Underslab Insulation

Easy-to-install, light-weight bags are laid unopened below concrete floors

Using Perlite in Bags

Concrete slab floors with direct thermal contact to the ground can present challenges to the maintenance of personal comfort in homes and add to heating bills. A solution to break that direct thermal contact is to use a natural insulative material such as perlite.

Top: *placing unopened perlite bags on grade.*

Above: *perlite bags packed tightly in place.*

Below: *compacted gravel and hydronic heating tubing in place over perlite bag insulation; ready to pour the concrete floor.*

Perlite conforming to ASTM C549, and provided in easy-to-install, light-weight bags (either plastic or paper) may be used as insulation below concrete floors as demonstrated in the accompanying photographs and schematic diagrams.

Perlite underslab insulation is a natural, inorganic product that does not rot, support combustion nor provide a habitat for rodents. Because of its neutral pH, the product does not foster corrosion in piping and electrical wiring that may be in the underfloor area.

Benefits from installation of such a system can accrue in both summer and winter. During winter, heat loss through the floor of a building can be decreased, while in summer, differences *(continues)*

EFFECTIVE R-VALUE OF PERLITE
THERMAL CONDUCTANCE/RESISTANCE

Section Thickness of Perlite Loose Fill Insulation		Thermal Conductance "C"		Thermal Resistance "R"	
U.S.	(SI)	U.S.	(SI)	U.S.	(SI)
1 in.	(2.5 cm)	0.32	(1.82)	3.13	(0.55)
2 in.	(5.1 cm)	0.16	(0.91)	6.25	(1.10)
3 in.	(7.6 cm)	0.11	(0.61)	9.37	(1.65)
4 in.	(10.2 cm)	0.08	(0.45)	12.50	(2.20)
5 in.	(12.7 cm)	0.06	(0.36)	15.63	(2.75)
6 in.	(15.2 cm)	0.05	(0.30)	18.75	(3.30)
7 in.	(17.7 cm)	0.045	(0.26)	21.88	(3.85)
8 in.	(20.3 cm)	0.04	(0.23)	25.00	(4.40)

* "C" values expressed in Btu/h • ft^2 • °F (W/m • K) were calculated using maximum thermal conductivity "k" factor or 0.32 Btu in/h • ft^2 • °F (0.046 W/m • K) at 75° F (24°C) mean temperature.

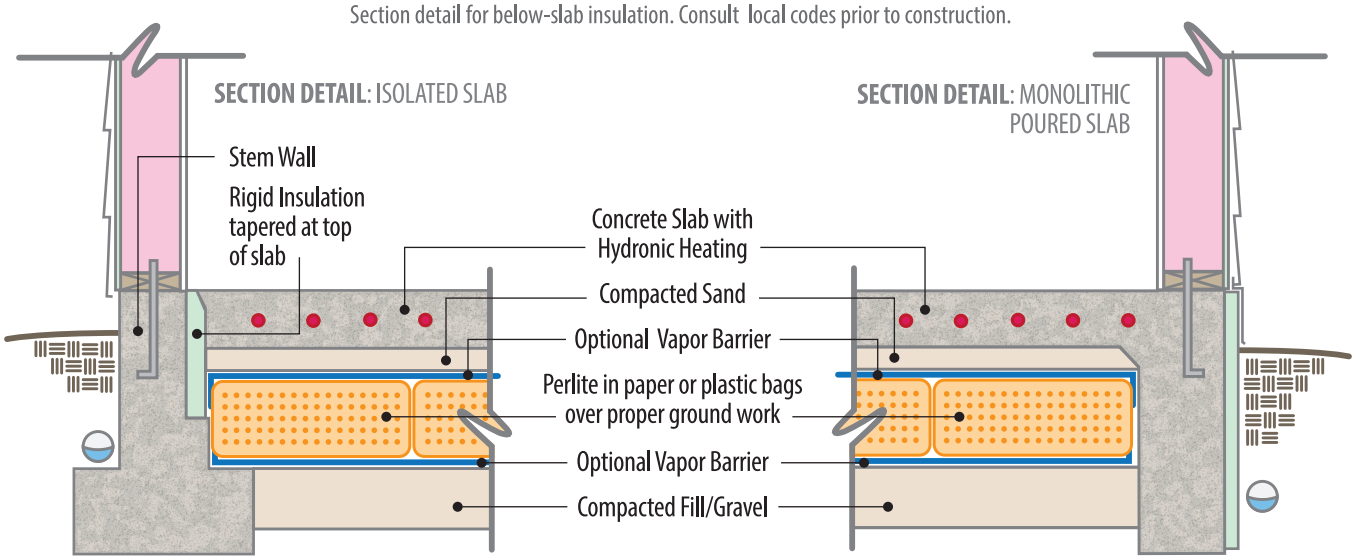
"R" values expressed in h • ft^2 • °F/Btu (K • m^2/W) were calculated using the formula R = 1/C.

Underslab Insulation Using Perlite in Bags

between floor and air temperatures are minimized and condensation on cool floors is avoided—providing a more comfortable and energy-efficient environment. This system is particularly useful when radiant under-floor heating is employed since the thermal resistance of the perlite will reduce heat loss from the heated slab to the ground below. In addition, perlite is dimensionally stable under varying temperatures and it is not combustible.

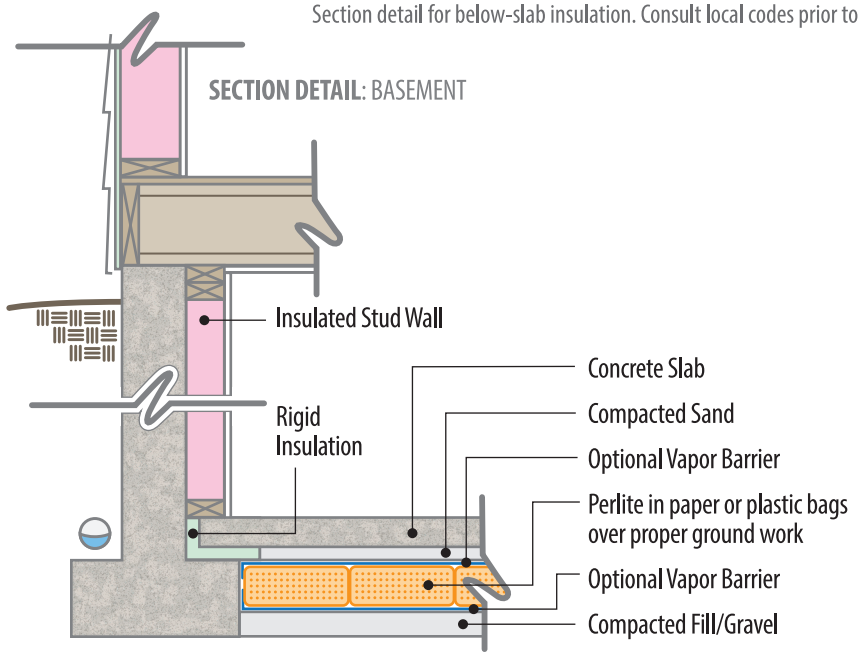
PERLITE BAGS BELOW HEATED SLAB-ON-GRADE FLOOR

Section detail for below-slab insulation. Consult local codes prior to construction.



PERLITE BAGS BELOW BASEMENT SLAB FLOOR

Section detail for below-slab insulation. Consult local codes prior to construction.



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