

redfish

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Greener Building for Better Living



# True R-value

The R-value of an enclosure assembly that includes all thermal bridging, air leakage, wind washing, convective loops, radiation enhancements, thermal and hygric mass, and installation defects.



## Thermal Control Layer

The component or components that are designed and installed in an assembly to control the transfer of thermal energy (heat). Typically these are comprised of insulation products, radiant barriers, or trapped gaps filled with air or other gases.

## Air Infiltration

Uncontrolled inward leakage of air (that may contain entrained water vapor) through cracks and interstices in any building element and around windows and doors of a building, caused by the pressure effects of wind or the effect of differences in the indoor and outdoor air density (from Gatley, [Understanding Psychrometrics](#)).

## Pressure Boundary

The primary air enclosure boundary separating conditioned air and unconditioned air. Typically defined by the air control layer system.

## Air Leakage

Uncontrolled and/or unintended airflow through a building enclosure or between units of occupancy. Leakage from indoors to outdoors is known as exfiltration and leakage from outdoors to indoors is known as infiltration. Air leakage can cause indoor air quality problems, condensation, excess energy use, comfort complaints, and smoke transport.

## Center-of-Cavity R-value

The R-value at a line through an assembly that contains the most insulation, and the least framing, typically the middle of a stud-bay in framed construction.

## Vapor Barrier

A material that has a permeance of 0.1 US perm or less. A vapor barrier is a material that is essentially vapor impermeable (e.g., metal, glass, thick plastics, unperforated epoxy paint). A vapor barrier is a Class I vapor control layer. The test procedure for classifying vapor barriers is ASTM E-96 Test Method A—the desiccant or dry cup method.

## Vapor Permeable

Describes materials with a permeance of greater than 10 perms (housewraps, building papers).

## Vapor Impermeable

Materials with a permeance of 0.1 perm or less (rubber membranes, polyethylene film, glass, aluminum foil). A Class I vapor control layer.

## Whole-Wall R-value

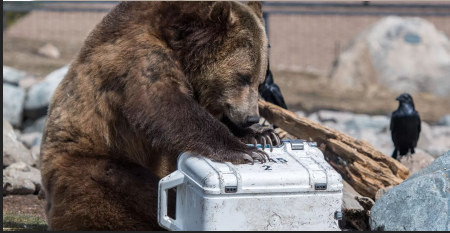
R-value for the whole opaque assembly including all structural elements (such as double studs), and typical interface details, including wall/wall (corners), wall/ceiling connections.

## Clear-Wall R-value

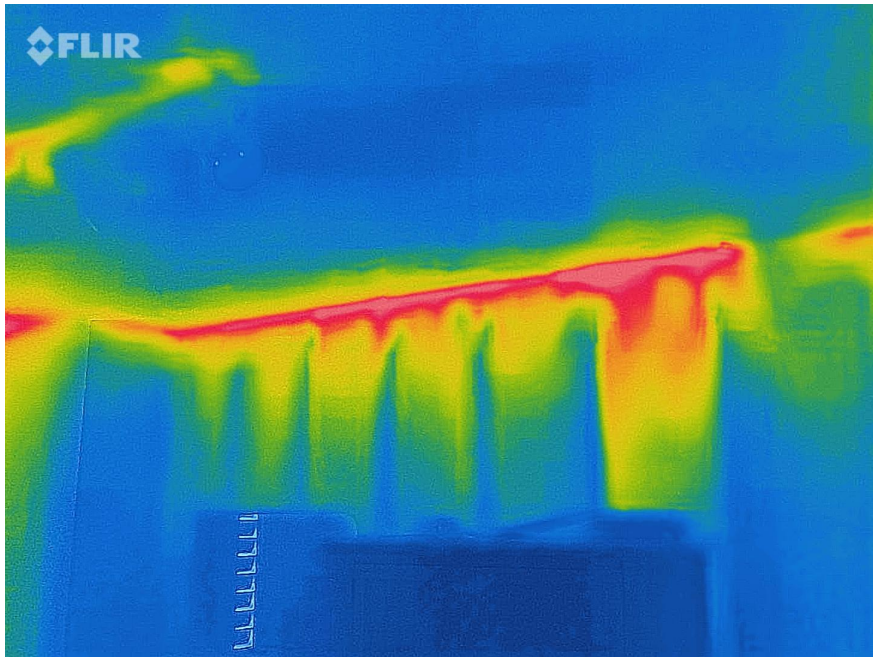
R-value of an assembly containing only insulation and minimum necessary framing materials at a clear section with no windows, corners, columns, architectural details, or interfaces with roofs, foundations or other walls.

## Vapor Semi-Permeable

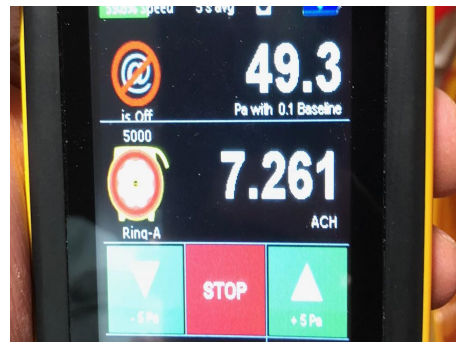
Describes materials with a permeance of 10 perms or less and greater than 1.0 perm (plywood, OSB, most latex-based paints).







0.05 ACH50



**BUILDINGS CONTRIBUTE**

**39%**

**OF OUR AIR POLLUTION**





Super Complex Systems. Great one offs but not scalable or cost effective

# Keep it Simple

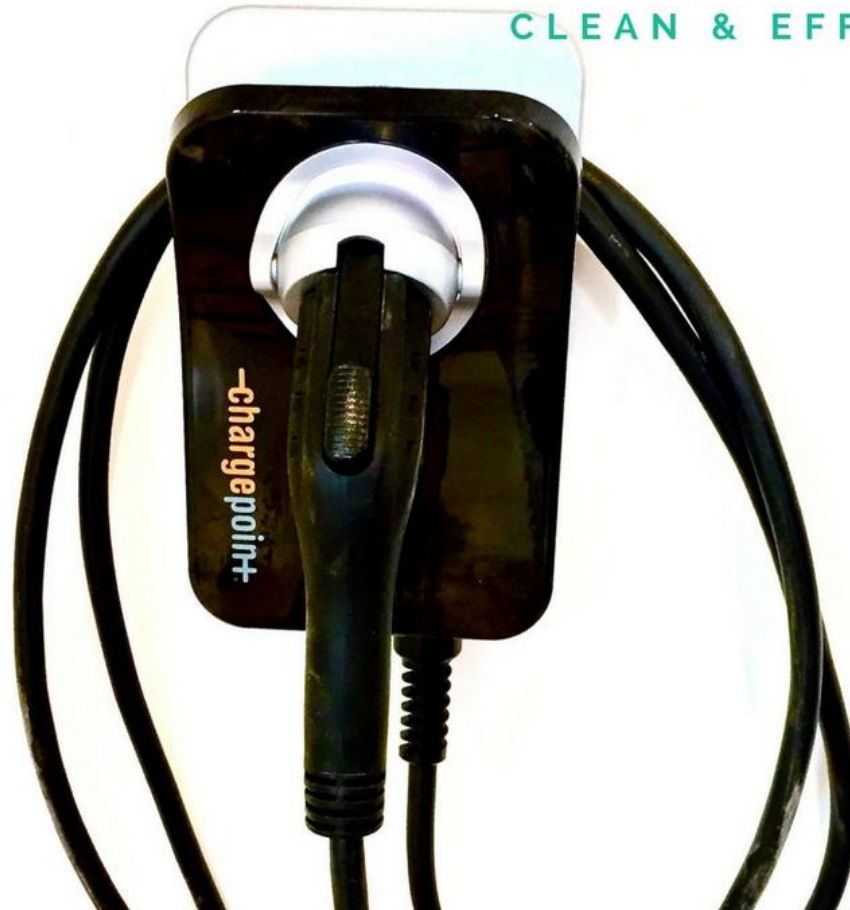




LIVING  ZENITH

# ENERGY

CLEAN & EFFICIENT



**AIR**  
FRESH & FILTERED



# DESIGN

INTEGRATED & MODERN



# INTELLIGENCE

AUTOMATED & PERSONALIZED



# LIFESTYLE

VIBRANT & WALKABLE

