Implementation Of Green Building Materials

Abstract

Every building exists within an environmental context upon which is not only acts on but also has an impact upon the building. Nowadays, a building is hard to be constructed as a microcosm due to the rise of complexity and interrelatedness. The people in charge of every building project must consider the impact it will have on the environment into which it will be placed, locally and globally. Sustainability is a concept of the needs of the unborn. Pollution effects and resource management are one of the environmental concepts. Implementation of green building materials has a great impact on the environment in the long run.

Keywords: environmental, green, building, material, impact.

1. Introduction

While people recognize that the term green means “environmentally friendly” most have several misperceptions about how environmentally products perform relative to a standard, more familiar products. In the building industry, it is not uncommon for the owner’s initial response were unsure with the ideas to have a green building materials. .Over the past few years, several major issues arise due to the non-eco-friendly building caused pollution and hazardous to its occupants. According to the National Institute for Occupational Safety and Health (NIOSH), the relatives causes of indoor air pollution are as follows:

Poor indoor air quality (IAQ) may contribute to various problems. Estimates range from tens of thousand to billion dollars annually in employee sick leave, earnings, and productivity losses. There may also be significant costs associated with IAQ issues for those who find themselves part of a growing body of IAQ legislative case history. Next, the green building material is easier and more economical to prevent wastage and pollution that can damage nature. Wastes cost money and lost profit. An ounce of waste prevention is easily worth a pound of waste mitigation. By performing an eco-audit of your building design, building operations, and manufacturing process, you can identify waste and possibilities for trimming it [1]. Green products can help recapture lost profits by mitigating potential liabilities and reducing waste. Manufacturers and building owners have already learned this and are implementing efficiency upgrades in various form. The environmental market, encouraged by the federal government, is moving away from cleanup to pollution prevention. Both green building products and green design services are factors of the burgeoning environmental technology market [2].

2. Green Building Materials

As the year progresses, consumer demand for healthy buildings and for energy-efficient structures also drives manufacturers and designers to explore options of green products. It is a very demanding business has a high potential to contribute in the Industrial Revolution 4.0. Green building materials are those that are use the Earth’s resources in an environmentally responsible way. Green building materials respect the limitations of nonrenewable resources

such as coal and metal ores and it is also nontoxic. They are made from recycled materials and are recyclable. They are energy and water-efficient. They are green in the way they are manufactured, the way they are used, and the method they are reclaimed after use. Ideally, we specify only those products that use a minimum amount of perpetual or renewable resources and that use of them very, very well at all stages .

As we understand the basic environmental principle finite, cyclical matter and temper our every action accordingly.some radical environmentalists do, even in the building industry. If we believe that a green material look trashy, we tend to actually see it that way. Perception filters reality. We are considering alternative agricultural products, recycled content products, nontoxic product, and energy-efficient products. On the other hand, they may look just like the much more environmentally damaging products they replace. Sustainably harvested wood may have a label on it, but otherwise, it looks like wood. In fact, for decades, many products have contained recycled materials. The table below shows a few of recycling items that can be used to make a new building material [3].

Recycle source

New building material made of the recycled item

Cellulose

Acoustical ceiling tile lines

Paper

Gypsum board

Aluminium can, old tires

Used directly

Hampcrete, Grasscrete

Alternative to concrete

Table 1: Recycle items that can be used to make a new building materials.

3. Benefits of Implementation of Green building materials

The concerned expressed in the “Does it work?” question is that using green materials will require a huge amount of capital. Other frequent asked question is “What kind of cost are we talking about?” reveals the economic perception of green. Builders worry about the initial cost of the different and perhaps risky green product as well as about the impact it may have on overall value of the building investment. When cost is discussed relative to environmental issues, it is necessary to consider both the broader societal costs, the costs each of us bears for destruction of the global commons, and the costs directly borne by individuals under the current economic system. Simple economic comparisons show that green products are often competitive for

purchase and installation, especially those that are considered green because they contain recycled materials. Back when recycled content was called trash, many mainstream construction products, including ceiling tile, gypsum board, concrete, and steel, contained recycled content materials. The manufacturers made economic decisions.

The recycled material performed just as well and cheaper than processing virgin materials. Perhaps most important, however, they could depend on the source. Increasingly, legislation is making it easier and more cost-effective for manufacturers to use recycled content material as feedstock. As the infrastructure. Legislation, and recycling programs continue to evolve, more industries can take advantage pf them. Besides, using green building materials helps nature to reduce pollution whether it is indoor or outdoor contaminants [4].

4. Green Building Material Selection Process Work

The product selection process for green products becoming quite complex. This is good news and bad news situation. The good news is that there are lots of innovative products and assess them while the bad news is that the explosion of green claims were valid, few are directly comparable to each other. Product selection for green products requires the specifier to sift through all of this data to find the information that is most useful. The product selection process is the same for green products as for standard (non-green) products. All of the typical considerations for quality, performance, aesthetics and cost of a product are explored as usual. The standard selection process includes the following steps [5]:

1. Determine material classification.

The Construction Specification Institute (CSI) MasterFormatTM list broad categories, which can be used to organize data. The 2004 edition lists 49 categories. Below shows several divisions that show the material categories.

MasterFormat 2004

Division 06

Wood, plastics and composites

Division 03

Concrete

Division 43

Process Gas and Liquid Handling, Purification and Storage Equipment

Division 23

Heating, Ventilating and Air Conditioning

Division 46

Water and Wastewater Equipment

Division 44

Pollution and Waste Control Equipment

2. Identify performance criteria.

Every green performance criteria, there will group in three general categories [6]:

Single-attribute criterion: Good indoor quality: achieved by selecting products with low zero volatile organic compounds (VOCs).

Multi-attribute: Good indoor environmental quality; achieved by selecting products with low or zero VOCs, products with low or zero persistent bioaccumulative toxins (PBTs), products that facilitate occupant control over temperature and humidity, and products that facilitate full-spectrum lighting.

Life cycle: minimal negative and maximum positive health impacts across the products life cycle; achieved by a review of product components and byproducts as well as the product itself.

3. Analyze building material options.

4. Gather technical information.

5. Review submitted information fro completeness.

6. Evaluate materials.

7. Select and document choice.

5. Challenges of Green Building Material Implementation

1. Is it hazardous? What if one of the byproducts at one of the stages happens to be a synthetic chemical?
2. Is it locally obtained? What if the input materials in one of the stages happen to be obtained from a location within an endangered ecosystem, such as bauxite for aluminium, mined in the rain forest?
3. Is it recycled? What if the inputs of the materials are obtained entirely from recycled materials? From recycled petroleum-based materials? What if the only facility equipped to recycle those petroleum-based materials is overseas? What if the product is fabricated entirely from recycled materials but the adhesive resin binder is a known carcinogen?
4. Is it energy-intensive to make? What if the fabricating equipment is high-efficiency, non-CFC-producing. State-of-the-art equipment? What if the energy used to power the high-efficiency fabricating equipment is produced in a coal-burning utility plant?
5. Is it reusable or recyclable? What if the product in its final stage will probably go straight to a landfill? What if it could be recycled at some point in the future…. if the facilities or technology could be created to recycle it?

A single product may contain several materials any one of which may possess green characteristics. Each material may involve hundreds of perpetual, renewable and non-renewable resources.balancing the “good” against the” bad” is an unfortunate and, hopefully, temporary reality [7].

6. Conclusion

The range of the green building products that are currently available has grown exponentially in response to the growth in green building rating systems on local, state, national and cost-competitive [8]. They offer a range of aesthetic option and they perform well. Many mainstream manufacturers have jumped on the bandwagon in response to the growing demand and the realization that green building materials are not a fad that soon going to fade away. I hope in the future, many would contribute to the redevelopment of our economic and political infrastructure in the support of sustainable approaches to green building. As for the recommendation in future works, we can use free waste production of building material which helps a lot of the environment.

7. References

1. Spiegel, R. and Meadows, D. (2012). Green building materials. 3rd ed. Hoboken, N.J.: John Wiley & Sons.
2. Ching, F.D.K. and M. Shapiro, I. (2014). Green building illustrated. Bognor Regis: John Wiley & Sons Ltd.
3. Calkins, M. (2009). Materials for sustainable sites. Hoboken, N.J.: John Wiley & Sons.
4. Venhaus, H. (2012). Designing the sustainable site. Hoboken, N.J.: John Wiley & Sons.
5. Sabnis, G. (2011). Green building with concrete. Hoboken: CRC Press.
6. Montoya, M. (2011). Green building fundamentals. Upper Saddle River, N.J.: Prentice-Hall.
7. Russell, S. and Buchter, J. (2011). Waste clay as a green building material. Bartow, Fla.: The Institute.
8. Venhaus, H. (2012). Designing the sustainable site. Hoboken, N.J.: John Wiley & Sons.