ESCSI
Expanded Shale Clay & Slate Institute

Info. Sheet # 3001
Revised 9-98

Guide Specification for
Load-Bearing
Lightweight Concrete Masonry Units
Section 4200

Lightweight concrete masonry units made from expanded shale, clay or slate lightweight aggregate provide the highest quality lightweight concrete masonry units. This guide specification is offered in a master specification format to aid the designer in projects involving lightweight concrete masonry. Comments, which are boxed and shaded, precede each specification section and should be deleted from the final specification.

SECTION 4200 - UNIT MASONRY

In 1990 the ASTM C 90 specification was extensively revised and now includes both hollow and solid concrete masonry units. There is no longer a lower strength Grade S unit; all C 90 load bearing units are required to meet the same 1900 psi minimum average strength requirement based on the net area.

Cite specification ASTM C 90-90 "Standard Specification for Load-Bearing Concrete Masonry Units" in the project "referenced specifications" section.

Load bearing lightweight concrete masonry units shall conform to ASTM C 90.

The type of units (Type I, Moisture Controlled, or Type II, Non-Moisture Controlled) specified will depend on the local climate and the measures taken to control shrinkage. Lightweight concrete masonry units made with expanded shale, clay or slate offer the least shrinkage of any lightweight unit. Consult the local lightweight aggregate supplier for additional information.

Specify the type of unit below by deleting the type of unit that will not be used.

Units shall be Type [I- Moisture Controlled] [II- Non-Moisture Controlled].

Cite specification ASTM C 331 "Standard Specification for Lightweight Aggregate for Concrete Masonry Units" in the project "referenced specifications" section.

The lightweight aggregate used in the manufacture of lightweight concrete masonry units shall be expanded shale, clay or slate aggregate produced by the rotary kiln process and conform with ASTM C 331.

Rotary Kiln Produced Structural Lightweight Aggregate
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Delete the following paragraph if not required.

The concrete masonry unit manufacturer shall provide certification that lightweight aggregates used in the manufacture of lightweight concrete masonry units meet the requirements of ASTM C 331.

Expanded shale, clay or slate aggregate produces a typical block concrete density of 90 pcf (1440 Kg/M^3) oven dry. Consult with local masonry manufacturers or lightweight aggregate manufacturers for more specific information.

In general, units with a lower density will not only reduce the dead load in a structure, but will also have better thermal insulating properties and provide increased mason productivity during installation. These factors can result in significant overall cost savings. The fire resistance rating of a concrete masonry unit depends on its equivalent thickness and the type(s) of aggregate used in its manufacture; ratings are assigned by the model building codes and by agencies such as Underwriters Laboratories, Inc.

The architect may choose to specify thermal insulation, sound control, and fire resistance properties of lightweight concrete masonry units. Information regarding these properties is available from a number of sources: ESCSI Information Sheets, NCMA TEK Sheets, ASHRAE Handbook, PCA Concrete Masonry Handbook, Underwriters Laboratories, Inc. Standard 618, American Insurance Association's Fire Resistance Ratings, NFPA Fire Protection Handbook, National Research Council of Canada, as well as various building codes.

The density of the concrete of which the units are made shall not exceed 90 pcf (1440 kg/m^3) when measured in accordance with the provisions of ASTM designation C 140 "Sampling and Testing Concrete Masonry Units".

Expanded shale, clay and slate aggregate, as manufactured by the rotary kiln process (originally developed in 1908 and patented in 1918 as Haydite), is available throughout the world.

Local Supplier

or

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