SPECIFICATION FOR PRECAST CONCRETE BLOCKS

PART 3: AUTOCLAVED AERATED CONCRETE MASONRY UNITS

Revision History

Issue Date	Revision	Revision Description
May 2004	01	- Indicated by a side bar on the right margin
Nov. 2005	02	- Clause 5.2 - Indicated by underlined highlighted font
14/08/2011	03	- Clause 3 new sub clause 3.3, 3.4, and 3.5 are added - Table 1 has been revised - Sub Clause 6.1.3 has been revised
22/07/2014	04	- Foreword has been revised - Clause 5.1 has been revised - Sub Clause 6.1.1 table 1 has been revised - Clause 4 has been revised

Title of DMS:

Specification For Precast Concrete Blocks - Part 3: Autoclaved Aerated Concrete Masonry Blocks

Application Number: S-619-14-ICS
Application Date: 08/07/2014

This Dubai Municipality Standard is:

Reviewed by: The Standardization Committee:

Eng.Sameer Darwish AlPojoq	Head of Committee	
Eng.Edwin Tan Palma	Member	
Eng.Mariam Alkharousi	Member & Coordinator	
Eng.Mohanned Mohieddin Zaza	Member	

Approved & Authorized by: Products Conformity Assessment Section Manager

Table of Contents

List of Tabels

Foreword

With a view to have a comprehensive set of unified Dubai Municipality Standards which would be consistent and appropriate to local conditions and yet be at par with International Standard, the Dubai Central Laboratory Department is formulating standards taking guidance as much as possible from International and Regional Norms.

The formulation of this Dubai Municipality Standards (DMS) Specification is in accordance with Local Order 44 issued in 1990 as amended by Local Order (1) 2012 on "Standard Specifications of Concrete Blocks Used in the Emirate of Dubai". This DMS Specifications takes into account the new developments in terms of materials, block types and manufacturing technology as well as the availability of test facilities and test methods.

In view of the above, this DM Standard Specification (DMS 1) is being formulated in five parts as follows and intended to meet the requirements of the Local Order 44: 1990 as amended by Local Order (1) 2012.

Part 1: Masonry blocks
Part 2: Filler blocks
Part 3:Autoclaved aerated concrete masonry blocks
Part 4: Paving blocks
Part 5: Concrete-polystyrene sandwich masonry blocks

1 Scope

This standard specifies materials and minimum performance levels for autoclaved aerated concrete masonry units.

2 References

This standard incorporates provisions from other references. These references are cited undated at the appropriate points in the text, but latest edition of these references applies (including amendments). In case any reference is shown as dated, then that specific edition shall be used. The titles of these references are listed on clause 7

3 Definitions

3.1 AAC block

A block manufactured from hydraulic binders such as cement and/or lime, combined with siliceous based fine materials (sand), cell generating material and water. AAC blocks are intended for use in the construction of walls.

NOTE The raw materials are mixed together and cast into moulds where the mix is allowed to rise and set into cakes. After this process, the cake is cut into the required sizes of blocks and cured with high pressure steam in autoclaves.

3.2 Lot

The term “Lot” refers to any number of AAC concrete blocks of any configuration or dimension manufactured by the producer using the same materials, concrete mix, manufacturing process, and curing method.

3.3 Length

The largest dimension of the horizontal plane of installation.

3.4 Width

The smallest dimension of the horizontal plane of installation .

3.5 Height

The vertical dimension perpendicular to installation plane

4 Materials of manufacture

4.1 The following materials of manufacture combined with additives and agents where appropriate may be used in the manufacturing process:

4.1.1 Cement conforming to the requirements of ASTM C 150, or BS EN 197;

4.1.2 Lime conforming to the requirements of BS 890;

4.1.3 Water conforming to the requirements of BS EN 1008;

4.1.4 Silicious based material;

4.1.5 Cell-generating material.

5 General requirements

5.1 Gross density

5.1.1 Block manufacturers shall declare the **maximum** gross density of each type and configuration of their masonry blocks. Declared gross density shall not be more than 850 kg/m^3.

5.1.2 When tested in accordance with BS EN 772: Part 13, the gross density of each type and configuration of the masonry blocks shall not exceed the declared value

5.2 Chloride and sulphate content

When tested in accordance with BS 1881: Part 124, the acid soluble chloride (Cl) and sulphate (SO_3) content of blocks shall not exceed 0.05% and 1.0% by mass of dry concrete respectively.

5.3 Drying shrinkage

When tested in accordance with BS EN 680, the average drying shrinkage shall not exceed 0.9 mm/m.

5.4 Thermal conductivity

5.4.1 For blocks intended to be used in elements subject to thermal requirements, thermal conductivity of blocks shall be declared by the manufacturer according to BS EN ISO 10456 at 35ºC and 60% relative humidity (RH).

5.4.2 When tested in accordance with ASTM C 518 at 35ºC and 60% RH AAC thermal conductivity shall not exceed the declared value.

6 Basic Certification Requirements

6.1 Sizes

6.1.1 Work size

The size of a masonry block specified for its manufacture, to which its actual size should conform within specified permissible deviations. The purchaser shall specify the work size. Table 1 gives most frequently used work sizes of blocks.

Table 1 – Works sizes and tolerances of blocks

	Length (mm)	Width (mm)	Height (mm)
Dimensions	390 - 590	250, 200, 150, 100	200 - 250
Tolerances	± 3	± 2	± 2
NOTE - Other work sizes may also be used as per requirements.			

6.1.2 Dimensions

The dimensions of blocks shall be declared by the manufacturer.

6.1.3 Tolerances

When measured in the manner described in BS EN 772-16, the tolerances in length, height or width of each block from the sample shall not exceed the limits shown in Table 1.

6.2 Strength

When tested at the air-dry condition in accordance with BS EN 772: Part 1, the average normalized compressive strength and that of an individual specimen shall be not less than the values given in Table 2.

Table 2 - Minimum compressive strength of masonry blocks in N/mm^2

Average	Individual
3.2	2.6
NOTE - Designers may specify blocks of higher strengths than those given in this table if required.	

6.3 Sampling for tests

6.3.1 Number of Specimens

The number of specimens required for each specified test shall be:

Table 3 - Number of specimens required for each specified test

Test Type	No. of Specimens
Dimension and Compressive strength	6
Concrete density	6
Chloride and Sulphate content	1
Drying shrinkage	3

6.3.2 Selection of test specimens

A representative sample of masonry blocks required for test purposes shall be selected at random from every designated lot of 20,000 blocks or fraction thereof. Each specimen shall be marked so that it may be identified at any time.

7 Publications referred to

ASTM C 150	Standard specification for portland cement
ASTM C 518	Standard test method for steady-state thermal transmission properties by means of the heat flow meter apparatus
BS 890	Building limes
BS 1881: Part 124	Method for analysis of hardened concrete
BS 6073: Part 1	Specification for precast concrete masonry units
BS 6073: Part 2	Method for specifying precast concrete masonry units
BS EN 197	Cement — Part 1: Composition, specifications and conformity criteria for common cements
BS EN 680	Determination of drying shrinkage of autoclaved aerated concrete
BS EN 772: Part 1	Methods of test for masonry units – Part 1: Determination of compressive strength
BS EN 772: Part 13	Methods of test for masonry units – Part 13: Determination of net and gross density of masonry units (except for natural stone)
BS EN 772-16	Determination of dimensions
BS EN 1008	Mixing water for concrete
BS EN ISO 10456	Building materials and products – Procedures for determining declared design thermal values