

AP™ Foil-Faced Polyisocyanurate Foam Sheathing

Crawl Spaces

Johns Manville AP™ Foil-Faced insulation sheathing board is an excellent choice for insulating crawl spaces. Polyiso provides one of the highest R-values per inch of any rigid insulation (R-6.5 at 1 inch). AP Foil-Faced insulation is lightweight and easy to install. It can be installed in both vented and unvented crawl spaces. AP™ Foil-Faced insulation must be covered with an approved thermal barrier and cannot be left exposed. In crawl spaces where entry is made only for service of utilities, AP Foil-Faced insulation must be covered with an approved ignition barrier and cannot be left exposed.

BEFORE YOU BEGIN:

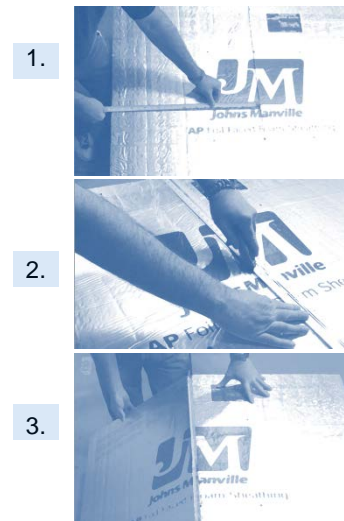
Always follow local building codes. AP Foil-Faced sheathing must be separated from the interior of a building by either a thermal barrier or ignition barrier as required by code. Repair any water leaks or structural cracks in the wall, and address any pest problems. Gather all materials and clear work area.

Materials Checklist

- Safety glasses and gloves
- Measuring tape and pencil
- Utility knife or handsaw
- Straight edge
- Construction-grade polyurethane adhesive such as Liquid Nails
- Mechanical fasteners such as masonry nails with 1-inch metal washers or caps
- Flashing tape such as 3M 8067, Grace Vycor Pro, or Lamatek
- Sealant such as Tremco Spectrem® 1
- Canned foam such as Touch'nSeal All Season, Hilti CF 810 or CF-F, Dow Great Stuff or Great Stuff Pro

Measuring and Cutting

1. Measure the board by dragging a measuring tape hook across the surface of the board; create a crease while holding the tape at the desired length.
2. Using a straight edge as a guide, deeply score the crease. There is no need to cut through.
3. Snap the board along the score line over the edge of a table or workbench.

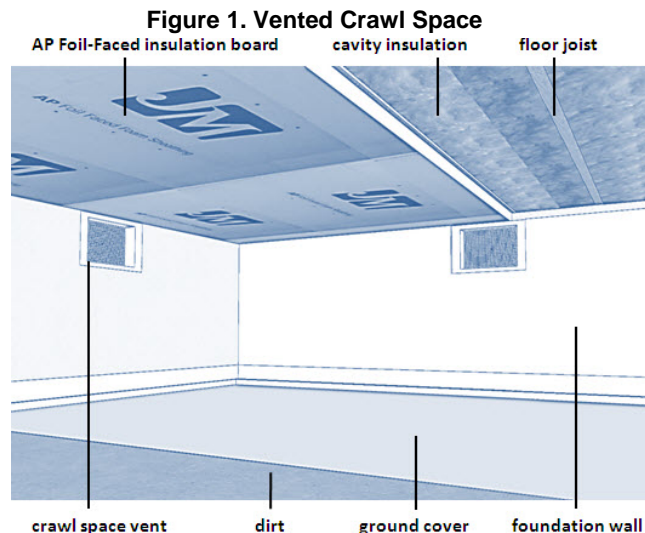


INSTALLATION

OPTION 1: Vented Crawl Space

1. The crawl space should be vented in accordance with local building code requirements.
2. If desired, install cavity insulation between the floor joists. Options for insulating between joists include JM Formaldehyde-free™ fiber glass batts (Unfaced, Faced, or ComfortTherm®), JM Climate Pro® blown-in fiber glass in the Blow-In-Blanket® system, JM Spider® Custom Insulation System, JM spray polyurethane foams (Corbond III®, Corbond MCS™, or Open-cell), or other approved cavity insulation. Fiber glass batts should be installed without compression. The amount of insulation will depend on the product chosen and the depth of the joists.
3. Fiber glass batts must be secured with wire staves or netting to prevent the insulation from falling out of the joist cavity before foam board insulation is installed.
4. Install AP Foil-Faced insulation boards across the bottom of the floor joists. This will prevent future condensation and increase the floor's overall insulation value.

5. Use maximum board lengths to minimize number of joints. Locate joints square to joists and center end joints over joists. Provide additional blocking as necessary. It is not necessary to stagger board joints. Butt board edges together tightly, and carefully fit around openings and penetrations.



INSTALLATION CONTINUED

OPTION 1: Vented Crawl Space – Continued

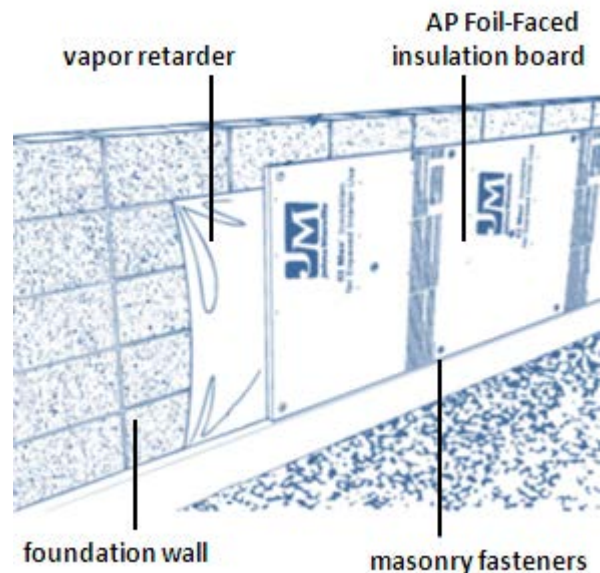
6. Fasten insulation boards to the bottom of the joists using screws or nails with 1-inch minimum washers or caps. Fasteners should be long enough to penetrate in to the joist a minimum of $\frac{3}{4}$ inch. Drive fasteners flush with the board, but do not countersink. Space fasteners approximately 16 inches on center around the perimeter and in the field of each board (16 or 24 inches on center across joists, depending on spacing).
7. To increase air sealing, board edges may be taped and all penetrations sealed with one-part expanding canned foam.
8. Cover exposed foam board insulation with either a thermal barrier or ignition barrier as required by local building code and occupancy of the crawl space.
9. In cold climates, be sure to insulate any plumbing lines that extend below the crawl space insulation.
10. All heating and cooling ducts in the crawl space should be sealed and insulated appropriately.
11. A ground cover must be installed to reduce moisture levels in the crawl space.

OPTION 2: Unvented Crawl Space

IMPORTANT NOTE: Some applications may require a 2- to 3-inch inspection strip along the top of the foundation wall for termite mitigation. Always adhere to local building codes.

1. Install wall section of crawl space moisture barrier. Barrier should consist of 6 mil minimum polyethylene sheeting wide enough to extend from the top of the foundation wall to at least 12 inches onto the ground.
2. Install AP Foil-Faced insulation from the top of the footing to the top of the foundation wall.
3. Fasten AP Foil-Faced boards to the interior of the foundation wall using power-driven masonry nails with $1\frac{1}{2}$ -inch minimum metal washers or caps, or other suitable masonry fastener.
4. Space fasteners approximately 24 inches on center across the short board dimension and 48 inches on center across the long board dimension.
5. Butt board edges together tightly and carefully fit around penetrations.
6. Cover exposed foam board insulation with either a thermal barrier or ignition barrier as required by local building code and occupancy of the crawl space.
7. Air seal the interface between the top of the foundation wall and the mud sill with caulk or expanding foam.
8. Air seal and insulate the inside of the band joist with the following options:
 - a. Seal with expanding canned foam and insulate with JM Formaldehyde-free™ fiber glass batts (Unfaced, Faced or ComfortTherm®).
 - b. Cut pieces of foam board to fit tightly into each band joist space. Install and seal in place with expanding canned foam. Multiple layers of foam board may be used to achieve the desired R-value. Foam boards in band joists are not required to be covered for fire

Figure 2. Unvented Crawl Space



- c. Air seal and insulate the band joist with JM spray polyurethane foam (Corbond III®, Corbond MCS™ or Open-cell). Open cell spray polyurethane foam should not be used to insulate band joists in cold climates.
9. A ground cover must be installed to reduce moisture levels in the crawl space.
 10. Unvented crawl spaces must include mechanical ventilation to control humidity.

PERSONAL PROTECTIVE EQUIPMENT

Personal Protective Equipment: Eyes/Face

Safety glasses with side shields are recommended to keep dust out of the eyes.

Personal Protective Equipment: Skin

Leather or cotton gloves should be worn to prevent skin contact and irritation.

Personal Protective Equipment: Respiratory

A NIOSH-certified respirator should be used if ventilation is unavailable, or is inadequate for keeping dust levels below the applicable exposure limits.

Ventilation

In fixed manufacturing settings, local exhaust ventilation should be provided at areas of cutting to remove airborne dust. General dilution ventilation should be provided as necessary to keep airborne dust below the applicable exposure limits and guidelines. The need for ventilation systems should be evaluated by a professional industrial hygienist, while the design of specific ventilation systems should be conducted by a professional engineer.

Personal Protective Equipment: General

Loose-fitting, long-sleeved clothing should be worn to protect skin from irritation. Work clothing should be washed separately from other clothes, and the washer should be rinsed thoroughly (run empty for a complete wash cycle). This will reduce the chances of dust being transferred to other clothing.