and sampling

Masonry units of the same type and size submitted to inspection at a time is regarded as one consignment. Samples for use in inspections and tests for the purpose of determining whether the units meet the requirements in this standard shall be representative of the production or the consignment, and the random sampling method shall be used, in which every masonry unit in the consignment has an equal chance of being selected for the sample. However, units damaged shall not be selected as samples. Number of the masonry units in a sample corresponding to the consignment size is given in Table 3.

In order to form a sample quantified as given in Table 3 corresponding to the consignment size, the sampling shall be conducted with separation, systematically and randomly.

Table 3 - Sampling size corresponding to consignment size, minimum number of masonry unit samples subject to inspections and tests, and allowable number of masonry units with failure ^a

Consignment size (Number of masonry units in the consignment)	Numbers of masonry unit samples subject to tests										Allowable number of units with failure
	Gross and net dry density	Compressive strength	Initial shear strength	Capillary water absorption	Thermal conductivity	Sound insulation	Shrinkage	Moisture movement	Water vapour permeability	Dimensions and tolerances, configuration and appearance	
< 20000	10	10	27	5	5	5	3	3	3	6	2
20001-150000	13	13	45	7	7	7	5	5	5	8	3
150001-500000	16	16	63	8	8	8	6	6	6	8	3
500001 and above	20	20	81	10	10	10	9	9	9	10	4
^a If the number of samples is specified in the relevant standard(s), it shall be taken as the sampling size. NOTE: Unless specified otherwise in the relevant standard(s), if the units are not damaged during the tests, the same units may be used for different tests.											

5.2 Inspections

Inspections shall be applied to all masonry units forming the sample shall be applied in the order given in this standard.

5.2.1 Inspection of configuration and appearance

Inspection of the configuration and appearance of the sample masonry units is conducted as indicated in EN 772-16 and EN 772-20. It's checked whether inspection results conform to Clause 4.2.1 for flatness and plane parallelism and whether markings on the masonry unit described in Clause 6.2 exist.

5.2.2 Dimension inspection and configuration

Dimension inspection of the sample masonry units are conducted as described in EN 772-16. It's checked if these recorded dimensions and the difference between the highest and lowest of them conform to the values indicated in Clause 4.3. When the configuration is tested in accordance with EN 772-16 and EN 772-2, if

necessary, the mean value derived from measurements of the test sample shall be within the range or limit declared.

5.3 Tests

From the units sampled in accordance with the Clause 5.1, an amount of masonry unit indicated in Table 3 is randomly separated to be used in each test.

5.3.1 Gross dry density determination test

Gross dry density determination test on masonry unit samples is conducted as described in EN 772-13. The results are checked whether they conform to values indicated in Clause 4.2.3. For foamed concrete masonry units sampled in accordance with the Annex A, it shall be determined according to EN 772-13. When a complete masonry unit is not used, samples shall be prepared according to Annex B.

5.3.2 Net dry density determination test

Net dry density determination test on masonry unit samples is conducted as described in EN 772-13. The results are checked whether they conform to values indicated in Clause 4.2.4.

5.3.3 Determination of the properties of the core material in the masonry unit

5.3.3.1 The reaction to fire class is determined according to EN 13501-1.

5.3.3.2 The minimum density of the materials used as the core or facing material is determined according to EN 1602.

EXAMPLE EPS (expanded polystyrene rigid foam), Class E, 20 kg/m³

5.3.4 Compressive strength determination test

Compressive strength determination test on masonry unit samples is conducted as described in EN 772-1.

Sample for the foamed concrete masonry units shall be prepared according to Annex B. It is checked whether the results of the tests and their arithmetic means conform to the values specified in Clause 4.2.5.

5.3.5 Capillary water absorption test

Capillary water absorption test on masonry unit samples is conducted as described in EN 772-11. The results are checked whether they conform to values indicated in Clause 4.2.6.

5.3.6 Thermal conductivity

Determination of thermal conductivity of the masonry unit samples is conducted as described in ISO 6946 and EN 1745. The results are checked whether they conform to values indicated in Clause 4.2.7.

5.3.7 Sound insulation determination test

Sound insulation determination test on masonry unit samples is conducted as described in EN ISO 140-4 EN ISO 10140-2. The results are checked whether they conform to values indicated in Clause 4.2.8.

5.3.8 Initial shear strength determination test

Initial shear strength determination test on masonry unit samples is conducted as described in EN 1052-3. It is checked whether the results of the tests and their arithmetic means conform to the values specified in Clause 4.2.9.

5.3.9 Shrinkage

Shrinkage test on the concrete masonry unit samples is conducted as described in EN 680. It is checked whether the results of the tests and their arithmetic means conform to the values specified in Clause 4.2.10.

5.3.10 Moisture movement

Moisture movement test on masonry unit samples made of styrene concrete is conducted as described in EN 772-14. It is checked whether the single value of the moisture expansion and arithmetic mean of moisture expansion values conform to the values specified in Clause 4.2.11.

5.3.11 Water vapor permeability

Water vapor permeability test on masonry unit samples is conducted as described in ISO 12572. It is checked whether the results of the tests and their arithmetic means conform to the values specified in Clause 4.2.12.

5.4 Assessment

Inspections and tests on the masonry units forming the sample are conducted in the order given in this standard.

Masonry unit sample which has not passed one of the inspections or the tests are removed, being considered as failed and is not subjected to further inspection and/or testing. If the number of masonry units with failure does not exceed the allowable number of units with failure given in Table 3 and number of the masonry units with failure which have the same characteristic does not exceed 2, further inspection and/or tests shall be conducted.

If the number of masonry units with failure exceeds the allowable number of units with failure given in Table 3 or number of the masonry units with failure which have the same characteristic exceeds 2, further inspection and/or tests shall not be conducted and the consignment shall be considered as not conforming with this standard.

After the completion of all inspection and tests described as above, if the number of masonry units with failure does not exceed the allowable number of units with failure given in Table 3, the masonry unit consignment from which samples have been taken is considered as conforming with this standard. If the number of masonry units with failure exceeds the allowable number of units with failure given in Table 3, the consignment is considered as not conforming with this standard.

5.5 Inspection and test reports

Inspection and test reports shall include at least following information:

- Name of the place and the laboratory where inspection and testing were conducted,
- Names, duties and professions of people who conducted the inspection and testing and/or signed the report,
- Date of the inspection and testing,

- Description of the sample,
- Reference numbers of standards which were applied in inspection and testing,
- Demonstration of results,
- Measures taken to eliminate the inconveniences of the factors possible to change the inspection and test results,
- Processes which were not defined or deemed necessary in the applied inspection and test methods but took place in the inspection and test,
- Whether it conforms to this standard,
- Date and number of the report.

In addition to above information, the test report may include the information given in ISO/IEC 17025.

5.6 Frequencies testing of finished product in factory

As appropriate, the factory production control system shall incorporate a sampling plan and the frequency of testing of the finished product. The results of sampling and testing shall be recorded. The sample shall be representative of the production. Guidance on testing frequencies for the characteristics of the finished products is given in Table C.1. The guidance should only be used if no better information is available. Depending on the corrective measure nonconformities may result in higher frequencies of testing than the ones used.

6. RELEASE TO THE MARKET

6.1 Package

Masonry units are generally placed on market without packaging. However, if specified before, they may be released to market with packaging.

If they are released with packaging, the markings specified in Clause 6.2 and the number of masonry units in the package shall be available on the package.

6.2 Marking

The following information shall be clearly marked on one of the following: the units, the packaging, the delivery note or any certificate supplied with the masonry units (see Annex D):

- Trademark or short name and the registered mark (if any), of the manufacturer,
- Reference number of this standard (SASO../...),
- Markings specified in Clause 4.1 and 4.2 for indication of the class and the type of the masonry unit.

7. MISCELLANEOUS PROVISIONS

When demanded, the manufacturer or the seller shall give or show a declaration of compliance with this standard for the product he has declared to be manufactured in accordance with this standard. This declaration shall specify that

- The masonry unit meets the requirements given in Clause 4.2,

- Inspections and tests given in Clause 5.2 and 5.3 have been conducted on the units with positive results.

When demanded, required information may be written in other language(s).

Annex A

Sampling

A.1 General

This sampling procedure shall apply for initial type testing and in the event that there is a requirement for an assessment of product compliance.

Only those characteristics declared by the manufacturer shall be assessed by this procedure.

Representatives of all parties shall be allowed to attend during sampling procedure for the tests that will be conducted by an independent testing body.

The required number of masonry units to determine compliance with the specification shall be sampled from a consignment of masonry units or a part of a batch, not more than 20 m³.

NOTE: Masonry units manufactured in accordance with this standard and have been subject to a third party inspection for compliance are not normally subjected to independent testing after the delivery of the consignments.

A.2 Sampling procedure for determination of the product compliance

NOTE: The choice of the method of sampling will normally be dictated by the physical form of the consignment in question.

A.2.1 Random sampling

Whenever possible, the random sampling method shall be used, in which every masonry unit in the consignment has an equal chance of being selected for the sample. The appropriate number of masonry units shall be selected at random from positions throughout the consignment without any consideration being given to the condition or quality of those selected except that units damaged in transit shall not be selected.

NOTE: In practice, random sampling is normally only convenient either when the masonry units forming the consignment are being moved in a loose (unpacked) form from one place to another or when they have been split into a large number of small stacks, e.g. on scaffolding awaiting laying.

A.2.2 Representative sampling

A.2.2.1 General

When random sampling is impracticable or not convenient, e.g. when the masonry units form a large stack or stacks with ready access to only a limited number, a representative sampling procedure shall be used.

A.2.2.2 Sampling from a stack

The consignment shall be divided into at least six real or imaginary sections, each of a similar size. An equal number of not more than four concrete masonry units shall be selected at random from within each section in order to give the required number without any consideration being given to the condition or quality of those selected except that units damaged in transit shall not be selected.

NOTE: It will be necessary to remove some sections of the stack or stacks in order to gain access to masonry units within the body of such stacks when taking samples.

A.2.2.3 Sampling from a consignment formed of banded packs

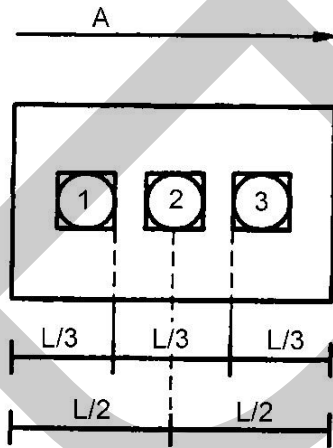
At least six packs shall be selected at random from a consignment. The packages of each pack shall be removed and an equal number of not more than four units shall be sampled at random from within each of the packs in order to give the required number without any consideration being given to the condition or quality of those selected except that units damaged in transit shall not be selected.

A.2.3 Dividing the sample

When the sample is to provide lightweight masonry units for more than one test, the total number shall be collected together and then divided by taking masonry units at random from within the total sample to form each successive sub-sample.

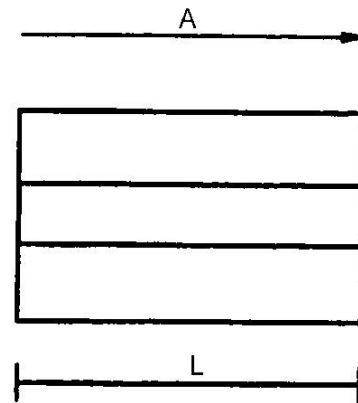
Annex B

Cutting schemes for testing of foamed concrete masonry units

B.1 Cutting scheme for producing cubes or prisms from foamed concrete masonry units in order to determine the dry density**Key**

A Direction of rise

L Lengths of masonry unit

Figure B.1 - Cutting scheme for cubes and cylinders**Figure B.2 - Cutting scheme for prisms and cylinders**

The specimens shall be taken uniformly from the surface at the middle of the masonry unit in the direction of rise (see Figure B.1).

The minimum dimension of the cube or cylinder specimens (Figure B.1) should be 100 mm. In the case of prisms (Figure B.2), the minimum dimension should be 50 mm.

NOTE If the minimum dimensions cannot be obtained, different dimensions and/or shapes may be agreed.

B.2 Cutting scheme for producing cubes from foamed concrete masonry units in order to determine compressive strength

The cutting scheme for producing cubes from foamed concrete masonry units in order to determine compressive strength is as shown in Figure B.1.

NOTE: The mean of the test values for the specimens cut from a unit represents the test value for that unit.

Annex C
Guidance on Checking frequencies

Table C.1 — Checking of finished products

Subject	Purpose of checking	Reference method	Frequency of checking by the manufacturer for a product group
Dimensions and tolerances	Conformity with the declared dimensions and the permissible tolerances determined by this standards	EN 772-16 EN 772-2	6 units/week of production or As given in the tests documentation
Configuration	Conformity with the declared values according to this standards	EN 772-16 EN772-20	6 units/week of production or As given in the tests documentation
Reaction to fire ^a	Conformity with the declared values according to this standards	EN 13501-1	Once every 5 years or As given in the tests documentation
Gross dry density	Conformity with the declared gross dry density and the permissible deviations to this standards	EN 772-13	6 units/week of production or As given in the tests documentation
Net dry density	Conformity with the declared gross dry density and the permissible deviations to this standards	EN 772-13	6 units/week of production or As given in the tests documentation
Compressive strength	Conformity with the declared values according to this standards	EN 772-1	6 units/week of production or As given in the tests documentation
Capillary water absorption ^a	Conformity with the declared values according to this standards	EN 772 -11	Once a month or As given in the tests documentation
Thermal Conductivity ^a	Conformity with the declared values according to this standards	ISO 6946 EN 1745	Once a year or As given in the tests documentation
Sound insulation	Conformity with the declared values according to this standards	ISO 140-4 ISO 10140-2	Once every 5 years or As given in the tests documentation
Initial shear strength	Conformity with the declared values according to this standards	EN 1052-3	Once every 5 years or As given in the tests documentation
Shrinkage	Conformity with the declared values according to this standards	EN 680	Once a year or As given in the tests documentation
Moisture movement ^a	Conformity with the declared values according to this standards	EN 772-14	Once a year or As given in the tests documentation
Water vapor permeability ^a	Conformity with the declared values according to this standards	ISO 12572	Once a year or As given in the tests documentation

^a Only when declared by the manufacturer based on testing.

The tests should be carried out in accordance with the reference methods mentioned in the standard or by applying alternative test methods with a proven correlation or a safe relationship to the reference methods.

Annex D

Marking data card

Trademark or name and the registered mark (if any short), of the manufacturer
Address and Country of origin:
Number of standards: SASO../...
Category I, xxx·yyy·zz mm foamed concrete masonry unit
Dimensions Tolerance class: D1
Configuration: As in attached drawing
Compressive strength: xxx N/mm ² (± bed face, cut prism)(Cat I)
Initial shear strength:
Shrinkage:
Reaction to fire: A1
Capillary water absorption: g/(m ² x s ^{0,5})
Water vapor diffusion coefficient: xxx
Moisture movement:
Direct airborne sound insulation:
Gross dry density: xxxx kg/m ³
Net dry density: xxxx kg/m ³
Thermal conductivity: xx W/m ² .K

Figure D.1 — Example for marking



Figure 1a)
Example of lightweight sandwich masonry units with insulation layer
incorporating non-hollow core insulation material

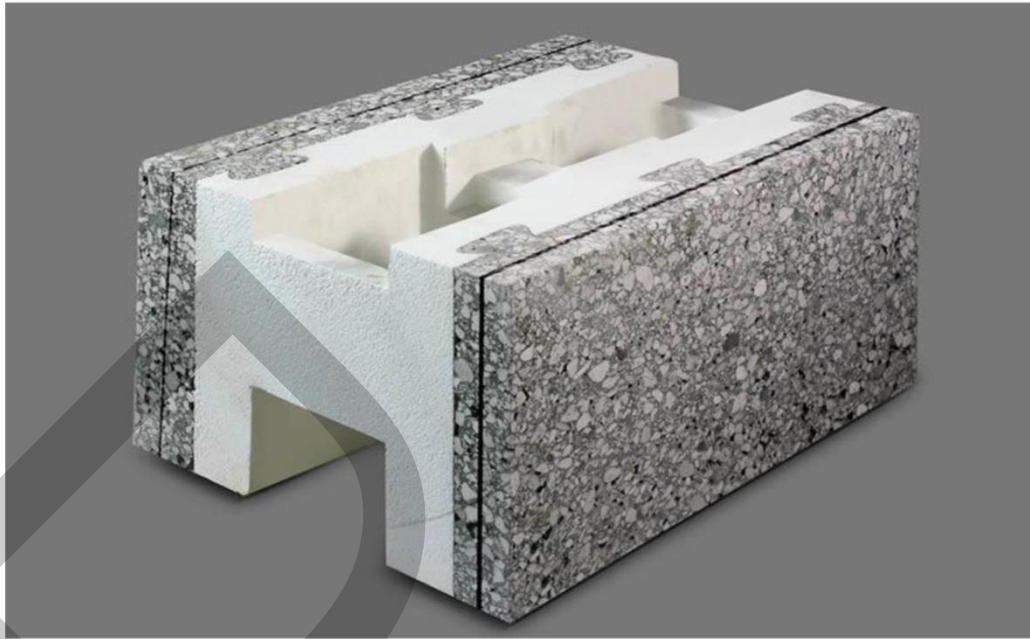


Figure 1b)
**Example of lightweight sandwich masonry units with insulation layer
incorporating hollow core insulation material**



Figure 1c)
Example of lightweight sandwich masonry units with facing insulation layer

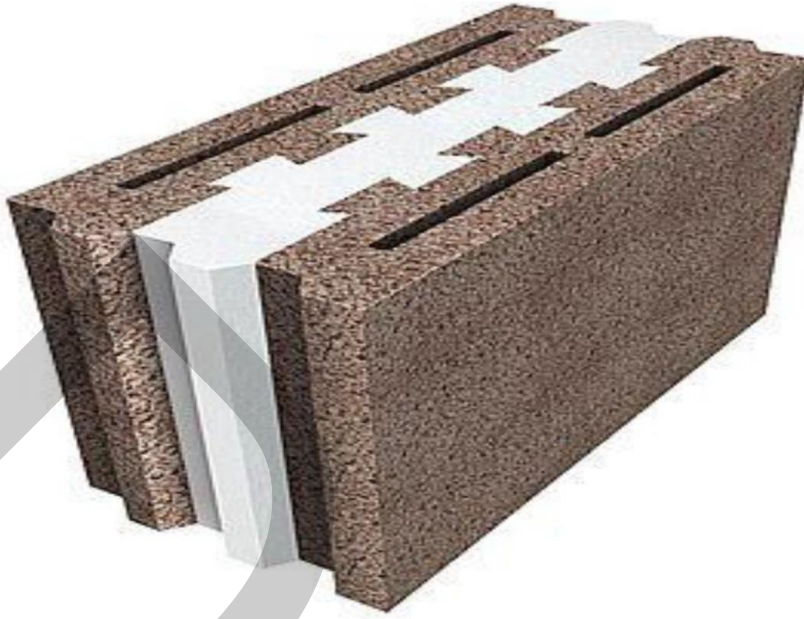


Figure 1d) – Example of lightweight sandwich masonry units with non-hollow core insulation layer and perforated concrete.

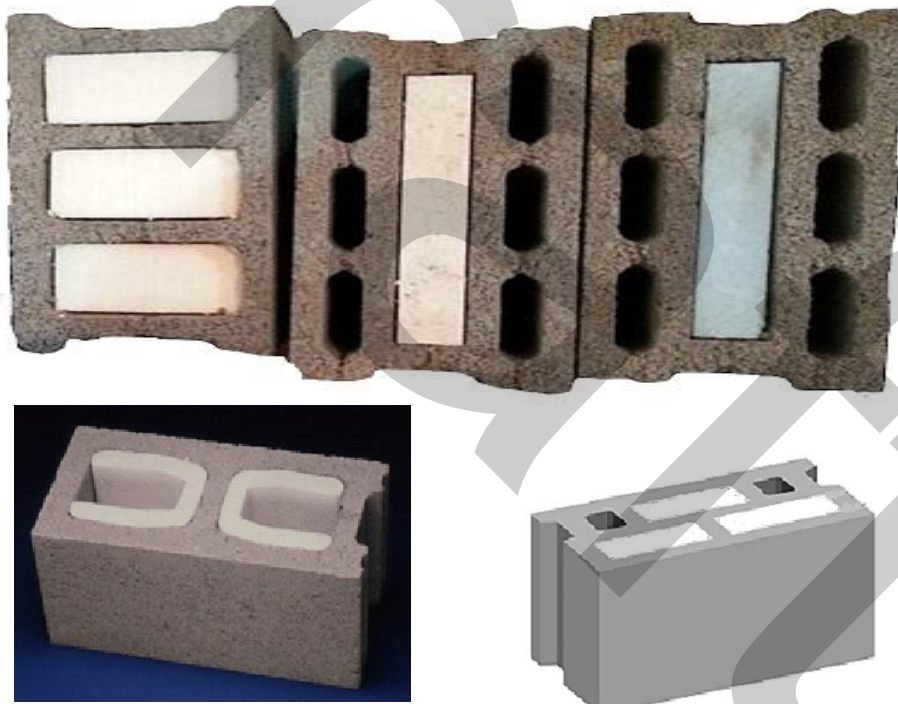


Figure 1e) – Example of unacceptable lightweight sandwich masonry units with non-hollow core insulation layer and perforated concrete (Insulation layer must be extended over the entire longitudinal section).



Figure 1f)
Masonry unit made of lightweight concrete manufactured using polystyrene