Green Interior Design: Practical Application and Market Prospect Analysis of New Environmental Protection Materials

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Abstract

With the continuous enhancement of global environmental protection awareness, people have increasingly strict requirements for the quality of their living environment. At the same time, the problem of indoor air quality has become increasingly prominent, becoming a key factor affecting people's health and quality of life. Modern people spend most of their time indoors, and harmful substances in indoor air, such as volatile organic compounds (VOCs) like formaldehyde and benzene, as well as microorganisms such as bacteria and viruses, constantly threaten people's respiratory health, which may cause coughs, allergies, asthma and even more serious diseases. Under such circumstances, the application of new environmental protection materials in interior design has quickly become a research hotspot in the industry. The research results show that new environmental protection materials can not only significantly improve the quality of the indoor environment, but also meet personalized needs and promote the sustainable development of the green building materials industry.

Keywords

Green interior design, new environmental protection materials, practical application, market prospect, sustainable development.

1. Introduction

Against the dual background of the increasing global environmental problems and the significant improvement of people's health awareness, the architectural decoration industry is undergoing a profound transformation, and green interior design has gradually become a crucial development direction of the industry. At present, global environmental problems such as global warming, air pollution and water pollution are becoming more and more severe. These environmental problems not only affect the balance of the earth's ecosystem, but also directly or indirectly threaten human survival and health. At the same time, with the improvement of living standards, people's attention to their own health has reached an unprecedented height, and they have more stringent requirements for the quality of living and working environments. Under such circumstances, green interior design emerged as the times require.[1] It emphasizes fully considering environmental protection and human health factors in the process of interior design, and strives to create an indoor space that is both beautiful, comfortable, environmentally friendly and healthy. This paper aims to analyze the practical application of new environmental protection materials in green interior design and explore their market prospects.

2. Scientific Principles and Characteristics of New Environmental Protection Materials

2.1. Types and Characteristics of New Environmental Protection Materials

There are many types of new environmental protection materials, including but not limited to bamboo fiber, glass fiber, graphene, diatom mud, etc. Each material has unique physical and chemical properties. Bamboo fiber, a natural environmental protection material, is like a green treasure given to us by nature. It has excellent moisture absorption and air permeability, allowing air to flow freely between fibers and keeping them dry and comfortable at all times; at the same time, it also has strong antibacterial and anti-mildew properties, which can effectively resist the growth of bacteria and mold, adding a layer of health protection to the indoor environment.[2] For this reason, it is widely used in floors, wall decorations and other fields, bringing a natural and fresh atmosphere to the home space. Moreover, bamboo has a short growth cycle, just like a fast-growing green guardian, with strong renewability and minimal impact on the environment, making it a high-quality material for sustainable development. Glass fiber, with its remarkable characteristics of high strength and light weight, has shined brightly in the construction field. It is like an invisible guardian in buildings, playing a crucial role in building heat insulation and sound insulation. It can effectively block the transmission of heat and sound, help reduce building energy consumption, improve indoor comfort, and allow people to enjoy peace and warmth indoors. Graphene, as a new type of nanomaterial, is like a rising star in the scientific and technological community, with both high conductivity and high strength. Its emergence has opened up new paths and provided unlimited possibilities for the development of smart home devices.

2.2. Principle of Diversified Functions

The reason why new environmental protection materials can show the significant characteristic of diversified functions lies in their unique and exquisite molecular structures and chemical compositions. These inherent characteristics, like magical codes, endow the materials with distinctive properties. Take diatom mud as an example, its unique internal porous structure is like a complex maze composed of countless tiny channels and chambers, which gives it extremely excellent adsorption performance.[3] Common indoor pollutants such as formaldehyde and benzene can hardly escape its "capture". Moreover, diatom mud does not just simply adsorb; it can also chemically react with these harmful substances through some special chemical components contained in itself, gradually decomposing and transforming them into harmless substances, thus creating a healthy and fresh air environment indoors. Looking at graphene again, it has amazing high conductivity, which makes it show extremely broad application prospects in the field of smart home. In smart home devices, efficient power transmission and precise signal control are crucial, and the high conductivity of graphene can just meet this demand. It can significantly improve the energy efficiency of devices, reduce energy loss during transmission, and make device operation more energy-saving and efficient.

3. Practical Application of New Environmental Protection Materials in Green Interior Design

3.1. Application in Wall Decoration

As a wall decoration material, diatom mud is widely used in green interior design due to its excellent ability to adsorb and decompose harmful substances. For example, in a high-end residential project, the designer boldly chose diatom mud as the wall decoration material out of consideration for the health of the residents and the concept of environmental protection. During the entire decoration process, diatom mud was evenly applied to the wall, forming a

beautiful and practical "air purification layer". After the completion of the project, the indoor air quality met the relevant national standards after testing by professional institutions.

3.2. Application in Floor Paving

As a "favorite" in the field of floor paving in green interior design, bamboo fiber flooring stands out among many floor materials and has been widely used due to its many excellent characteristics such as environmental protection, durability, moisture absorption and air permeability. From the perspective of environmental protection, the raw material of bamboo fiber flooring is natural bamboo. Bamboo has a short growth cycle and strong reproductive capacity. Compared with traditional wood, it exerts less pressure on the environment in terms of resource acquisition. Moreover, in the production process, mostly environmentally friendly processes are adopted, which reduces the use and emission of harmful chemical substances, truly realizing the whole-process green environmental protection from raw materials to finished products, which is in line with people's pursuit of green and sustainable life.

3.3. Application in Smart Home Devices

With the rapid development of science and technology and the increasing popularity of the concept of smart home, graphene, with its unique and excellent high conductivity, has shown extremely broad and remarkable application prospects in the field of smart home devices, just like a rising star, bringing new opportunities and changes to the development of smart home. For example, the application of graphene heating films in floor heating systems can achieve fast and uniform heating effects while reducing energy consumption. In addition, graphene can also be used to make smart sensors and touch panels, improving the intelligence level of home systems.

4. Technical Difficulties and Solutions

4.1. Material Selection and Cost Control

Against the background of the current era of pursuing green and sustainable life, the interior design field is actively seeking changes. New environmental protection materials are emerging like mushrooms after rain, providing a wealth of choices for creating healthy and environmentally friendly indoor spaces. However, among the various new environmental protection materials, accurately selecting the most suitable materials for interior design and effectively controlling costs has undoubtedly become a very challenging problem. To solve this problem, it is necessary to strengthen the cooperation between industry, university and research, promote the R&D and industrialization of new environmental protection materials, reduce production costs through technological innovation, and improve the cost performance of materials.

4.2. Technology Implementation and Construction Technology

Against the background of vigorously advocating green development and promoting the deep rootedness of environmental protection concepts, new environmental protection materials, with their unique performance advantages such as low pollution, recyclability and high energy efficiency, are increasingly widely used in many fields such as construction and decoration. However, these new environmental protection materials often have completely different physical and chemical properties from traditional materials, which may require supporting new construction technologies and processes in their application process. For example, some new thermal insulation materials may be lighter in texture but have special adhesion, and traditional construction methods may not be able to install them firmly; some wall materials with self-cleaning functions also have unique requirements in surface treatment and painting processes. If conventional construction methods are adopted, it is likely that the best

performance of the materials cannot be exerted, and even the materials may be damaged, affecting the project quality and environmental protection effect.

5. Market Prospect Analysis

5.1. Sustained Growth in Market Demand

In today's society, with the steady improvement of people's living standards and the significant enhancement of health awareness, consumers' requirements for living environments are no longer limited to basic living functions, but increasingly focus on health and environmental protection factors. They deeply realize that a healthy and environmentally friendly living environment has a crucial impact on their own and their families' physical and mental health, so they show a strong pursuit for materials that can create such an environment. This pursuit is not a temporary trend, but is increasingly strengthened with social development and the deepening of people's cognition. Against this background, the market demand for new environmental protection materials shows a sustained and rapid growth trend. With their significant advantages such as low pollution, renewability and energy saving, new environmental protection materials meet consumers' demand for healthy and environmentally friendly living environments and become a popular choice in the market.

5.2. Increased Policy Support

Against the background of the current severe challenges facing the global ecological environment and the deep rootedness of the concept of sustainable development, the country deeply recognizes the key role of the environmental protection industry in promoting the green transformation of the economy and realizing the win-win goal of ecological environmental protection and economic and social development. Therefore, the support for the environmental protection industry is constantly increasing, and it is promoted as an important part of the national strategy. For example, policy measures such as tax incentives and financial subsidies are provided to reduce the production costs of new environmental protection materials and improve their market competitiveness. Through the comprehensive effect of these policy measures, the production costs of new environmental protection materials have been effectively reduced, making them more advantageous in price, thus improving their market competitiveness and laying a solid foundation for the wide application of new environmental protection materials in the market.

5.3. Technological Innovation Drives Industrial Upgrading

In today's era, the progress of science and technology is changing with each passing day, becoming the core driving force for the development of various fields of society. At the same time, new materials and new technologies are emerging like mushrooms after rain. They integrate and promote each other, bringing unprecedented opportunities for the development of new environmental protection materials. Technological innovation will promote the upgrading and development of the green building materials industry, bringing more possibilities to the field of interior design. Technological innovation is a key factor driving the upgrading and development of the green building materials industry. By introducing advanced production technologies and management models, the green building materials industry will realize the automation, intelligence and greenization of the production process, improve production efficiency and product quality, and reduce production costs and energy consumption.

6. Conclusion and Prospects

The practical application of new environmental protection materials in green interior design has significant advantages and broad prospects. In-depth study of their scientific principles and technical characteristics, combined with analysis of practical cases, can provide strong support for their wide application in interior design. In the future, with the progress of science and technology and the improvement of environmental protection awareness, new environmental protection materials will play a more important role in interior design. Looking forward to the future, with the continuous progress of science and technology and the increasing improvement of people's environmental protection awareness, new environmental protection materials will play a more important role in interior design. On the one hand, technological innovation will bring new breakthroughs to the R&D and application of new environmental protection materials. For example, the application of cutting-edge technologies such as nanotechnology and biotechnology is expected to develop new environmental protection materials with more excellent performance and more diversified functions; the development of intelligent materials will also enable indoor spaces to automatically adjust according to environmental changes and residents' needs, improving the comfort and convenience of living. On the other hand, the improvement of people's environmental protection awareness will prompt consumers to be more inclined to choose green and environmentally friendly indoor decoration materials and design schemes, thus promoting the continuous expansion of the new environmental protection materials market. The government, enterprises and academic circles should strengthen cooperation to jointly promote the development of the new environmental protection materials industry and the popularization of green interior design, and contribute to the achievement of sustainable development goals.

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