

# Finding Natural Ground: Sustainable Residential Flooring

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## INTRODUCTION:

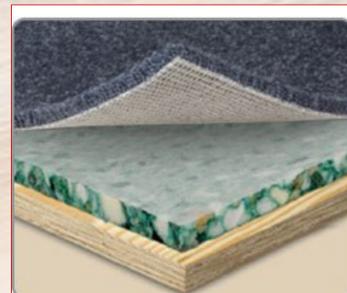
Buildings have a large environmental impact because they consume raw materials, emit greenhouse gasses, produce waste, and involve synthetic materials.<sup>1</sup> One opportunity to significantly reduce the environmental impact of buildings is with flooring. Carpet and laminate are the most popular choices for residential flooring. However, consumers are unaware of the environmental and health risks. With the recent movement to lower human environmental impact, flooring companies are providing more sustainable flooring options. The flooring market may be difficult to maneuver provided deceiving or misleading labels, lack of environmental assessment information provided to consumers, and overall lack of education on sustainable materials presented to consumers.<sup>2</sup> While considering new flooring, consumer goals must also be factored into the decision. This research attempts to find which sustainable flooring material is the best solution for residential homes depending on the goal of the consumer.

## WORK CITED:

- Espinoza, Omar, Urs Buehlmann, and Bob Smith. "Forest Certification and Green Building Standards". *Journal of Clean Production*. 33 (2012): 34.
- Pritchard, Robert. "Climate Key is Smarter Buildings". *Australian Financial Review*. (2010)
- Espinoza, Omar, Urs Buehlmann, and Bob Smith. "Forest Certification and Green Building Standards". *Journal of Clean Production*. 33 (2012): 30

## METHODS:

To answer my research question, I conducted an extensive literary review along with semi-structured interviews with an architect, carpenter, and sales specialist. To better understand flooring materials, I reviewed characteristics of carpet, laminate, domestic hardwood white and red oak, bamboo, cork and engineered flooring. I used product descriptions from flooring companies, industry magazines and newspapers, and books. To understand the environmental impacts involved with common flooring materials that had the most recent data, I reviewed case-studies, industry reports, company reports, trade journals, life-cycle analysis, and material comparison reports. I sought out material tests to distinguish each material's performance. To apply my findings, I compared material characteristics and related them to consumer goals that had been identified.



Layer makeup of carpet



Carpet piled up in landfill



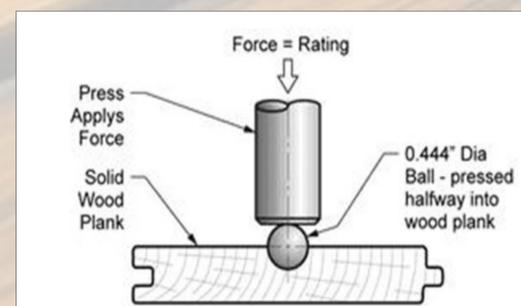
Layer makeup of laminate

## MATERIAL AND GOAL COMPARISON

	OAK	ENGINEERED	BAMBOO	CORK
<b>COST</b>	4	3	3	2
<b>DURABILITY</b>	3	3	4	1
<b>AESTHETICS</b>	2	3	4	4
<b>AIR QUALITY</b>	4	1	3	1
<b>TOTAL</b>	13	10	14	8

Materials rated performance for top four consumer goals. The higher the rating the more successful of a performance

## JANKA HARDNESS TEST

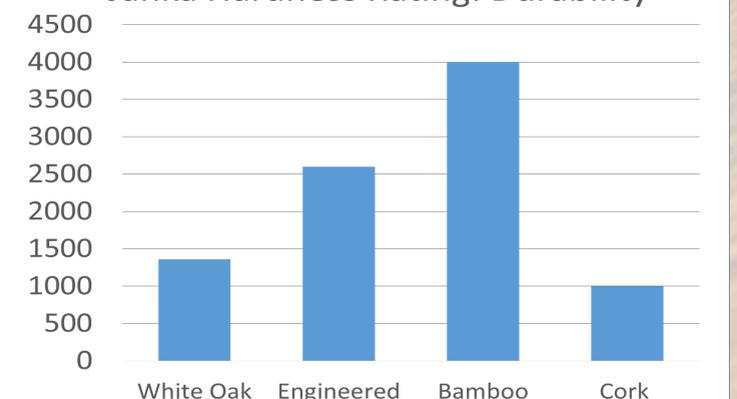


Janka Hardness test performed in order to determine the material's rating on the Janka Scale

## RESULTS:

Domestic hardwood oak, engineered, bamboo and cork materials each affect the environment to a different degree ranging in renewability, harmful chemicals, embodied energy, and waste, but all materials are better for the environment than laminate and carpet. At least one of the four materials included in the studied can replace some characteristic that make carpet or laminate appealing, while posing a smaller impact on the environment. Bamboo's performance in relation to consumer goals is the most successful of the four materials. Because bamboo is imported to the U.S. from China, it emits more Greenhouse Gasses into the atmosphere than domestic flooring options. Therefore, the single material that emanates both consumer goals and sustainability most successfully is domestic hardwood oak.

## Janka Hardness Rating: Durability



The higher the Janka scale rating, the harder the material. Thus, Bamboo is the hardest, then engineered, white oak and cork respectively

**DOMESTIC  
HARDWOOD**



**ENGINEERED**



**BAMBOO**



**CORK**

