



Decision Name: Choosing an Insulation Material

Project: Use Cases

01. Decision Summary

Due Date	Decision Status	Selected Alternative
2016-05-05	In Progress	Fiberglass

Objective

The goal is to choose whether to use cotton or fiberglass insulation material.

Collaborators

Doanh Do

02. Alternatives

Cotton

Fiberglass

03. Factors & Criteria

Recycled content

Want Criterion : higher is better

Chemical Irritants

Want Criterion : does not have is preferred

Density

Want Criterion : lower is better

Insulation Capabilities

Want Criterion : higher is better

Recyclability

Want Criterion : Higher Is Better

Fireproofing

Want Criterion : higher hour rating is better

Material handling

Want Criterion : easier is better

Installation

Want Criterion : faster is better

04. Attributes

Recycled content

Cotton: 85%

Met meet must criterion ✓

Fiberglass: 20%

Met meet must criterion ✓

Chemical Irritants

Cotton: Does not have irritants

Met meet must criterion ✓

Fiberglass: Has irritants

Met meet must criterion ✓

Density

Cotton: Heavy (2.5 lb./cf.)

Met meet must criterion ✓

Fiberglass: Light (0.5 lb./cf.)

Met meet must criterion ✓

Insulation Capabilities

Cotton: R-19

Met meet must criterion ✓

Fiberglass: R-19

Met meet must criterion ✓

Recyclability

Cotton: 100%

Met meet must criterion ✓

Fiberglass: 40%

Met meet must criterion ✓

Fireproofing

Cotton: Less than one hour

Met meet must criterion ✓

Fiberglass: More than one hour

Met meet must criterion ✓

Material handling

Cotton: Wear mask, no gloves. Very hard to cut

Met meet must criterion ✓

Fiberglass: Wear mask and gloves. Easy to cut

Met meet must criterion ✓

Installation

Cotton: 2000 sf./day pp.

Met meet must criterion ✓

Fiberglass: 2500-3000 sf./day pp.

Met meet must criterion ✓

05. Advantages

Recycled content

Want Criterion : higher is better

85% Advantage: 65% more recycle content Most Important Advantage ★

20% Advantage: None Least Preferred Attribute ✖

Chemical Irritants

Want Criterion : does not have is preferred

Does not have irritants Advantage: does not have irritants Most Important Advantage ★

Has irritants Advantage: None Least Preferred Attribute ✖

Density

Want Criterion : lower is better

Heavy (2.5 lb./cf.) Advantage: None Least Preferred Attribute ✖

Light (0.5 lb./cf.) Advantage: 2 lb./sf. lighter Most Important Advantage ★

Insulation Capabilities

Want Criterion : higher is better

R-19 Advantage: None Least Preferred Attribute ✖

R-19 Advantage: None

Recyclability

Want Criterion : Higher Is Better

100% Advantage: None Least Preferred Attribute ✖

40% Advantage: 60% more recyclability Most Important Advantage ★

Fireproofing

Want Criterion : higher hour rating is better

Less than one hour Advantage: None Least Preferred Attribute ✖

More than one hour Advantage: Slightly less flammable than cotton Most Important Advantage ★

Material handling

Want Criterion : easier is better

Wear mask, no gloves. Very hard to cut Advantage: None Least Preferred Attribute ✖

Wear mask and gloves. Easy to cut Advantage: Easier to cut Most Important Advantage ★

Installation

Want Criterion : faster is better

2000 sf./day pp. Advantage: None Least Preferred Attribute ✖

2500-3000 sf./day pp. Advantage: 500-1000 sf./day/pp. faster. Most Important Advantage ★

06. Importance of Advantages

Recycled content

Want Criteria : higher is better

Alternative	Attribute	Advantage	Weight of Advantage
Cotton	85%	65% more recycle content	77
Fiberglass	20%	None	

Chemical Irritants

Want Criteria : does not have is preferred

Alternative	Attribute	Advantage	Weight of Advantage
Cotton	Does not have irritants	does not have irritants	38
Fiberglass	Has irritants	None	

Density

Want Criteria : lower is better

Alternative	Attribute	Advantage	Weight of Advantage
Cotton	Heavy (2.5 lb./cf.)	None	
Fiberglass	Light (0.5 lb./cf.)	2 lb./sf. lighter	37

Insulation Capabilities

Want Criteria : higher is better

Alternative	Attribute	Advantage	Weight of Advantage
Cotton	R-19	None	
Fiberglass	R-19	None	0

Recyclability

Want Criteria : Higher Is Better

Alternative	Attribute	Advantage	Weight of Advantage
Cotton	100%	None	
Fiberglass	40%	60% more recyclability	52

Fireproofing			
Want Criteria : higher hour rating is better			
Alternative	Attribute	Advantage	Weight of Advantage
Cotton	Less than one hour	None	
Fiberglass	More than one hour	Slightly less flammable than cotton	18

Material handling			
Want Criteria : easier is better			
Alternative	Attribute	Advantage	Weight of Advantage
Cotton	Wear mask, no gloves. Very ...	None	
Fiberglass	Wear mask and gloves. Easy...	Easier to cut	55

Installation			
Want Criteria : faster is better			
Alternative	Attribute	Advantage	Weight of Advantage
Cotton	2000 sf./day pp.	None	
Fiberglass	2500-3000 sf./day pp.	500-1000 sf./day/pp. faster.	100*

* *Paramount Advantage*

07. Costs

Alternative	Labor	Material	<Empty>	<Empty>	<Empty>	Total*
Cotton	\$6,400.00	\$10,000.00	\$0.00	\$0.00	\$0.00	\$16,400.00
Fiberglass	\$7,500.00	\$9,000.00	\$0.00	\$0.00	\$0.00	\$16,500.00

Importance of Advantages vs. Cost Graph



Alternative	Importance of Advantages	Cost
1 Cotton	115	\$16,400.00
2 Fiberglass	262	\$16,500.00

Selected Alternative	Importance of Advantages	Life Cycle Cost
Fiberglass	262	\$16,500.00

Final Notes

Last Modified

May 29, 2016, 4:56 a.m.