

Residential Insulation Packages – VIRGINIA

Based on the 2003 International Energy Conservation & International Residential Codes for Normal Heating/Cooling Equipment Efficiency

ZONE	MAXIMUM		MINIMUM						Supply and Return Ducts
	Window Area % ¹	Glazing U-Value ²	Ceiling R-Value ³	Wall R-Value ⁴	Floor R-Value ⁵	Basement Wall R-Value ⁶	Slab Perimeter R-Value ⁷ and depth	Crawl Space Wall R-Value ⁸	
8	12% ¹⁰	0.60	R-30	R-13	R-19	R-8	R-4, 2 ft.	R-10	Unconditioned spaces or outside the building: Supply R-8 Return R-4 Duct sealing required See Note 1
	15%	0.65	R-38	R-18	R-19	R-8	R-6, 2 ft.	R-11	
	15% ^{9,10}	0.50	R-30	R-13	R-19	R-8	R-5, 2 ft.	R-10	
	18% ¹⁰	0.46	R-38	R-13	R-19	R-8	R-6, 2 ft.	R-11	
9	12% ¹⁰	0.55	R-38	R-13	R-19	R-9	R-4, 2 ft.	R-12	
	15%	0.55	R-38	R-16	R-19	R-9	R-4, 2 ft.	R-12	
	15% ^{9,10}	0.45	R-38	R-13	R-19	R-8	R-5, 2 ft.	R-11	
	18% ¹⁰	0.40	R-38	R-13	R-19	R-9	R-6, 2 ft.	R-13	
10	12% ¹⁰	0.50	R-38	R-14	R-19	R-9	R-5, 2 ft.	R-16	
	15% ^{9,10}	0.45	R-38	R-16	R-19	R-9	R-6, 2 ft.	R-17	
	15%	0.55	R-38	R-19	R-21	R-10	--	R-22	
	18% ¹⁰	0.37	R-38	R-15	R-19	R-9	R-6, 2 ft.	R-16	
11	12% ¹⁰	0.45	R-38	R-16	R-19	R-9	R-6, 2 ft.	R-16	
	15% ^{9,10}	0.45	R-38	R-18	R-19	R-9	R-6, 2 ft.	R-17	
	15%	0.35	R-38	R-13	R-21	R-10	R-9, 2 ft.	R-18	
	18%	0.40	R-49	R-18	R-19	R-9	R-6, 2 ft.	R-16	

COUNTIES BY ZONE – 8: Accomack, Brunswick, Charles City, Chesterfield, Dinwiddie, Gloucester, Greensville, Henrico, Isle of Wright, James City, Lancaster, Mathews, Middlesex, Nansemond, New Kent, Northampton, Northumberland, Prince George, Richmond, Southampton, Surry, Sussex, Westmoreland, York; **9:** Albemarie, Amelia, Amherst, Appomattox, Bedford, Botetourt, Buckingham, Campbell, Caroline, Charlotte, Cumberland, Essex, Fluvanna, Goochland, Halifax, Hanover, King and Queen, King George, King William, Louisa, Lunenburg, Mecklenburg, Nelson, Nottoway, Pittsylvania, Powhatan, Prince Edward, Roanoke, Rockbridge; **10:** Alleghany, Arlington, Buchanan, Craig, Culpeper, Dickenson, Fairfax, Fauquier, Franklin, Giles, Greene, Henry, Lee, Loudoun, Orange, Patrick, Prince William, Russell, Scott, Spotsylvania, Stafford, Wise; **11:** Augusta, Bath, Bland, Carroll, Clarke, Floyd, Grayson, Highland, Madison, Montgomery, Page, Pulaski, Rappahannock, Rockingham, Shenandoah, Smyth, Tazewell, Warren, Washington, Wythe

IMPORTANT: This information is based on U.S. Dept. of Energy material for Virginia’s Energy & Residential Codes. This is not a substitute for local code.

FOOTNOTES:

1. Glazing area is the ratio of the area of the glazing assemblies (including sliding-glass doors, skylights, and basement windows but excluding opaque doors) to the gross wall area expressed as a percentage. Up to 1% of the total glazing area may be excluded from the U-Valued requirement. For example, 3 ft² of decorative glass may be excluded from a building design with 300 ft² of glazing area.
2. Glazing U-values must be tested and documented by the manufacturer in accordance with the National Fenestration Rating Council (NFRC) test procedure or taken from the glazing U-value table in Appendix B. Center-of-glass U-values cannot be used.
3. The ceiling R-values do not assume a raised or oversized truss construction. If the insulation achieves the full insulation thickness over the exterior walls, R-30 insulation may be substituted for R-38 insulation and R-38 insulation may be substituted for R-49 insulation. Ceiling R-values represent the sum of cavity insulation plus insulating sheathing (if used). For ventilated ceilings, insulating sheathing must be placed between the conditioned space and the ventilated portion of the roof.
4. Wall R-values represent the sum of the wall cavity insulation plus insulating sheathing (if used). Do not include exterior siding, structural sheathing, and interior drywall.
5. The floor values apply over unconditioned spaces (unconditioned crawls, basements, garages). Floors over outside air (e.g., cantilevers, garages) must meet the ceiling requirements.
6. Walls of conditioned basements below uninsulated floors must be insulated from the top of the basement wall to a depth of 10 ft below ground level or to the basement floor, whichever is less. The entire opaque portion of any individual basement wall with an average depth less than 50% below grade must meet the same R-value requirement as above-grade walls. Windows and sliding glass doors of conditioned basements must be included with the other glazing.
7. The R-value requirements are for unheated slabs. Add an R-2 for heated slabs. The insulation must extend 1) down from the top of the slab, or 2) down from the top of the slab to the bottom of the slab and then horizontally underneath the slab, or 3) down from the top of the slab to the bottom of the slab and then horizontally away from the slab, with pavement or at least 10 in. of soil covering the horizontal insulation.
8. The crawl space wall R-value requirements are for walls of unventilated crawl spaces. The crawl space wall insulation must extend from the top of the wall (including the sill plate) to at least 12 in. below the outside finished grade. If the distance from the outside finished grade to the top of the footing is less than 12 in., the insulation must extend a total vertical plus horizontal distance of 24 in. from the outside finished grade.
9. Exact requirements contained in the IRC Table 1102.1 for Zones 8-11
10. Exact requirements contained in the IECC Table 502.2.4(3) and Table 602.1 for homes in Zones 8-11 with 15% maximum glazing area.

NOTES:

1. Duct insulation and sealing: The IECC generally calls for supply ducts in all unconditioned spaces or outside the building to be insulated to a R-8, and up to R-4 on returns, in VA. Insulation on return ducts in unconditioned basements is not required. See IECC Table 503.3.3.3. The IRC requires R-5 for ducts in the building but outside the conditioned space and R-8 for ducts outside the building (N1103.3). Ducts shall be sealed using listed & labeled UL 181A or B tape of mastic, and “duct tape” shall not be used (See IECC 503.3.3.4.3; IRC M1601.3.1).
2. Prescriptive packages in the table are based upon ‘Normal’ HVAC equipment. The IECC includes packages permitting the envelope values to be reduced when more efficient ‘High Heating’ and ‘High Heating/Cooling’ equipment is used.
3. Limitations. This guide is an energy code compliance aid for VA. This guide does not provide a guarantee for meeting applicable code.

TECHNICAL ASSISTANCE:

For additional details on Virginia’s energy code, please contact your local or county building code official; the VA Department of Housing and Community Development at 804-371-7000, or www.dhcd.state.va.us; the VA Building Code Officials Association (www.vbcoa.org); or the VA state or local HBA (www.hbav.com).

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IMPORTANT NOTICE: Chart contains select information from the **U.S. Dept. of Energy material for Virginia’s Energy & Residential Codes**. It cannot guarantee compliance with all applicable code requirements. Inaccuracies, errors or code changes could render all or part of this chart obsolete. Information is provided on an “AS IS” basis, without warranty of any kind. Chart is for general information only and is not legal advice or legal representation or any advice of any other kind. **USER ASSUMES TOTAL RESPONSIBILITY AND RISK FOR USE OF THIS CHART AND THE INFORMATION PROVIDED HEREIN.**