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Green Environment Advertising to Reduce the Environmental Pollution

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Abstract

One of the problems that our communities face is the issue of environmental graphics in the cities, with respect to the pollution of environment is one of the concerns of the authorities. It is based on empirical-descriptive research. The graphic design of environmental billboards and bus stops are designed in a way that visually the design can create a sense of attraction for the audience. On the other hand, Titanium nanoparticles were used so that it can remove the colors and designs from the billboards after few days and to create new designs on them. Therefore, fabric base has been used to create the design, and the spectrophotometer was used to determine the amount of color evaporation. The results showed that the fabric used can eliminate the colors and designs created on them after some time; and prepare the base again for new advertisement with colors and designs. Therefore, the green environment advertisement was implemented.

Keywords: Environmental Graphic; Green Advertisement; Nano-titanium

1. Introduction

Graphic design is a type of language that has unspecified commands and is in the process of inventing extensive literal meaning. The unclear nature of its principles means that it can only be studied and not taught. The graphic work of art can be understood at times when one can percept its language (Hollies, 2002: 21). Graphic design means creating and organizing a series of visual factors to express a concept or message or information in a direction with specific purpose (Mesghali, 2011: 23). The graphic design has three types of function which are a) identity (introduction and recognition like poster design and company signage); b). Information designs

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such as chart diagrams and landmark signage; and c). Arena graffiti and advertising such as posters and city advertising (Hollies, 2002: 10).

With the expansion of urban life and the agglomeration of inner-city spaces, more problems occur. Living in big cities, especially metropolitan areas is in a way, that people spend most of their time in the outdoor space. Therefore, they are more influenced by the external environment. Hence, such type of spaces offers the best opportunity to the environmental graphic designers who can act based on the aesthetic principles of different issues. This opportunity is sometimes as a short pause, but can deeply affect the viewer (Ilukhani, 2009: 17). Environmental advertising has an effect on the customers and viewers while moving from place to place and conveys the everyday message advertisement in their places of living, work, shopping, recreation and travel (Sadr Mohammadi, 2008: 15). Historical research has shown that the consumers' attitude is influenced by advertisement. Accordingly, most of the companies have invested lot in the field of advertisement. Today, green advertising has a vital role in the field of shaping the attitudes and behavior within and outside the organization related to environmental issues (Leonidou 2014).

Green product: Green product are environmentally friendly product or products obtained from the environment, designing a product that requires less natural resources and has the least opposition with the environment and throughout the life cycle of the products (Mohtasham and Moghadamnia, 2016).

Environment means the combination of different knowledge in science, which includes a set of environmental factors in the framework biological and non-biological environment (physical, chemical) that affects the life of individual or species and gain influence from it. Today, this definition is related to humans and its activities. The environment can be summarized as a set of natural factors of the earth such as air, water, atmosphere, cliffs, plants, etc. (Ravanshadnia, 2013).

The nanostructured material referred as a material that at least one of its dimensions is nanometer scale (below 100 nanometers). This definition includes types of structures, such as man-made or nature. The study carried out here is related to new technologies or those developed through deeper understanding of the science of Nano. So, the subject of discussion is the structures of nanometer with the dimension of nanoscale. The textile industry dates back to the age of human civilization, and great clothes or relatively stable ones are their main core, but these products ranges from room curtains to recreational kite. Nanotechnology has huge potential for the production of fiber-reinforced materials with new qualities, cosmetics and sports materials. Nano-pipes may one day be as a woven nano-fiber with high strength and durability.

Titanium dioxide is also known as Titanium dioxide IV or Titanium with TiO2 chemical formula. When this is used as a pigment, it is named as white Titanium, white pigment 6, and CI77891. Its application ranges from cream to food colors. Photocatalyst is a substance that by absorbing light causes a chemical reaction in the environment. When the UV rays of the sunlight or the room light hits the surface covered with photocatalyst, the surrounding organic material decomposes through oxidation. In this way, dust and organic contaminants, the material with odor and bacteria are removed and brings about a good cleaning property (Fili, 2008).

2. Results and Discussion

In this paper, cotton fabrics are used with the following specifications given in Table 1, and useable chemical substances are used and shown in Table 2 respectively.

Table 1 Specifications of the fabrics used

Weave type	Manufacturer	Fabric type	Weight (gm/m2)	Warp density (1/cm)	Weft density (1/cm)
Tafteh	Yazd baf	100% cotton	100	21	13

Table 2 Specifications of useable chemical substance

Substance name	Manufacturing company name	Chemical formula
Titanium Nano-Dioxide	Degussa p-25	TiO2

To cover the cotton fabric with nano materials the crosslink method was implemented and test were conducted. To cross link the nano material with cotton fabric the following steps were carried out:

After washing the cotton fabric with distilled water it is dried to remove wax and waste materials. The Succinic acid with Sodium Hypophosphite was stirred for 20 minutes to obtain a suspension. The cloth was then placed in the suspension at 70 ° C for one hour and later removed. Then the cloth was kept in the oven at 85 ° C temperature for 3 minutes, and later the temperature was increased to 180 °C and the cloth was stirred for 2 minutes to be cooked. Then the material with 1.5% nano material was prepared and the cloth was kept in it for one hour and after that put in the oven to dry. Then the fabric containing the nano material and it was prepared for subsequent test to be carried out. The range of the color fading of the fabric was measured under ultraviolet light so that the fabrics were cut in 4*4cm size and stained with Reactive Orange (Fig 1-4). The staining method was done by initially synthesizing the color with 0.1% weight. Then two drops of color was dropped on the surface of the specimens and kept for 5 minutes for the stains to dry. It should be noted that the stains uniformly covers the surface of the fabric. The specimens were exposed to ultraviolet light (UV A type) with 400 watts for 30 hours. Subsequently, samples were prepared for the experiment of reflective spectrophotometry testing to obtain a degree of color evaporation (ΔE). The results of the reflective spectrophotometer show that the ΔE of the specimen are incomplete and is lower than the completed specimen. In other words, the range of ΔE of the fabric was the most containing 1.5% of titanium nano-dioxide. The ΔE of the completed and incomplete samples is 1.78 and 18.63, respectively. Therefore, according to the test results, the poster designing for the Diety factory began and the following designs were implemented on the fabric.

These advertisements are for the billboards that are quickly read and there is much time for its analyses. So the more simple, beautiful and not complicated are designed which are more powerful and successful. To convey message or product advertising the use of attractive images with brilliant colors can be effective and help to achieve our goal.

Fig 1 Advertisements for the billboards

3. Conclusion

This paper, was carried out for designing the graphics of the city by using fabrics that were completed by Titanium nanoparticles and urban furniture (billboards and bus stops advertisement) was designed for Diety food product. The fabric was prepared by nanoparticles with dimension less than 100 nm and then tested by ultraviolet rays. The spectrophotometer was used to determine the amount of color evaporation. The results showed that the use of this fabric for advertisement can eliminate the colors and designs created on them after some time, and again prepare the base to provide new advertisement with colors and designs. In this way, plastic materials that harm the environment are not used for environmental advertising, and only one base was used for the presentation of several designs.

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