

# Environmental Systems

Project 9

Fall 2017  
ARCH 633

# Insulation Materials

Name	R-value/inch	Inches needed for R-38	Density in lb/ft <sup>3</sup>	Weight at R-38 in lb/ft <sup>2</sup>	Cost (cents/sq. ft.)
 Fiberglass Batt Insulation	2.2-2.7	14-17	0.5-1.0	0.5-1.2	20-40
 Rockwool Insulation	3.0-3.3	11.5-13	1.7-1.9	1.6-1.8	32-50
 Cellulose Insulation	3.2-3.8	10-12	1.5-2.0	1.25-2.0	34-50

The price of the insulation and the level of the resistance value in the material is directly proportional. As the R value increases in the construction, the price of the overall construction also increases. But it is important in order to save energy costs that will be more expensive in the long run.

## Window Assemblies

Name	U Value COG- Center of Glass	U Value EOG- Edge of Glass	U Value Frame	U Value Assembly
 1" Insulating Uncoated	0.47	0.49	0.86	0.61
 1" Insulating Low-E Coated	0.29	0.37	0.85	0.50
 1-3/4" Triple Insulating Double Low-E Coated	0.16	0.27	0.69	0.37

The relationship between the U factor of the center of glass and the frame is not the same. The frame has a higher U factor than the glass itself which brings the total assembly of the window to higher U value as seen in the chart above. The glass itself has a low U factor and is a good insulator especially when used as double or triple pane.