2021 STATEWIDE VIRGINIA RESIDENTIAL CODE

SUMMARY OF KEY RESIDENTIAL ENERGY CODE REQUIREMENTS

The 2021 Virginia Residential Code was adopted and went into effect **January, 18, 2024** but there is a one-year period where compliance with the previous code is allowed. This document summarizes the building envelope-related requirements in the updated code for Virginia.

CODE CHANGE HIGHLIGHTS

- The wood framed walls section was amended to allow for R-15 cavity insulation.
- Additional energy efficiency is required per R401.2.5.
- Ceiling insulation levels were increased in all climate zones.
- The maximum ERI was lowered and the fenestration stringency was improved.
- Building framing cavities used as ducts or plenums shall comply with Virginia Residential Code Section M1601.1.1.

BUILDING ENVELOPE AND DUCT REQUIREMENTS

PRESCRIPTIVE	CLIMATE ZONE 3	CLIMATE ZONE 4	CLIMATE ZONE 5
Wood Frame Wall	R-15 or R-13+1ci / U-0.079		
Basement Walls[a]	R-13 or R-5ci / U-0.091	R-13 or R-10ci / U-0.59	R-15ci or R-19 or R-13+5ci / U-0.50
Mass Wall[b]	R-8/13 / U-0.098		R-13/17 / U-0.082
Crawl Space Walls[a]	R-13 or R-5ci / U-0.136	R-13 or R-10ci / U-0.065	R-15ci or R-19 or R-13+5ci / U-0.055
Ceilings	R-49 / U-0.026	R-60 / U-0.024	
Floor	R-19 / U-0.047		R-30 / U-0.033
Slab R-value / Depth	R-10ci / 2 ft.	R-10ci / 4 ft.	
Fenestration	U-0.30 / SHGC-0.25	U-0.30 / SHGC-0.40	

DUCT LEAKAGE

MEASUREMENT	CFM25 / 100 SQ. FT.
Rough-in (no air-handler)	3
Rough-in (with air-handler)	4
Post-construction	4
Within thermal envelope	8

DUCT R-VALUE

R-VALUE
R-8[c]

AIR LEAKAGE

CLIMATE ZONE	MEASUREMENT
3	5 ACH50

MAXIMUM ENERGY RATING INDEX (ERI)

CLIMATE ZONE 3	CLIMATE ZONE 4	CLIMATE ZONE 5
51	54	55

a. The continuous insulation can be on the interior or exterior.

b. The second R-value/U-factor applies where >50% of the insulation is on the interior.

c. R-6 is allowed for ducts < 3 inches.

MORE INFORMATION ON THE 2021 VIRGINIA RESIDENTIAL CODE CAN BE FOUND HERE:

https://codes.iccsafe.org/content/VARC2021P1

Insulation Institute™

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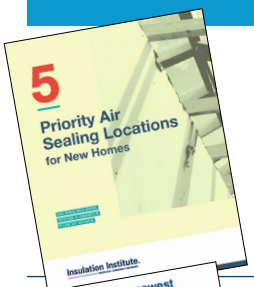
ENERGY-EFFICIENT, COST-EFFECTIVE CONSTRUCTION WITH FIBERGLASS AND MINERAL WOOL INSULATION

As code levels advance, **keep informed about innovative practices** to meet or exceed code requirements using cost-effective fiberglass and mineral wool insulation.

The following resources in the table below are just a subset of the many guides available from the **Insulation Institute** to help you achieve new performance requirements with proven approaches.

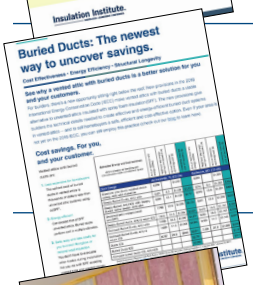
INSULATION INSTITUTE RESOURCES



Air Leakage

As states adopt more stringent energy codes, some builders may experience challenges meeting new mandatory air leakage requirements. Fiberglass and mineral wool insulation is the low-cost solution for homebuilders to meet or surpass code air leakage rate requirements of 3 or 5 air changes per hour depending on climate zone. For homeowners, an airtight building envelope results in energy savings and increased thermal comfort.

https://insulationinstitute.org/wp-content/uploads/2018/05/N090-5-Air-Sealing-Locations-for-New-Homes.pdf



Ducts Buried Within Ceiling Insulation

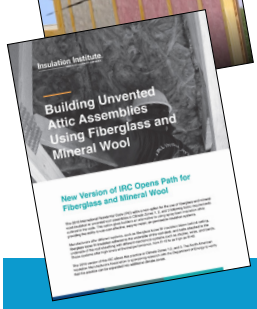
Deeply buried ducts in attics is an easy way to lower energy code compliance costs for builders using the simulated energy performance path. Homeowners can benefit from energy savings realized from lower-capacity, lower-cost HVAC systems.

https://insulationinstitute.org/wp-content/uploads/2019/03/N087-Buried-Ducts-The-newest-way-to-uncover-savings.pdf

Proper Installation of Insulation

Grade I installation delivers superior energy efficiency and is increasingly required by state energy codes. Insulation installation jobs that fail to meet Grade I criteria can mean construction delays due to callbacks, HERS rating penalties, and failed code inspections. Grade I installation is readily achievable by following basic guidelines as recommended by manufacturers. NAIMA offers free online training for installers.

www.grade1insulation.org



Unvented Attics Using Fiberglass and Mineral Wool Insulation

Unvented attics can be constructed by installing fiberglass or mineral wool insulation below the roof deck instead of using more costly materials like spray foam. In addition, fiberglass and mineral wool insulation products are green certified and do not carry recommended occupancy restrictions due to product off-gassing after installation. Starting with the 2018 IRC, this practice is outlined in detail within the code. Homeowners benefit from lower construction costs and the use of a safe product.

https://insulationinstitute.org/wp-content/uploads/2018/05/BuildingUnventedAtticAssemblies-N089.pdf

LEARN MORE ABOUT THE ERI COMPLIANCE PATH HERE:

https://www.energycodes.gov/technical-assistance/training/courses/2015-iecc-energy-rating-index-eri-compliance-alternative

Get the Facts for a Stronger Business

Learn more about fiberglass and mineral wool insulation at InsulationInstitute.org

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PUB.NO. N149 04/24