Assignment 09 | Building Enclosure

39.87° N | 75.23° W

PennDesign
Environmental Systems I
Fall 2017
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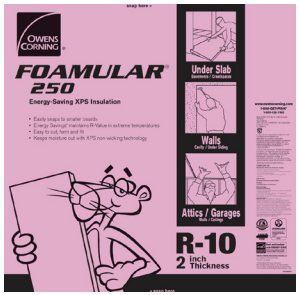
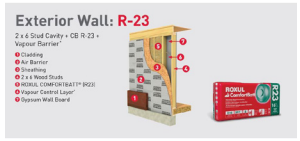
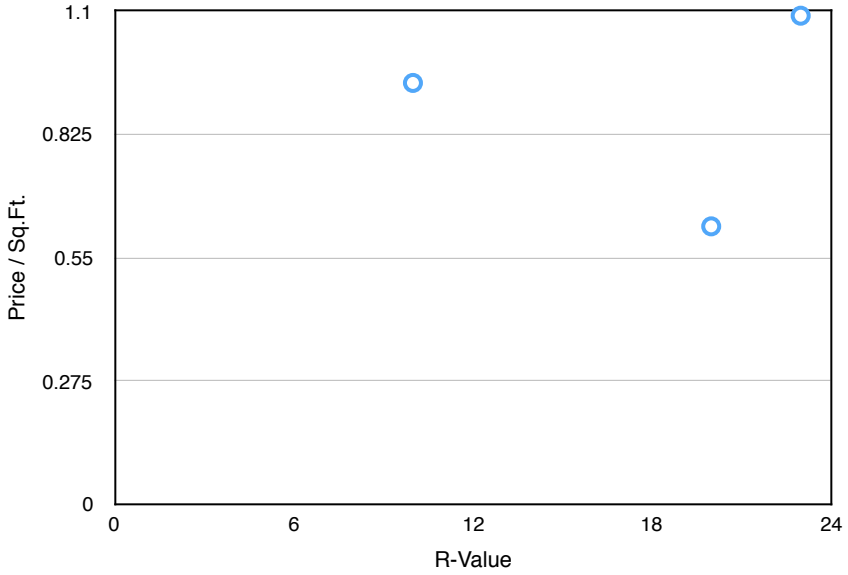
Insulation Material

Material	R-Value	Price
Kraft Faced Fiberglass Insulation Roll	R-20	$24.99 /each Dimensions: 5.5" x 15" x 384" Total Covered Area = 40 sq.ft. Price Per Sq.Ft = **$0.62 /sq.ft.**
Closed Cell Rigid Foam Board	R-10	$29.99 /each Dimensions: 2" x 48" x 96" Total Covered Area = 32 sq.ft. Price Per Sq.Ft = **$0.94 /sq.ft.**
Fire Resistant Stone Wool Insulation	R-23	$43.27 /8-roll Dimensions: 5.5" x 15.25" x 47" Total Covered Area = 39.8 sq.ft. Price Per Sq.Ft = **$1.09 /sq.ft.**





Scatter Plot



Analysis

There is no immediate correlation visible with the R-value and price per square foot of the material. Generally, the price trend seems to reflect the material type rather than the R-value. Typical insulators, like the fiberglass batt insulation, is overall cheaper option when compared to more unique insulation types, such as stone wool insulation or denim insulation.

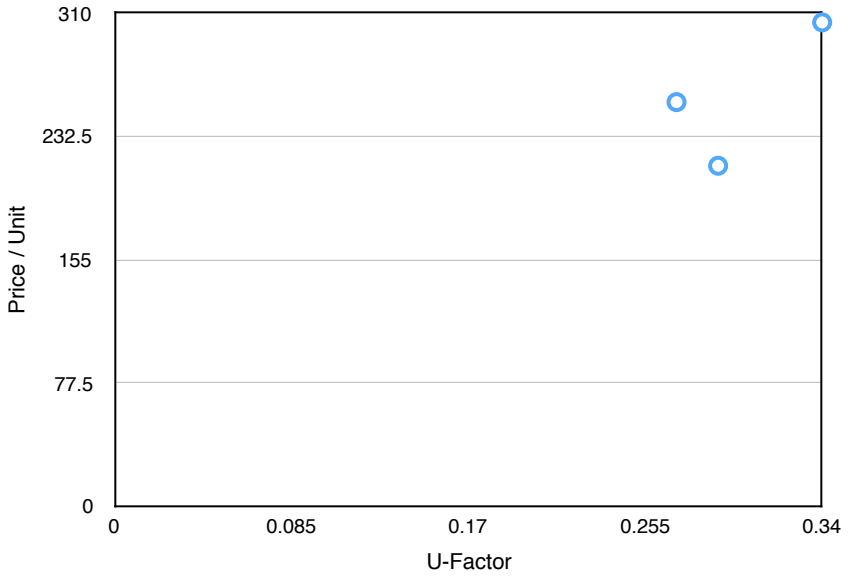
Window Assembly

Assembly	U-Factor | Solar Heat Gain Coefficient	Price
Jeld-Wen V-2500 Single Hung Window	.29 | .23	$214.09 /each

Jeld-Wen W-2500 Double Hung Window	.34 | .30	$306.23 /each

Jeld-Wen V-4500 Casement Window	.27 | .18	$254.10

Scatter Plot



Analysis

There is again no strong correlation visible between the U-Factor and the price per unit of typical window assemblies. There is a slight trend in the updward direction, U-Factor increses with price, but overall the price trend seems to be affected more by the type of window assembly over the U-factor. I did control the sample set, by controling the widow size, material, and glass type. All windows are 30"x48", made of vinyl, have double-paned, low-E glazing, and contain Argon glass in the air cavity between the panes.