ISSN 2706-655X Vol.4, Issue 2: 24-26, DOI: 10.25236/IJFET.2022.040204

Innovation and application of green building materials in civil engineering construction

Cui Lixiang

Zhengzhou Business University, Henan, Gongyi, China
clx15085904838@163.com

Abstract: *As people's requirements for building quality are getting higher and higher, the use of building materials in civil engineering construction should also meet the modern environmental protection requirements. Therefore, it is proposed that the innovation and application of green building materials in civil engineering construction and analysis of green The characteristics of building materials, the innovative application of green building materials in engineering construction based on the characteristics, the use of green materials in building structures, the innovative application of exterior decoration, and the innovative application of interior decoration. Realize the application of green building materials in civil engineering construction.*

Keywords: *green materials; building materials; civil engineering; engineering construction; architectural innovation; construction application*

1. Introduction

Under the premise of stable economic growth, the pace of development of civil engineering is also constantly advancing. The civil engineering industry standards are becoming more and more stringent with the development of the construction industry. Relevant industry specifications are developing in the direction of standardization and perfection. In order to develop the civil engineering industry[1], traditional construction techniques need to be continuously upgraded, and equipment is constantly updated with the needs of the industry. The development of technology can promote With the improvement of the construction quality of the entire civil engineering industry, many problems of traditional buildings have also been solved, and the market competitiveness of civil engineering is getting higher and higher[2], but with the proposal of sustainable development, the environmental protection problems of the construction industry have become new The important issues that need to be solved, coupled with the increasing requirements of the people for the quality of construction. Government departments have also increased their supervision of the construction industry. Under the concept of ecology and construction, the focus of the project inspection of the relevant supervision department is no longer only the project quality, but also whether the construction process is environmentally friendly[3]. In traditional civil engineering, many building materials are non-degradable materials. During the construction process, a large amount of waste materials are accumulated on the ground and become solid waste. Incineration destroys polluted air, and long-term stacking of polluted land. How to deal with these waste materials has always been a headache. There is still a phenomenon of waste of construction materials in construction projects. The consumption of materials in the construction industry itself has caused a shortage of resources. Therefore, the use of green building materials in the construction industry is an inevitable development trend. Green building materials are used in civil engineering construction. The innovation and application of this is a necessary means to alleviate the deterioration of the ecological environment.

2. Characteristics of green building materials

The production of green building materials requires environmental protection treatment and processing. The traditional building materials are transformed into building materials without harmful gas generation and low pollution. The biggest problem with traditional building materials is the problem of waste accumulation. Solid waste affects the beauty of the city and takes up space. New green building materials can be reused. The waste scraps can be reassembled and applied through simple processing, which solves traditional materials. The problem. Even if it is a material that cannot

ISSN 2706-655X Vol.4, Issue 2: 24-26, DOI: 10.25236/IJFET.2022.040204

be used multiple times[4], because of the degradability of the material, there is no need to worry about occupying space for a long time. The piled up construction waste will not pollute the land and water sources, and will not produce harmful gases that endanger human health. The consumption of green building materials is also very small, which can play a role in saving resources. The production and use of green materials have made a certain contribution to the development of the civil engineering industry. Therefore, it is recommended to use green materials as much as possible for civil construction projects of any scale. There are many types of green building materials. The most common one is green building materials made of gypsum materials. Compared with cement, gypsum materials are lighter in texture. They can replace cement materials in the production of some accessories, and gypsum materials can be recycled[5]. In the construction of civil engineering, the cost of raw materials can be effectively reduced, and the toxic gas generated during the use of gypsum is very small, and the processing of the materials only needs to be calcined without complicated processing procedures. In recent years, some construction sites have also used foam materials as materials for building thermal insulation layers. The foam glass is also a new type of green environmental protection material. Foam glass is an insulating, fire-resistant, lightweight material extracted from discarded glass products.

3. Innovative application of green building materials in engineering construction

3.1. Use green materials in building structures

A good building structure is a prerequisite to reflect the superiority of the building. When designing the building structure, the functionality of the building must be ensured. Green building materials not only have ecological and environmental protection characteristics, but can also enhance the stability of the building. The structure of a building is often constructed of steel bars, because the steel bars are sufficiently stable and not easily deformed. In the modern construction process, light steel is used instead of traditional steel. The stability effect of light steel is the same as that of traditional steel. And the texture is lighter. Due to the particularity of its material, it can also have the effect of sound insulation. The use of this steel for construction of building structures consumes less than traditional materials. Lightweight steel is more beautiful than traditional steel and is easier to transport. A large number of applications in construction can reduce the cost of structure construction. It is a material that is safe and reliable in quality. In traditional building structure construction, concrete is used to match steel bars. In the use of green materials, gypsum mortar is used to match light steel bars, which plays the same role as concrete. , But it is more environmentally friendly than cement. The consumption of cement by gypsum mortar is very low, and the corresponding cement dust produced is also very small. It has a certain protective effect on the surrounding environment of the construction site[6]. In the process of making the bricks used in the building structure, part of the fly ash can be added. The fly ash is the waste generated by the combustion of coal. When added to the production of building materials, it can not only realize the secondary use of cinder[7], it can also increase the thermal insulation effect of the building, and the light-weight green building materials do not affect the stability of the building, which meets the requirements of building quality.

3.2. Innovative application of green building materials in exterior decoration

In addition to the functions of heat preservation and sound insulation mentioned above, the building structure also needs to be fire-resistant and water-resistant to ensure the safety of life and property of residents. Therefore, the exterior decoration of the building is also more important. The quality of the exterior decoration directly determines the living experience of residents after they move in. The development of the construction industry has also brought about the improvement of people’s requirements for living conditions. The rational use of green materials increases the comfort of the house. Some of the self-characteristics of green building materials have the function of fire and water resistance. They are applied to the exterior decoration of buildings. For the icing on the cake, light green building materials can make the appearance of the building neat and beautiful. It is also more in line with the high aesthetic requirements of modern people. The application of green thermal insulation materials improves the comfort of people's life in winter and reduces the harmful gas caused by the building's thermal insulation. The use of green materials can play a role in energy saving and environmental protection, and green building materials can also enhance the high temperature resistance of buildings, and can protect the furnishings in the house to a certain extent when disasters such as fires occur.

ISSN 2706-655X Vol.4, Issue 2: 24-26, DOI: 10.25236/IJFET.2022.040204

3.3. Innovative application of green building materials in interior decoration

Indoor decoration materials, such as the gas released by waterproof coatings, are harmful to humans, and most indoor decoration materials are also harmful to human health. It also emits an uncomfortable pungent smell. In recent years, green decoration materials have been gradually used to replace traditional harmful materials. The quality of decoration materials is closely related to the health of residents, so it should not be ignored. Paying attention to interior materials is to respect the people-oriented economic development strategy. The quality of modern construction requires us to choose green, healthy and pollution-free materials before decorating, inspect the materials before decorating, and replace traditional wall paint with diatom mud. The use of green building decoration materials reduces the content of formaldehyde in the air after decoration. Contribute to the creation of a comfortable home environment.

4. Conclusions

The content described in this article fully illustrates that the use of green materials has brought a new development route to the construction industry. It alleviates the scarcity of traditional building materials and other problems. The use of green materials in construction projects can increase the utilization rate of materials. Green materials also have certain benefits for ecological and environmental protection. Buildings produced less harmful gases and protect the health of residents. The price of green materials is also very low, and the construction cost is reduced under the premise of ensuring the construction quality. However, the development of green materials in a more complete direction requires more in-depth research to improve the seismic resistance and warmth retention of materials and contribute to the improvement of the quality of civil engineering.

References

[1] Xue Kuo. Discussion on the application of green building materials in civil engineering construction[J]. Ju She, 2021(30): 51-52.
[2] Meng Zeyu. Application analysis of green building materials in civil engineering construction[J]. Ju She, 2021(27): 25-26+36.
[3] Sun Yonghui. The application of green building materials in civil engineering construction[J]. Ju She, 2021(23): 31-32.
[4] Chen Zhiwei. Application analysis of green building materials in civil engineering construction[J]. Popular Standardization, 2021(15): 11-13.
[5] Sun Juanning. Discussion on the application of green building materials in civil engineering construction[J]. Real Estate World, 2021(12): 76-78.
[6] Yang Haiyan. Exploring the application of green building materials in civil engineering construction [J]. Science and Technology Vision, 2021(17): 129-130.
[7] Wu Haofeng. Application of green building materials in civil engineering construction[J]. Housing and Real Estate, 2021(15): 135-136.