VERMICULITE
MASONRY FILL

COVERAGE CHARTS
INSULATION
VALUES

SCHUNDLER

CONSTRUCTION GUIDE

The Schundler Company
150 Whitman Avenue
Edison, New Jersey 08817
732-287-2244 www.schundler.com

VERMICULITE MASONRY FILL

BLOCK AND CAVITY FILL

From literature distributed by:
The Vermiculite Association

Vermiculite loose fill masonry insulation is an inert, inorganic, lightweight granular material that can be been treated for water repellency. It is non-flammable, non-combustible, economical, and does not emit odors, toxic fumes, or attract vermin. It will not deteriorate or decompose.

Since it is simply poured into the cavities of block cores or in cavity wall areas, it is one of the easiest means of providing a barrier against the transmission of heat, sound, and moisture. As a loose-fill product, it fills the cavities completely, not leaving gaps or openings or bridging.

Basic Product Properties

Thermal Insulation--Vermiculite has been used for over 50 years for insulation in attics, walls, and high temperature industrial applications. In recent testing, vermiculite masonry insulation used in a standard 8" lightweight block performed better than urea formaldehyde foam polystyrene beads, and polystyrene inserts. Generally vermiculite will increase the total insulating value of a block wall by 35% to 60% depending upon the properties of the concrete block.

Water Repellency--If treated to reduce water absorption, vermiculite masonry insulation reduces water migration through both block and cavity walls.

Permanency--Vermiculite is a naturally occurring mineral and has a sintering point of 2300° or (1260° C). Once in place, this product has very minimal settling properties. Vermiculite is free flowing and will fill and insulate all voids.

Economical--Vermiculite is cost competitive and easy to install (virtually foolproof). It significantly reduces heat loss in block wall construction, and can be used in conjunction with other forms of wall insulation to provide a total super-insulated form of construction.

Non-Combustible--In testing following the ASTM E-84 tunnel test, vermiculite has no flame spread, no fuel contributed, or smoke developed.

Improved Fire Rating--Underwriters Laboratory has assigned a four hour rating (U.L. Design nos. U 901, 904 and 905) to concrete block walls constructed of standard 8" x 8" x 16" blocks with all the cores filled with vermiculite. Required fire ratings for elevator shafts and fire walls can now be easily attained with this economical type construction. This eliminates the use of heavy and expensive masonry units used to obtain these ratings in the past.

- Underwriters' Laboratory Design **No. U905** shows that a 2-hour rated 8,10, or 12-inch concrete block wall is improved to 4 hours when cores are filled with loose fill vermiculite. (Other four hour designs and ratings for 8-inch blocks are also described in **U901** (upgrading 2 and 3 hours blocks to 4 hours), **U904** (upgrading 3 hr block to 4 hour), and **U907** (upgrading 3 hr block to 4 hour).)

Economical--Heat transmission is reduced approximately 50% in masonry wall systems when vermiculite masonry insulation is installed. Annual savings in heating and cooling frequently exceed the initial cost of the masonry insulation thus providing a constant reduction in utility bills for the life of the building. Savings are even more significant in buildings heated with electricity.

Concrete Block Walls

		Block Only		Block Insulated Furred & Plastered (e)	
Wall Thickness in Inches	**Type pf Block**	**Uninsulated**	**Insulated**	**1" Air Space Uninsulated**	**1 " Air Space Insulated**
6	Lightweight	.40	.26	.18	.15
8	Lightweight	.33	.17	.13	.11
	Sand &	.53	.36	.23	.18

	Gravel				
12	Lightweight	.30	.15	.12	.11
	Medium Weight	.44	.24	--	--
	Sand & Gravel	.47	.33	.22	.17

(e) 3/8 " gypsum lath and 1/2" of vermiculite-gypsum plaster.

Solid Brick and Block Walls

		4" Face Brick	4" Common Brick
6 " Concrete Block (Lightweight)	Uninsulated	.34	.33
	Insulated	.23	.21
8" Concrete Block (Lightweight)	Uninsulated	.29	.26
	Insulated	.16	.15
8" Concrete Block (Sand & Gravel)	Uninsulated	.43	.37
	Insulated	.31	.28

Cavity Walls

4" Exterior Wythe		Face Brick		Common Brick		Concrete Block	
Actual Cavity Dimension, In.		2.5	4.5	2.5	4.5	2.5	4.5
4" Concrete Block (Sand & Gravel)	Uninsulated	.34	.34	.30	.30	.31	.31
	Insulated	.13	.08	.13	.08	.13	.08
4" Concrete Block (Cinder) or 4" Clay Tile	Uninsulated	.30	.30	.27	.27	.25	.25
	Insulated	.13	.08	.12	.08	.12	.08
4" Concrete Block (Lightweight)	Uninsulated	.27	.27	.24	.24	.21	.21
	Insulated	.12	.08	.12	.08	.11	.07

6" Concrete Block (Lightweight)	Uninsulated	.26	.26	.23	.23	.20	.20
	Cavity Insulated	.12	.08	.11	.08	.10	.07
	Block & Cavity Insulated	.10	.07	.10	.07	.10	.07
8" Concrete Block (Lightweight)	Uninsulated	.22	.22	.21	.21	.18	.18
	Cavity Insulated	.11	.07	.11	.07	.10	.07
	Block & Cavity Insulated	.08	.06	.08	.06	.08	.06
4" Face Brick	Uninsulated	.37	.37				
	Insulated	.14	.09				
4" Common Brick	Uninsulated	.33	.33	.29	.29		
	Insulated	.13	.08	.13	.08		

Sound Transmission

Average Sound Transmission --- Loss in Decibels			
Wall Type	**Cores Empty**	**Cores Filled with Vermiculite**	**Noise Reduction Percentage** (a)
8" painted lightweight block	43	48(b)	31%
8" unpainted heavyweight block	45	48(c)	21%(d)

(a) Decibel reduction converted to sones and expressed as a percentage reduction in loudness.
(b) STC-48
(c) STC-52
(d) 31% when block filled and painted.

Approximate Coverage(a)

Sq. ft. of wall area(b)	**1" Cavity**	**2" Cavity**	**2.5" Cavity**	**4.5" Cavity**	**8" Block**	**12" Block**
100	2	4	5	9	7	13
500	10	20	25	45	34	63

1,000	21	42	50	95	69	125
2,000	42	84	100	189	138	250
3,000	62	124	150	279	207	375
5,000	104	208	250	468	345	625
7,000	146	292	350	657	483	875
10,000	208	416	500	950	690	1,250

(a) 4-cubic foot bags required to fill
(b) a standard 8"x16" block equals 0.89 sq.ft.
Multiply the number of blocks times 0.89
to calculate the total square footage needed.

Nominal Thermal Resistance Values
Thermal Resistance [(a)] $^0F \cdot h \cdot ft^2/Btu$ ($K \cdot m^2/W$)

Mean Temp. ^0F (^0C)	0-Premium	1-Large>	2-Medium	3-Fine	4-Super Fine
-199 (-84)	--	--	--	--	3.4 (0.59)
-58 (-50)	--	--	--	--	3.0 (0.52)
-13 (-25)	--	--	--	--	2.7 (0.48)
75 (24)	2.3 (0.40)	2.3 (0.40)	2.3 (0.40)	2.3 (0.40)	2.3 (0.40)
212 (100)	--	--	--	--	1.8 (0.32)
302 (150)	--	--	--	--	1.6 (0.28)
392 (200)	--	--	--	--	1.4 (0.25)
482 (250)	--	--	--	--	1.2 (0.22)
572 (300)	--	--	--	--	1.1 (0.19)
662 (350)	--	--	--	--	0.94 (0.17)
752 (400)	--	--	--	--	0.84 (0.15)
850 (454)	--	--	--	--	0.73 (0.13)

(a)The nominal thermal resistances in this table are for 1.0 inch (25.4 mm) of thickness

---

Technical Support and Specifications:

Description

The block or cavity wall insulation shall be vermiculite masonry insulation, as produced by a qualified manufacturer of vermiculite products. It can be specially treated to reduce water absorption, and should be free flowing insulation.

Scope

The walls to be insulated shall be designated on drawings and schedules.

Materials

All insulation materials shall conform to ASTM C-516, Standard Specification for Vermiculite Loose Fill Thermal Insulation or Federal Specification HH-I-585C. Vermiculite Masonry Insulation can be treated for water repellency if necessary.

Installation

The vermiculite masonry insulation shall be poured into the concrete block cavities directly or through the use of a hopper device placed immediately on top of the wall section. The insulation shall be poured at any convenient interval so as to insure that all areas are filled. All holes and openings in the wall through which the insulation can escape shall be permanently sealed or caulked prior to installation of the vermiculite; and glass fiber, rope, galvanized steel, or copper screens shall be used at seep holes to prevent leakage.

Codes and Certification

Vermiculite Masonry Insulation is manufactured to meet the following standards:

- ASTM C-516 (Vermiculite Loose Fill Thermal Insulation).
- Federal Specifications for Insulation, Thermal (Vermiculite), HH-I-585C and A-A-902 General Services Administration, April 21, 1980.
- National Concrete Masonry Association guidelines for insulation in concrete masonry walls.

For more information, please call or contact:

The Vermiculite Association
or one of its members, or

The Schundler Company

150 Whitman Avenue
Edison, New Jersey 08817
732-287-2244 or www.schundler.com