VAPOR RETARDER COMPARISON

**IRC/IBC Requirements**

**R702.7/1405.3 Vapor retarders.** Class I or II vapor retarders are required on the interior side of frame walls in Climate Zones 5, 6, 7, 8 and Marine 4.

**Exceptions:**
1. Basement walls.
2. Below grade portion of any wall.
3. Construction where moisture or its freezing will not damage the materials.

**R702.7.1/1405.3.1 Class III vapor retarders.** Class III vapor retarders shall be permitted where any one of the conditions in Table R702.7.1/1405.3.1 is met.

<table>
<thead>
<tr>
<th>Climate Zone</th>
<th>Class III Vapor Retarders Permitted For:</th>
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</thead>
<tbody>
<tr>
<td>Marine 4</td>
<td>Vented cladding over wood structural panels</td>
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<tr>
<td></td>
<td>Vented cladding over fiberboard</td>
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<tr>
<td></td>
<td>Vented cladding over gypsum</td>
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<tr>
<td></td>
<td>Insulated sheathing with R-value ≥ 2.5 over 2x4 wall</td>
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<tr>
<td></td>
<td>Insulated sheathing with R-value ≥ 3.75 over 2x6 wall</td>
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<tr>
<td>5</td>
<td>Vented cladding over wood structural panels</td>
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<tr>
<td></td>
<td>Vented cladding over fiberboard</td>
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<tr>
<td></td>
<td>Vented cladding over gypsum</td>
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<tr>
<td></td>
<td>Insulated sheathing with R-value ≥ 5 over 2x4 wall</td>
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<tr>
<td></td>
<td>Insulated sheathing with R-value ≥ 7.5 over 2x6 wall</td>
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<tr>
<td>6</td>
<td>Vented cladding over fiberboard</td>
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<tr>
<td></td>
<td>Vented cladding over gypsum</td>
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<tr>
<td></td>
<td>Insulated sheathing with R-value ≥ 7.5 over 2x4 wall</td>
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<td></td>
<td>Insulated sheathing with R-value ≥ 11.25 over 2x6 wall</td>
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<tr>
<td>7&amp;8</td>
<td>Insulated sheathing with R-value ≥ 10 over 2x4 wall</td>
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<tr>
<td></td>
<td>Insulated sheathing with R-value ≥ 15 over 2x6 wall</td>
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</tbody>
</table>

a. Spray foam with a minimum density of 2 lb/ft³ applied to the interior cavity side of wood structural panels, fiberboard, insulation sheathing or gypsum is deemed to meet the insulation sheathing requirement where the spray foam R-value meets or exceeds the specified insulation sheathing R-value.

**WSEC Requirements**

**VAPOR RETARDER:** A layer of low moisture transmissivity material (not more than 1.0 perm dry cup) placed over the warm side (in winter) of insulation, over the exterior of below grade walls, and under floors as ground cover to limit the transport of water and water vapor through exterior walls, ceilings and floors. Vapor retarding paint, listed for this application, also meets this definition.

**R402.6 Moisture Control.** Vapor retarders shall be installed on the warm side (in winter) of insulation as specified in the following cases.

**Exception:** Vapor retarder installed with not more than 1/3 of the nominal R-value between it and the conditioned space.

**R402.6.1 Floors:** Floors separating conditioned space from unconditioned space shall have a vapor retarder installed. The vapor retarder shall have a one perm dry cup rating or less (i.e. four mil [0.004 inch thick] polyethylene or kraft faced material).

**R402.6.2 Roof/Ceilings:** Roof/ceiling assemblies where the ventilation space above the insulation is less than an average of 12 inches shall be provided with a vapor retarder. Faced batt insulation where used as a vapor retarder shall be face stapled. Single rafter joist vaulted ceiling cavities shall be of sufficient depth to allow a minimum one inch vented air space above the insulation.

**Exception:** Unvented attic assemblies (spaces between the ceiling joists of the top story and the roof rafters) shall be permitted if all of the following conditions are met:
1. The unvented attic space is completely contained within the building thermal envelope.
2. No interior vapor retarders are installed on the ceiling side (attic floor) of the unvented attic assembly.
3. Where wood shingles or shakes are used, a minimum ¼ inch (6 mm) vented air space separates the shingles or shakes and the roofing underlayment above the structural sheathing.
4. Any air-impermeable insulation shall be a vapor retarder, or shall have a vapor retarder coating or covering in direct contact with the underside of the insulation.
5. Either items a, b or c shall be met, depending on the air permeability of the insulation directly under the structural roof sheathing.
   a. Air-impermeable insulation only. Insulation shall be applied in direct contact to the underside of the structural roof sheathing.
**IRC/IBC Requirements (Cont.)**

**R702.7.2/1405.3.2 Material vapor retarder class.** The vapor retarder class shall be based on the manufacturer’s certified testing or a tested assembly.

The following shall be deemed to meet the class specified:

Class I: Sheet polyethylene, unperforated aluminium foil.
Class II: Kraft-faced fiberglass batts.
Class III: Latex or enamel paint.

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**WSEC Requirements (Cont.)**

b. Air-permeable insulation only. In addition to the air-permeable insulation installed directly below the structural sheathing, rigid board or sheet insulation shall be installed directly above the structural roof sheathing as specified per WA Climate Zone for condensation control:

i. Climate Zone 1: R-10 minimum rigid board or air-impermeable insulation R-value.

ii. Climate Zone 2: R-25 minimum rigid board or air-impermeable insulation R-value.

c. Air-impermeable and air-permeable insulation. The air-impermeable insulation shall be applied in direct contact to the underside of the structural roof sheathing as specified per WA Climate Zone for condensation control. The air-permeable insulation shall be installed directly under the air impermeable insulation.

i. Climate Zone 1: R-10 minimum rigid board or air-impermeable insulation R-value.

ii. Climate Zone 2: R-25 minimum rigid board or air-impermeable insulation R-value.

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**R402.6.2.1** Vapor retarders shall not be required in roof/ceiling assemblies where the ventilation space above the insulation averages 12 inches or greater.

**R402.6.2.2** Vapor retarders shall not be required where all of the insulation is installed between the roof membrane and the structural roof deck.

**R402.6.3 Walls:** Walls separating conditioned space from unconditioned space shall have a vapor retarder installed. Faced batt insulation shall be face stapled.

**Exception:** For Climate Zone 5, wood framed walls with a minimum of nominal R-5 continuous insulated sheathing installed outside of the framing and structural sheathing. For Climate Zone 6, wood framed walls with a minimum of nominal R-7.5 continuous insulated sheathing installed outside of the framing and structural sheathing. The interior cavity insulation for this exception shall be a maximum of nominal R-21.

**R402.6.4 Ground Cover:** A ground cover of six mil (0.006 inch thick) black polyethylene or approved equal shall be laid over the ground within crawl spaces. The ground cover shall be overlapped 12 inches minimum at the joints and shall extend to the foundation wall.