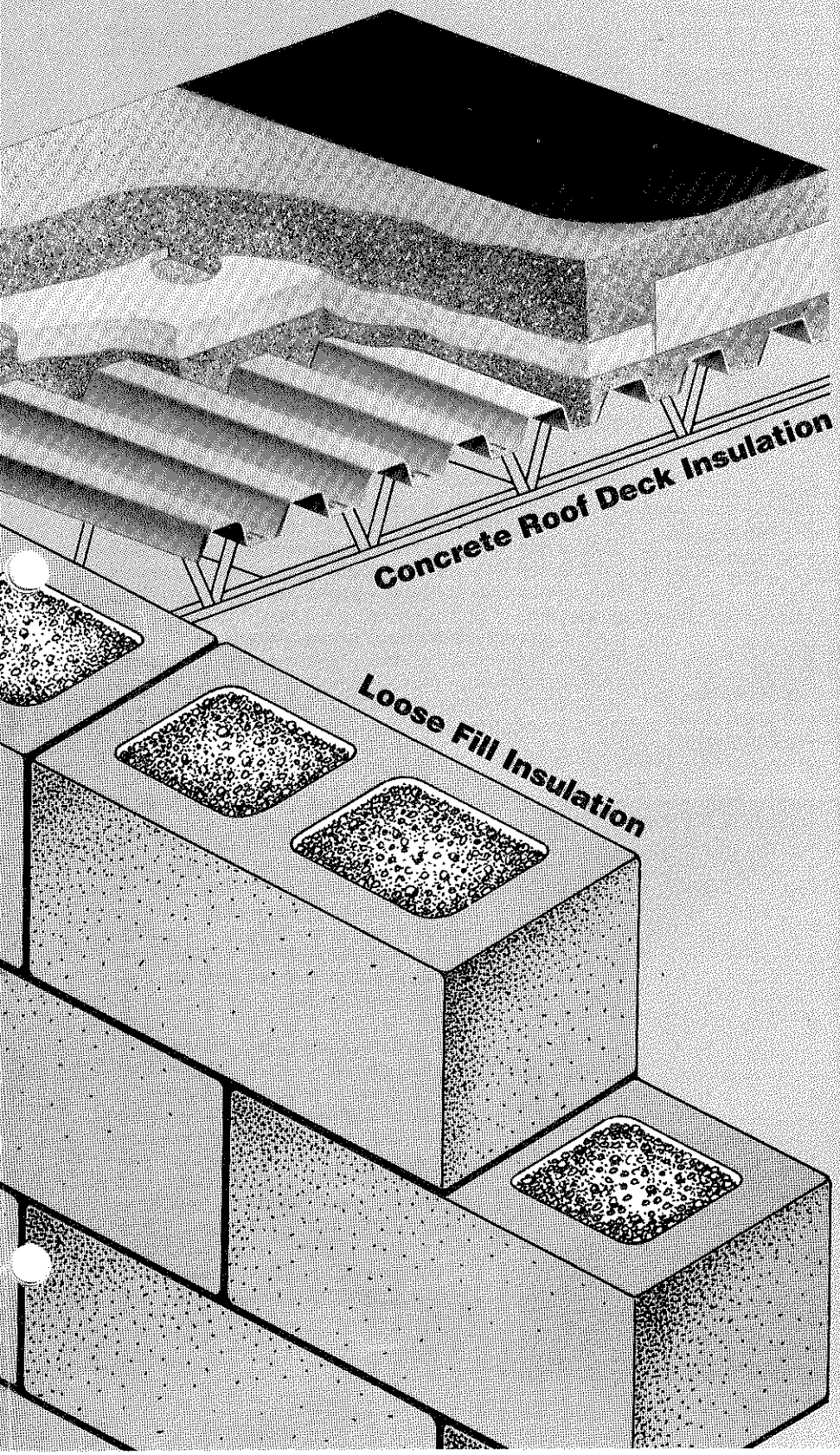
Perlite



- *Superior Insulation*
- *Non Combustible*
- *Inorganic*
- *Asbestos Free*
- *Lightweight*
- *Readily Available*

Concrete ...

- *Durable*
- *Excellent Nailable Roofing Base*

Loose Fill ...

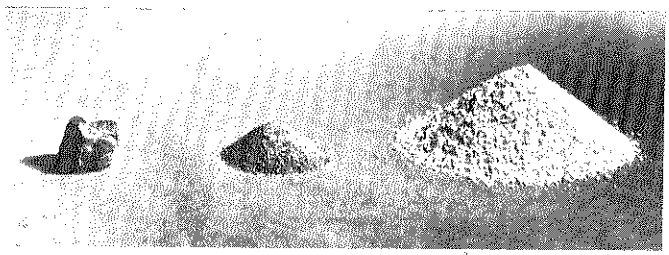
- *Non-Settling*
- *Non-Bridging*
- *Easy to Install*

Perlite

PP/Product Presentation

Perlite is not a trade name but a generic term for naturally occurring siliceous volcanic rock. The distinguishing feature which sets perlite apart from other volcanic glasses is that when heated to a suitable point in its softening range, it expands four to twenty times its original volume.

This expansion is due to the presence of two to six percent combined water in the crude perlite rock. When quickly heated to above 1600°F (870°C) the crude rock pops in a manner similar to popcorn as the combined water vaporizes and creates countless tiny bubbles in the heat softened glassy particles. It is these tiny glass-sealed bubbles which account for the amazing physical properties of expanded perlite.



Crude Perlite | Crushed Crude Perlite | Expanded Perlite

Three stages of perlite production illustrate the great increase in volume after expansion. The same weight of perlite, 1 oz (28 gm) is shown in each photo. The expansion process also creates one of perlite's most distinguishing characteristics: its white color. While the crude rock may range from transparent to light gray to glossy black, the color of expanded perlite ranges from snowy white to grayish white.

Expanded perlite can be manufactured to weigh from 2 lb/ft^3 (32 kg/m^3) to 15 lb/ ft^3 (240 kg/m^3) making it adaptable to numerous applications in the construction, industrial, chemical, horticultural and petrochemical industries.

Perlite Insulating

PP/Product Presentation

Roof Insulation

Perlite concrete roof deck insulation is an ideal base for conventional built-up roofing membranes as well as single ply systems providing superior strength and fire safety over other roof insulation materials. Its rigid monolithic surface has a minimum compressive strength of 125 psi compared with typical rigid board systems having strengths of only 10 to 35 psi. With the addition of polystyrene board sandwiched in the perlite concrete, R values in exess of 32 can be achieved at minimal cost. Composite shear values over galvanized steel deck in excess of 1,500 PLF are available.

Slope-to-drain is easily accomplished by varying the thickness of perlite concrete. It may also be accomplished by stair stepping different thicknesses of polystyrene board and covering it with a uniform layer of lightweight perlite insulating concrete. This is a far more cost effective system than tapered rigid boards.

Perlite insulating concrete may be placed over side lap vented or slotted galvanized steel decking, poured-in-place concrete or precast concrete panels. Lightweight perlite concrete insulation is particularly suitable for use over pre-cast concrete construction as these systems often have uneven joints and camber differentials. Perlite concrete insulation levels any uneveness to provide a seamless, smooth, hard surface ready for application of roofing.

Even if leakage should occur in the roofing material, perlite concrete insulation remains unharmed and suffers little loss in efficiency. Perlite concrete roof insulation is reusable, reroofable and provides insulation with the permanance of concrete.

Reroofing Base

Perlite insulating concrete reroofing base is ideally suited for reroofing applications. It provides permanent, cost-effective, slope-to-drain designs with high R values over flat and often irregular substrates found in reroofing projects. Using a perlite insulating concrete slurry coat the polystyrene insulation board is positively attached to the substrate. Polystyrene board sandwiched in perlite concrete may be stair stepped to provide permanent slope-to-drain. Perlite concrete roof insulation is more economical than tapered board systems and depending on the condition of the existing roof, may be installed directly to a B.U.R. and gravel roof eliminating costly tearoffs. Perlite concrete roof insulation is easily placed around the numerous objects protruding through existing roofs and will pay for itself in maintenance and energy savings alone.

Concrete

TS/Technical Support

I. General

Testing and Approvals

Perlite roof deck insulation systems have been tested and approved by Underwriters Laboratories, Factory Mutual and Code Authorities throughout the nation. The system is rated as non-combustible by Factory Mutual which is a superior rating to their Class 1 . U.L. Design P 920 successfully achieved the first 2 hour rating for any system of this kind under full scale fire conditions. Systems over galvanized steel form units meet the criteria for U.L. Class 90 Wind Uplift Resistance as well as F.M. 1-60 and 1-90.

Code Approvals and Guide References

- International Conference of Building Officials (ICBO)
- Southern Building Code Congress International (SBCCI)
- Building Officials Conference of America (BOCA)
- South Florida Building Code
- Federal Construction Guide Specification: FCGS 03501
- U.S. Army Corps of Engineers Guide Specifications: CEGS 03510

TS/Technical Support

TABLE 1

Typical Physical Properties Of Perlite Concrete Insulation*

Cement To Aggregate Ratio (By Vol.)	Dry Density Range lb/ft³ (pcf)	Minimum Compressive lb/in² (psi)	Wet Density Range lb/ft³ (pcf)
1:4	36-42	300	48-56
1:5	30-36	200	42-50
1:6	24-30	125	38-44
1:8	18-24	80	34-40

*Pittsburgh Testing Lab and R.W. Hunt Co. Engineers.

TABLE 2

R-Value, U-Factor & Deadload Tables-1:6 Mix Ratio 24-30 pcf Perlite Insulation

2 in. of Perlite Concrete Over Polystyrene Thickness, in.	Depth Of Corrugations									4 in. Structural Concrete		
	9/16 in.			15/16 in.			1 5/16 in.					
	R(1)	U(2)	D.L.(3)	R(1)	U(2)	D.L.(3)	R(1)	U(2)	D.L.(3)	R(1)	U(2)	D.L.(3)
0	5.06	.198	5.03	5.35	.187	5.65	5.65	.177	6.31	5.06	.198	3.67
1	9.20	.109	5.34	9.49	.105	5.96	9.79	.102	6.62	9.20	.109	3.98
1½	11.17	.089	5.38	11.46	.087	6.00	11.76	.085	6.66	11.17	.089	4.02
2	13.14	.076	5.43	13.43	.074	6.05	13.73	.073	6.71	13.14	.076	4.07
2½	15.11	.066	5.47	15.40	.065	6.09	15.70	.064	6.75	15.11	.066	4.11
3	17.08	.059	5.51	17.37	.058	6.13	17.67	.057	6.79	17.08	.059	4.15
3½	19.05	.052	5.55	19.34	.052	6.17	19.64	.051	6.83	19.05	.052	4.19
4	21.02	.048	5.59	21.31	.047	6.21	21.61	.046	6.87	21.02	.048	4.23

NOTES: 1. R values expressed as °F-ft²hf/Btu **2.** U factors expressed as Btu/h-ft² °F. **3.** Dead loads include weight of metal, polystyrene and perlite concrete roof insulation. Dead loads of structural concrete not included. **4.** Insulation values are for summer conditions, heat flow down. To calculate winter conditions heat flow up subtract 0.39 from the R value and divide into 1 for the U factor **5.** U factors are based on series parallel heat flow calculations defined in the ASHRAE Handbook of Fundamentals & test data by recognized independent test laboratories. Thermal conductivities of roof deck components are based on 40 °F mean temperature except perlite concrete which is based on 75°F. A 5.5% reduction to the R values of the polystyrene was used to account for vent openings within and joints between boards **6.** Perlite concrete properties are based on materials at minimum dry density. Actual dry density is dependent on application, design and climatic conditions. **7.** U factor calculations are for constant thickness insulation. For sloped insulation, consult your perlite manufacturer. **8.** The U factors shown are calculations based on thermal conductivity data derived from laboratory testing dry materials in accordance with ASTM Specification C 177. The values shown are intended only as guidelines. Actual insulation performance for all materials and systems is affected by design of building environment and installation and will be lower than calculated values.

(1) Roof Assembly Design Numbers And Fire Ratings

Design Number	Hours	Design Number	Hours
P214	1	P810	2
P215	2	P812	2
P216	1	P902	2
P231	1½	P903	1
P241	2	P905	2
P246	1	P907	2
P251	2	P908	2
P405	3	P910	2
P406	3	P913	2
P407	2	P916	2
P410	2	P919	1½
P509	1	P920	2
P511	1	P921	2
P513	1½	P922	2
P678	1	P923	2
P708	2		

(1) Explanation and Source of Design Numbers

FM Serial Report No. OC2AO.AC (Class 6232)
U.L. Wind Uplift Construction No. 143
U.L. Wind Uplift Construction No. 250
U.L. Fire Rated Designs—Roof-Assemblies

Perlite Insulating Concrete

Section 07200—Perlite Concrete Roof Deck Insulation

1.00 General

1.01 Scope
An applicator, approved by a perlite manufacturer, shall furnish all labor, materials and equipment for installing the perlite concrete roof insulation and metal decking (where applicable) in accordance with these specifications.

1.02 Work by Others
All framings for openings, edge angles, pitch pans, wood nailers, structural expansion joints, vented flashing and vent stacks shall be installed by others.

1.03 Inspection
The applicator shall be responsible for inspection and acceptance of the substrate as being suitable to receive the perlite concrete roof insulation system.

2.00 Products

2.01 Materials

A. Perlite: shall conform to ASTM C 332 Group 1.

B. Portland Cement: shall conform to ASTM C 150 Type I or III

C. Water: shall be clean and free of deleterious substances.

D. Polystyrene: shall conform to ASTM C578 and shall include keying holes of approximately 3% of the gross area.

E. Metal Deck (when applicable): shall be galvanized, ASTM A 525, G-60 minimum, high tensile steel with vented side laps or slots. The deck shall be ____ type; ____ gauge.

F. Reinforcing Mesh (only on some fire rated systems): shall be style 2160-2-1619 with a minimum cross sectional area of .026 in^2 per linear foot.

G. Control joints: shall compress to one half thickness under a load of 25 psi.

2.02 Physical Properties	**Standard Mix**
A. Cement to Aggregate Ratio (By Vol.)	1:6
B. Min. Compressive Strength	125 psi
C. Density at Placement	38-44 pcf
D. Oven Dry Density	24-30 pcf

See Table 1 for other properties

3.00 Execution

3.01 Installation

A. The perlite concrete roof insulation shall be installed by a properly equipped and trained applicator approved by the perlite manufacturer. The perlite concrete shall be screeded to a surface suitable for application of the roofing. Thickness of perlite concrete shall be as shown on the drawings. (Note: 2 in. minimum thickness recommended.)

B. Polystyrene boards shall be placed in a slurry coat (1/8 in. minimum thickness above the substrate) and covered with the top layer of perlite concrete the same day board is laid.

C. Metal deck (where applicable) shall be installed in accordance with manufacturers recommendations and local building codes.

D. Reinforcing mesh (in some fire rated assemblies) shall be placed at right angles to structural supports with 6 in. end laps and no side laps.

E. Control Joints. A minimum 1 in. (1 in. per 100 lin. ft.) thick control joint shall be installed through the thickness of the perlite concrete around the perimeter of the roof deck and at through the building expansion joints. Delete control joints when substrate is galvanized steel deck.

4.00 Notes To The Specifier

4.01 Design for Slope
A minimum slope of 1/8 in./ft. is recommended for proper drainage and maximum roofing performance. Sloping the perlite concrete roof insulation system is most economically accomplished by stair stepping the polystyrene boards in maximum 1 in. increments. Indicate the high and low point elevations desired on the roof plan.

4.02 Metal Decks
Permanent steel form units, designed for use with periite concrete roof insulation shall be galvanized high tensile steel with a minimum yield of 80 ksi. Consult the deck manufacturer's catalog for load tables or the perlite manufacturer for recommendations .

4.03 Seismic or Diaphragm Design
When roof deck is designed for diaphragm, consult metal deck or perlite manufacturer regarding welding patterns and other design criteria.

4.04 Admixtures
Calcium chloride, any admix containlng chloride salts shall not be used in perlite concrete roof insulation systems. Use only admixtures recommended by the perlite manufacturer.

4.05 Roofing

A. Consult built-up roofing or single-ply manufacturers for their specific recommendations and specifications for roofing over perlite concrete roof insulation.

B. Provisions must be made for perimeter edge venting at gravel stop or parapet flashing over non-vented substrates. For details contact the perlite manufacturer.

C. Nail holding power of perlite concrete roof insulation is a prime criteria. Type of nail to be used is the prerogative of the roofing manufacturer. However, a minimum nail holding power of 40 lb. per fastener is recommended.

D. Perlite concrete roof insulation may be roofed within 48-72 hours from time of placement if the insulation can support workman without causing surface damage.

4.06 Reroofing (when applicable)
Existing roof insulation should be inspected for soundness and moisture content and may have to be removed. Pay particular care to the support structure of the building to determine if it is capable of safely supporting new roof loads. All loose gravel and dirt shall be swept off existing roof. For maximum roofing performance, it is recommended that drainage be provided by stair stepping polystyrene board away from the drains.

Perlite Loose Fill Insulation

TS/Technical Support

Calculated Transmittance Values Are Not the Answer

Concrete masonry walls with different types of core insulation are frequently compared by the relative ranking of published calculated U and R values. However, extensive Guarded Hot Box tests [1] of full scale wall systems at Dynathemm Engineering[2] have determined that thermal performance of insulated masonry walls is not solely proportional to thermal transmittance of the insulation but also depends on block geometry, concrete thermal conductivity and the degree to which the insulation fills the core spaces.

Perlite Is The Superior Insulation

Dynatherm Engineering's testing has shown conclusively that perlite masonry loose fill insulation is the superior concrete block insulation when compared to expanded polystyrene(EPS) inserts, expanded polystyrene (EPS) beads, vermiculite and foam.

Effect Of Dimensional Variations

Variations found in block dimensions and the effect of these variations lend further validity to the selection of masonry insulating material on the basis of actual tests of wall systems rather than on the use of published or calculated values based on nominal concrete block. In an analysis conducted by the Construction Technology Laboratories [4],variations in block dimensions can cause thermal transmittance to vary from 19 to as much as 36% depending on face shell and web thickness. Accordingly, calculated and published values do not take these dimensional differences into account while tested wall systems do consider all variables.

1 ASTM C236, Standard Test Method for Steady State Thermal Performance ot Building Assemblies By Means of A Guarded Hot Box.
2 Dynatherm Engineering, Lino Lakes, Minnesota
3 Thermal effectiveness is based on a comparison of total R values corrected to ASHRAE winter design with 15 mph wind outside, still air inside and 8 inch (20 cm), 103 lb/ft^3 (1650 kg/m^3) two-core blocks. The percent improvement will be greater if lighter weight (lower k value) blocks are used and less if higher weight (higher k value) blocks are used.
4 Construction Technology Laboratories, Skokie, Illinois.

PERLITE VS. EPS INSERTS

Perlite—22% More Effective Than

EPS Inserts

PERLITE VS. EPS BEADS

Perlite—12% More Effective Than

EPS Beads

PERLITE VS. FOAM

Perlite—7% More Effective Than

Foam

PERLITE VS. VERMICULITE

Perlite—6% More Effective Than

Vermiculite

Perlite Loose Fill Insulation

PP/Product Presentation

Description

Perlite loose fill insulation is an inert volcanic glass expanded by a special heat process and treated with water repellent material. The resultant light weight product is a white granular material which handles and pours easily. It provides a quick, inexpensive and permanent method for efficiently insulating masonry walls. Depending upon design conditions, reductions in heat transmission of 50 percent or more may be obtained when perlite loose fill is used in the hollow cores of concrete block or cavity type masonry walls.

Properties

Thermal insulation—Perlite contains countless tiny air cells which account for its excellent thermal insulation and light weight. Thermal conductivity factors at the recommended density range of 5 to 8 pcf (80-128 kg/m3) are shown in Table 5.

The efficiency and economy of perlite loose fill insulation has been proven many years in the insulation of storage tanks for liquid gases, such as oxygen, liquid natural gas and nitrogen at temperatures as low as - 400°F (- 240°C).

Water Repellency—The non-flammable water repellent treatment significantly improves low water retention properties of perlite.
Permanency—Perlite is inorganic and therefore, rot, vermin and termite resistant and noncombustible with a fusion point of approximately 2300°F (1260°C). It is as permanent as the walls which contain it.
Non-settling—Perlite loose fill supports its own weight in the wall without settling as verified bv actual field measurements.

Flowability—Perlite consists of granules which are free flowing to seek out and completely fill the smallest crevices and mortar areas without bridging.

Benefits

Total Functional Performance—Water repellent treated perlite functions as a permanent, nontoxic, non-combustible, rotproof insulation which minimizes winter heat loss and summer heat gain to provide greater comfort at lower cost. The water repellent treatment protects against water transmission and severe wind driven moisture penetration and thus assures constant insulating efficiency.

Thermal performance tests using ASTM C236 Guarded Hot Box Method have shown conclusively that perlite masonry loose fill insulation is the superior concrete block insulation when compared to expanded polystyrene (EPS) inserts, expanded polystyrene (EPS) beads, vermiculite and foam.

Other tests conducted by independent laboratories also confirm the superior qualities of water repellent treated perlite loose fill insulation:

Test	Results
ASTM E84	
Flame Spread	0
Fuel Contribution	0
Smoke Density	0
FED. SPEC. HH-I-515D	
Critical Radiant Flux	Greater than 1.07 Watts/cm^2
Smoldering Combustion	Flaming Combustion: None Weight Loss: Nil

CC/Codes, Certification

Applicable Standards, Specifications and References

ASTM Specification C549 Perlite Loose Fill Insulation

ASTM Specification C520 Density of Granular Loose Fill Insulation

ASTM C236 Test Method for Steady-State Thermal Performance of Building Asssemblies by Means of a Guarded Hot Box

ASTM Specification E84 Test for Surface Burning Characteristics of Building Materials

FHA Use of Materials Bulletin UM-37

GSA Commercial Item Description A-A-903 Insulation, Thermal (Expanded Perlite)

Brick Institute of America Technical Notes No. 21A

National Concrete Masonry Assoc. Tek 101

Federal Specification HH-1-515D for: Smoldering Combustion/Critical Radiant Flux

Federal Specification HH-1-574B Thermal Insulation (Perlite)

4 hour fire rating

Underwriters' Laboratories Design No. U905 shows that a 2-hour rated 8 in. (20.32 cm) concrete block wall is improved to 4 hours when cores are filled with Water Repellent Treated Perlite.

Thermal Transmittance Calculations

In order to calculate the thermal transmittance, U factor, of a wall system, the thermal resistances of the individual components in series can be added together to obtain the total resistance. The reciprocal is the U factor. The thermal resistances for the individual components can be obtained from the literature or if the thermal conductivity of a homogenous component is known, the thermal resistance of that component can be calculated by dividing the thickness of the component by the thermal conductivity.
For example: the resistance of 3 in. (76 mm) of 5 pcf (80 kg/m^3) perlite is 3/0.32 = 9.38 °F • ft^2 • h/Btu (1.65 K • m^2/W). Using published data on the thermal conductivity of concrete blocks from the National Concrete Masonry Association (NCMA) and calculation procedures verified by actual tests at Dynatech Research & Development Co., R values and U factors for uninsulated concrete block walls (including face shell mortar bonding) are shown in Table 3. It should be noted that the values in Table 3 were determined using the series-parallel method of heat flow calculation as described in the ASHRAE Handbook of Fundamentals. While the series-parallel method yields more conservative values than other heat flow calculation techniques, it provides more representative data on actual performance of the wall construction.

Sample U factor calculations for Veneer and Cavity Walls

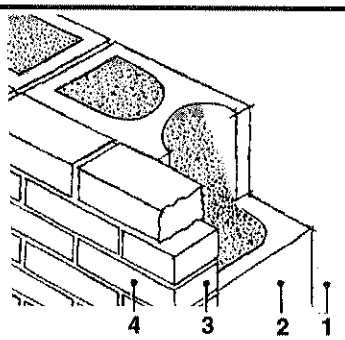
Veneer Walls

Given: Veneer Wall of 4 in. face brick, 8 in. 105 pcf block filled with 5 pcf perlite, determine the U factor:

	R values
1. inside air film (from Table 4)	.68
2. 8 in. 105 pcf block filled with 5 pcf perlite (from Table 3)	5.91
3. face brick (from Table 4)	.44
4. outside air film (from Table 4)	.17
	R Total = 7.20

U = 1/Rt = **0.14**

To find the total R of a Veneer Wall, add the R values for the veneer material (from Table 4), inside and outside air films (from Table 4) and the insulated block (from Table 3). Take the reciprocal of the total R to find the U factor.



Perlite Loose Fill Insulation

TS/Technical Support

TABLE 3
Thermal Factors Resistance (R) Values[1] and Thermal Transmittance (U) Factors[3] of Concrete Block Walls Uninsulated and Insulated with Perlite Loose Fill

Block	6 in. Block					8 in. Block					12 in. Block				
Density (PCF)	Approx. Unit Wt. (lb.)	Uninsulated R^2	Uninsulated U^4	Insulated with Perlite R^2	Insulated with Perlite U^4	Approx. Unit Wt. (lb.)	Uninsulated R^2	Uninsulated U^4	Insulated with Perlite R^2	Insulated with Perlite U^4	Approx. Unit Wt. (lb.)	Uninsulated R^2	Uninsulated U^4	Insulated with Perlite R^2	Insulated with Perlite U^4
80	17	1.80	0.38	5.93	0.15	22	2.03	0.35	8.25	0.11	33	2.30	0.32	11.93	0.08
95	20	1.57	0.41	4.86	0.18	26	1.77	0.38	6.76	0.13	39	2.00	0.35	9.64	0.10
105	22	1.45	0.44	4.25	0.20	29	1.63	0.40	5.91	0.15	43	1.84	0.37	8.36	0.11
115	24	1.34	0.46	3.69	0.22	31	1.51	0.42	5.14	0.17	47	1.70	0.39	7.21	0.12
125	26	1.20	0.49	3.04	0.26	34	1.36	0.45	4.23	0.20	51	1.54	0.42	5.88	0.15
135	28	1.06	0.52	2.42	0.31	37	1.21	0.49	3.37	0.24	55	1.38	0.45	4.64	0.18

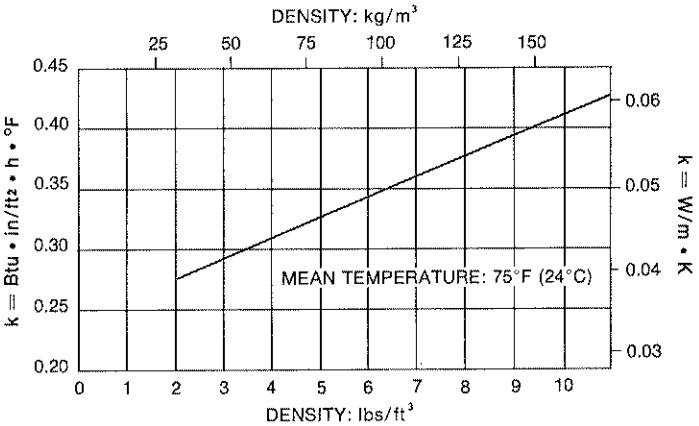
1. The values in this table represent typical R values of concrete block. The actual R of a concrete block is influenced by the concrete constituents and by moisture content. More accurate estimates of thermal performance can be made if the actual thermal conductivity k or thermal resistance R of the specific block has been determined by tests. Procedures to make calculations for blocks of known conductivity are described in Perlite Institute Technical Data Sheet No. 2-6.
2. R values expressed in °F • ft² • h/Btu do **not** include inside and outside air film resistances. To determine total resistance (Rt) of single wythe block walls add .85 to R values shown above.*
3. U factors expressed in Btu/h • ft² • °F were calculated using thermal conductivity k factor of 0.32 Btu • in/h • ft² • °F Different densities of perlite in the core spaces of concrete block has only a slight effect on the overall U factor.
   For estimates of this effect see Perlite Institute Technical data Sheet No. 2-6 which provides the calculation techniques.
4. U factors shown **include** the effect of inside and outside air film resistances (15 mph wind).
5. **These U factors are based on steady state heat flow and must be considered conservative. Recent testing of an 8 inch medium weight concrete block wall filled with perlite loose fill insulation using dynamic temperature conditions simulated by a National Bureau of Standards 24-hr (diurnal) test cycle indicates that the measured total energy (total heat flow through a wall for a 24-hr period) was only 72 percent of the total energy predicted by steady-state analysis.**

***Metric:** To determine R values and U factors in SI (metric) units use the following conversion factors:
Thermal resistance, R: °F • ft² • h/Btu x 1.761 102 E -01 = K • m²/W
Thermal transmittance, U: Btu/h • ft² • °F x 5.687 263 E + 00 = W/m² • K

TABLE 4
Resistance Values For Veneer And Cavity Walls Calculations

	R Values (°F • ft² • h/Btu)	R Values (K • m²/W)
Outside Air Film	0.17	0.03
Common Brick	0.20	0.04
Face Brick	0.44	0.08
Air Space in Cavity ¾-4 in. (19-102 mm)	0.97	0.17
1 in. Cavity Filled with 5 pcf Perlite (80 kg/m³)	3.12	0.55
2 in. Cavity Filled with 5 pcf Perlite (80 kg/m³)	6.25	1.10
3 in. Cavity Filled with 5 pcf Perlite (80 kg/m³)	9.38	1.65
4 in. Cavity Filled with 5 pcf Perlite (80 kg/m³)	12.50	2.20
Reflective Air Space	3.08	0.54
Furring (Nonreflective Air Space)	1.01	0.18
Gypsum or Plaster Board 0.5 in. (13 mm)	0.45	0.08
Gypsum or Plaster Board 0.625 in. (16 mm)	0.56	0.10
Inside Air Film	0.68	0.12

TABLE 5.
Thermal Conductivity Of Expanded Perlite (at Various Densities)



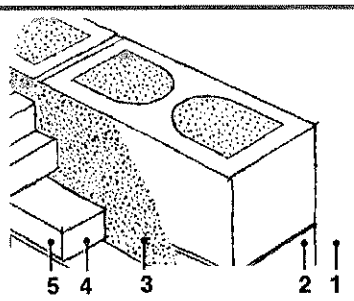
Cavity Walls

Given: Cavity Wall of 4 in. face brick 3 in . cavity filled with 5 pcf perlite 8 in. 105 pcf block filled with 5 pcf perlite determine the U factor:

	R values
1. inside air film (from Table 4)	.68
2. 8 in. 105 pc' block filled with 5 pcf perlite (from Table 3)	5.91
3. 3 in. cavity filled wi1h 5 pcf perlite (from Table 4)	9.38
4. 4 in. fare brick (from Table 4)	.44
5. outside air film (from Table 4)	.17
	16.58

U = 1/Rt = **0.06**

To find the total R of a cavity wall, follow the same procedure as for veneer walls adding in the R of the perlite filled cavity (from Table 4) Take the reciprocal of the total R to find the U factor.



Perlite Loose Fill Insulation

TS/Technical Support

Guide Specification Section 07—Water Repellent Treated Perlite Loose Fill Insulation

PART 1.—GENERAL

1.01 Scope

The work covered by this section of the specification includes supplying and installing loose fill material for the thermal insulation of all masonry walls in accordance with these specifications and applicable drawings.

PART 2.—PRODUCTS

2.01 Materials

Water Repellent Treated Perlite loose fill insulation. Each package shall be clearly marked as such. The insulation material shall conform to the requirements of ASTM Designation C549 and shall be a product of a member of Perlite Institute, Inc. or approved equal. Prior to installation of the insulation, the manufacturer shall furnish a certificate to the architect or owner stating the product conforms to the Standard Specifications for Water Repellent Treated Perlite Loose Fill Insulation as adopted and published by Perlite Institute, Inc.

PART 3.—EXECUTION

3.01 Installation

(a) The insulation shall be installed in the following locations:

1. In the cores of all exterior (and interior) hollow masonry unit walls.
2. In the cavity between all exterior (and interior) masonry walls.
3. Between exterior masonry walls and interior furring.

(b) The insulation shall be poured directly into the wall at any convenient interval. Wall sections under doors and windows shall be filled before sills are placed.

(c) All holes and openings in the wall through which insulation can escape shall be permanently sealed or caulked prior to installation of the insulation. Copper, galvanized steel, or fiber glass screening shall be used in all weep holes.

(The inclusion of weep holes is considered good construction design practice to allow passage of any water which might penetrate the cavities or core spaces of wall construction.)

Perlite Institute Inc.

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