



RESEARCHES REGARDING NEW APPROACHES OF PRODUCT DESIGN TO HELP REDUCE BACTERIA TRANSMISSION

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Abstract: *This paper is based on research regarding the identification and development of product concepts that improve the quality of consumer life, both aesthetically and attributing antimicrobial qualities to the concept created. The paper presents the results of some experiments on various types of leather parts, which later, through the designer's intervention, are processed and aesthetically improved by applications made with silver, silver wire or silver ion based paint. The resulted accessories are products that can be used independently or can be assembled on different objects, aiming at improving the aesthetic aspect of the product, while ensuring the quality of an antimicrobial product. The paper is based on studies of aseptic, technological and aesthetic properties of silver. The work, based on the experiments made, proposes a series of landmark variants, made of leather, which can be interchangeable. These proposed benchmarks can be easily assembled on various every day products. The sacred symbols, the mandala, the silver properties, the leather processed in different color shades and finishes represent challenges for product design in the development of product concepts capable of meeting the aesthetic requirements of the consumer, while identifying approaches to improve the quality of the user's life. Antimicrobial protection, style / fashion, accessories and objects that are used every day such as wallets, mobile phone, purse, bracelet, belt and more, are preoccupations in the aesthetic approach of a product.*

Key words: *Silver, leather, design, antibacterian, accesory*

1. INTRODUCTION

The paper is based on the speciality literature and the results of the experiments conducted within the Iasi design specialization. The documentation allowed the conclusion that silver can have both an aesthetic value material with superior processability properties [1] and it is material with antibacterial properties [2]. Experimental studies conducted on the aesthetic results that can be obtained by using leather in combination with wood [3] and silver in the creation of antibacterial packaging reveal the versatility of natural based materials to be used for aesthetic and antibacterial purposes. The antiseptic properties of silver are highlighted by studies and products on the market: silver ion filters, silver ion-based paints and varnishes, silver ion-based bandages [4]. A direction of study used by designers to achieve aesthetics of objects is the symbol [5], its power to transmit emotions and messages.



2. GENERAL INFORMATION

2.1 Conceptual elements

This paper combines through this experiment, the design process principles, the aesthetic and semantic value of the graphic sign, materials such as silver (in various forms of wire, foil, silver based paint [6]), or leather in different color variants finishes and personal use items. The purpose of the experiment is to create objects of personal use that, by touching the silver-based graphic element, contribute to reducing the potential for transmitting bacteria through the antibacterial effect of silver ions. The combination of silver and leather, both natural materials, allows the designer to create a vast range of product that can be assembled and interchangeable or assemblies to help improve the user's well-being. The product's success can be ensured by the designer's choice of the effect created by symbols with antistress effects: double spiral, mandala.

The paper incorporates the beneficial value of the properties of the materials used, their aesthetic proprieties as well as the role of the resulted accesories, their aesthetic and septic potential, on the finished products.

2.2 Experiment steps

The experimental route consists of choosing the materials used: wire / silver wire, silver foil and silver based paint, leather with different finishes **Fig.1**; of graphical symbols with semantic potential that could be applied **Fig.2**; tools used as well as the choice of accessories that can be applied to existing objects. The work technique used by the designer consisted of cutting the leather by selecting the pieces of material with the potential to be used (the leather semi-finished product is the result of the manufacturing of some other leather objects, technological debris) ornamentation by different methods: painting, glueing, engraving, silver-based graphics. The selection of the pieces of leather and the graphic symbol to be applied was aimed at achieving aesthetic effects with a beneficial emotional impact for the user. The role of the chosen mark, its shape, color, finish, aesthetic appearance and the combination of basic material (leather), applied material (silver) and graphic symbols have as main objective for the designer to ensure increased psychological comfort for the user. The experiments made with the proposed materials, tools and working techniques lead to the obtaining of ecoproducts. This is achieved by environmentally friendly materials in the sense that they are natural, recoverable, recyclable, reusable materials. The working technique used is simple, without energy consumption, and the variants obtained can be numerous **Fig.3**. Ecodesign, represents for designer an important approach to product design. Thus, the versatility of the product, it can be used independently and as an accessory by applying to various basic products, the interchangeability of these elements, the great variety of finishes, graphic symbols and colors represent opportunities followed by decisions the designer can take after the proposed experiments (and their submission to a market survey). The route of the experiment consists in choosing the strategy of the design process as well as the materials and working techniques.

The resulted accessories can extend the life of existing products, or extend the life of new products due to the innovation of product aesthetics, antimicrobial effects and interchangeability that can prolong the life cycle of the product (the user may interfere with the aesthetics of the object). It is important that these accessories can be made from technological debris (reuse, recovery). The working technique used is hand made, with simple tools and without energy consumption.



Fig.1: Tools and materials used for the experiments



Fig.2: Work steps: selecting the used materials, cutting the material, applying the graphic symbol to the silver ion-based paint, silver foil and wire / silver wire



Fig.3: Work steps for applying the silver foil to make the graphic symbol

3. EXPERIMENTAL RESEARCH OF SILVER IN LEATHER DESIGN

3.1. Experimental data and proposals for accessories

The accessories proposed by the designer in his studies aim both at exploring the multiple possibilities of the shapes obtained by cutting, brading, piercing the leather and combining the resulted produc with silver foil, silver wire, silver ions based paint. **Fig. 4.**



Fig.4: Techniques used by the designer to obtain aesthetic effects based on brading the leather with silver wire and the application of graphic symbols on the surface with the use of silver-based paint

3.2. Creating leather accessories and improving them with silver applications

Based on the leather semi-finished products obtained from the manufacturing process of other products, with the aim of reusing them and valorizing them, different ornamental objects can be created for the customization of daily-use products or accessories to improve existing items. In **Fig. 5**, there are highlighted the elements of aesthetic value that can be applied to different products. These ornaments are made of leather in different shapes, colors and different finishes from gloss to matte, and the subsequent application of graphic elements with silver foil or silver-based paint. The fitting of these elements can be achieved by gluing, staples or other joining processes that can ensure their interchangeability.



Fig.5: Ornamental elements applied with silver foil and silver ion based paint to create the graphic symbols

Creating complex objects that can be independent as a product (bracelet, pendant, ornament) are made on the basis of leather texture assessment, which may be glossy, matte, printed with a certain pattern, made as a simple band or by brading, or by the application of silver wire, **Fig.6**. The effect is aesthetic and beneficial to health. Ornaments created can be applied on different objects: purses, **Fig.7**; mobile phone covers, **Fig.8**; wallets, **Fig.9**, etc.



Fig.6: Techniques used to obtain accessories: bracelets, pendants, ornaments with different aesthetic effects: color, texture, joining, graphic symbols



Fig.7: Different ornamental elements with silver foil and silver ion based paint applied on purses



Fig.8: Different ornamental elements with silver foil and silver ion based paint applied on the mobile phone case



Fig.9: Different ornamental elements with silver foil, silver wire and silver ion based paint applied on wallets

5. CONCLUSIONS

The experiments in this paper demonstrate the aesthetic and functional proprieties of materials that can be reintegrated into the production of new products or the enrichment of existing objects, thus prolonging their use. The paper demonstrates that the leather debris resulted from making other products can be used successfully and that new objects can be created from these debris, their aesthetic enrichment and their return to the usage circuit, extending the life of some products, managing to reuse and to be responsible for recycling. The aesthetic combination with silver in different forms offers both, aesthetic value and antiseptic effect. The life cycle of a product can be prolonged by the designer's intervention in each stage.

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