

ACOUSTICAL PROPERTIES OF Q-LITE® CONCRETE MASONRY UNITS

Unwanted noise has become a major problem in recent years. With all the increased technological advances we have taken for granted, noise reduction was not considered important in our everyday life until the middle 1980's. Studies show an ever-increasing amount of noise pollution in the work place, at home, almost everywhere we go.

Designing with concrete masonry provides a sound controlling wall system which helps reduce unwanted noise. Because of its mass and rigidity, concrete masonry is especially effective in reducing the transmission of sound.

The Q-LITE concrete masonry unit provides the traditional superior sound reduction qualities of concrete masonry while reducing the weight of the wall. Q-LITE concrete masonry units are manufactured using lightweight aggregates produced by Arcosa Lightweight, manufactured in compliance with A.S.T.M. C 331, "Specification for Lightweight Aggregates for Concrete Masonry Units".

Table 1
STC Ratings for Q-LITE CMU's

Unit Size, In	Weight of Wall, psf		STC	
	UngROUTed	Grouted	UngROUTed	Grouted
4 X 8 X 16	19	30	41	45
6 X 8 X 16	23	51	43	50
8 X 8 X 16	27	72	44	54
8 X 8 X 24	28	70	45	54
12 X 8 X 16	40	109	48	59

Reference:
NCMA TEK 13-1, Sound Transmission Class Ratings for Concrete Masonry Walls

STC Ratings

Sound transmission class (STC) is a single-figure rating derived in a prescribed manner from sound transmission loss values. The rating provides an estimate of the performance of the partition in certain common sound insulation problems. The STC of a concrete masonry wall can be calculated using an equation developed from the results of sound transmission loss tests. The equation, $STC=23(w)^{0.2}$, shows the STC to be a function of the weight of the wall system. Table 1 shows STC values for various configurations of Q-LITE masonry walls.

Suggested Specifications

Lightweight Concrete Masonry Units (CMUs) shall be Q-LITE CMUs conforming to the requirements of ASTM C 90, "Specification for Load-Bearing Concrete Masonry Units".

The units shall be Type II, Nonmoisture Controlled Units. The producer of the Q-LITE lightweight concrete masonry units shall supply a current certification that all concrete masonry units use rotary kiln expanded clay, shale or slate aggregates produced by Arcosa Lightweight, conforming to ASTM C 331, "Specification for Lightweight Aggregates for Concrete Masonry Units".

Natural aggregates shall conform to ASTM C 33 "Specification for Aggregates for Concrete". The mix design used in manufacturing the Q-Lite concrete masonry units shall include not less than 70% expanded clay aggregate (all gradations) and not more than 30% local natural aggregates (all gradations), by volume.

