



## DIVERSITY OF VEGETABLE-TANNED LEATHER FOR SUSTAINABLE DEVELOPMENT

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**Abstract:** *sustainability is a major concern to stakeholders in the leatherwork industry. The reason is that other materials are being used in the production of artifacts that were hitherto produced using vegetable-tanned leather. African mask is one artifact that people use as wall hangings for decorations which are usually produced using wood. If it is made from leather, the problem of people associating religious or spiritual activities with it can be reduced, and it can also be a source of income. As a result, it's critical to expand the range of applications for this vegetable-tanned leather in order to maintain both its production and the value chain activities that support the life of those working in the leather sector. Due to this, the study utilized a studio research methodology to investigate additional uses for vegetable-tanned leather in order to diversify the leather industry and ensure the long-term viability of this business. The study demonstrated the adaptability of vegetable-tanned leather and showed how it could be used to create molds from carved wood. When accurately described, the carved wooden object has attractive qualities and can be used for aesthetic purposes in home design. As a result, leatherwork will become more sustainable because it may be used in other contexts as opposed to the traditional artifacts like wallets, bags, sandals, and footrests, which are strongly linked to the usage of vegetable-tanned leather.*

**Key words:** *Mask, Studio, raw hides, skins, pelts, Indigenous.*

### 1. INTRODUCTION

For thousands of years, humans have used animal skin and hides as useful materials [1]. Animal skin was discovered by early man to be a resourceful clothing material necessary to protect himself against the adverse weather conditions, which sparked frantic efforts to develop better methods of conserving it [2].

Local tanners have created Ghanaian native vegetable-tanned leather as the main raw material for usage in a variety of leather products. Any economy could consider leatherwork to be a crucial activity. People may acquire basic necessities like footwear, containers, and furniture as well as a means of subsistence thanks to the leatherwork industry [3].

Leather tanning is one of the first human activities, and early man discovered that various treatments applied to the pelts (raw skins and hides) helped to stop bacterial activity on the by-product of their



food supply, which was the decomposition of the pelts [4]. Beyond clothing, leather's physical characteristics have influenced its use in a variety of beneficial ways, including the creation of more cozy, warmer bedding, shelter, seating, and other acceptable uses. These uses extend beyond clothing and include the treatment of animal hide and skin with plant extracts [5].

Leather is well known for having "desirable properties" that make it flexible, strong, and useful in a variety of applications. [6]. Tanning materials derived from plant sources are thought to be less harmful to the environment compared to those derived from chromium. However, they still possess favorable properties such as high tensile and tearing strength, flexibility, ability to stretch without breaking, air permeability, insulation, and resistance to bending fatigue. The process of vegetable tanning involves using tannin-rich tree barks and leaves to treat the hides and skins. The northern part of Ghana is noted for processing leather using this tanning process. The study there used the vegetable tanned leather from the northern part of Ghana. Vegetable-tanned leather can be used for a variety of purposes. Due to its qualities, including workability, splendor, stretch, adaptability as fabric or as hard as wood. Vegetable tanned leather is also strong enough to withstand pressure. Early understanding of leather's potential as a material that could be worked to create a variety of items to meet societal needs influenced the development of advanced technology, which allowed them to increase the diversified uses of leather. One such use is the leather African mask, which is typically made of wood [7]. Observations regarding Ghana's leather industry indicates that for more than a century of leatherwork practice in the nation has not resulted in any notable improvements to the profession relative to what is practiced elsewhere in the world [8].

According to the researchers, taking concrete steps to diversify the uses of locally sourced, vegetable-tanned leather in the creation of novel, contemporary items would enhance the sustainability of the leatherwork industry on both the domestic and global markets. Therefore, the potential of vegetable-tanned leather will be greatly increased if it is successfully used to create African masks, which up to now have not been produced using it as the primary method.

In order to meet current demands for national development, Adu-Agyem and Peligah [9] argued that it was necessary to investigate the materials and technologies already available locally in order to improve them. Expanding the use of locally produced, vegetable-tanned leather from Ghana for the manufacture of African masks will boost employment prospects in the industry and promote sustainability and environmental friendliness [10].

### **Vegetable tanned leather**

Vegetable-tanned leather is a type of leather that is processed without the use of chemicals. Instead, natural substances such as vegetable extracts or tree bark are used. This technique is considered to be eco-friendly and gives the leather a more natural and organic look. Additionally, this method results in strong and long-lasting leather that ages beautifully. Many luxury leather goods such as wallets, purses, belts, and shoes are made using vegetable-tanned leather [11].

Unlike other types of leather that may involve the uses chemicals in the tanning process, vegetable-tanned leather utilizes plant extracts rich in tannins throughout the leather tanning process. The finished product of vegetable-tanned leather showcases the natural fibers of the hide, resulting in a strong and organic appearance. Due to its durability and resistance to microbes, vegetable-tanned leather is frequently used for saddles, holsters, and footwear [12].

The use of vegetable tanning produces leather that has a unique appearance and exceptional durability, owing to the expertise and meticulous application of traditional methods that have evolved over time. With frequent use and exposure to the environment, vegetable-tanned leather is likely to develop a vintage look. This type of leather has a longer lifespan compared to chrome-tanned leather, as it undergoes a gentle process that takes several weeks to complete. Products made



from vegetable-tanned leather, such as shoes, become increasingly comfortable over time due to its breathable nature [13]

Once the tanning process is complete, leather that has been subjected to vegetable tanning can either be left in its natural state or colored using various chemicals. Although vegetable-tanned leather can be dyed, it's important to note that the color of this type of leather may change slightly over time. Factors such as exposure to sunlight or water may cause the color to fade or become more intense. However, as vegetable-tanned leather develops a unique and attractive antique look over time, this characteristic is often considered desirable [14]

## **2. AFRICAN MASK**

One of the most common kinds of art in Africa south of the Sahara is the mask. They are connected to almost all of the fundamental components of the local life forces wherever they emerge. In a nutshell, they frequently serve as social control agents, and as a result, they comply with both established practices and required general appearances. In some tribes, masks are used in place of figures to represent ancestors or to restrain their power. Masks exhibit a wide range of shapes, sizes, and overt expressiveness as art forms [15].

Anyone who has had even a brief exposure to this kind in museums or collections can quickly identify it. If it is frequently impossible to understand the significance and purpose of African figure sculpture simply by looking at its external shapes and how they interact, it is even more difficult to grasp these fundamentals in a mask [16].

Wooden masks are crafted by numerous African tribes. Using colored pigments made from charcoal, fruits, and trees, the person will carve the wood into a design before painting it. During rituals or cultural ceremonies, people don the masks. Africans view masks as having a spiritual and religious significance. They assume a new identity when participating in ceremonies while wearing masks. In the mask, they take on the form of the subject or creature [17].

Strict guidelines are followed when creating each African mask, as the craftsmen believe that the materials used, as well as the colors and shapes incorporated, possess a certain power that guides their artistry. These masks hold great significance in African culture, serving as ceremonial attire and conveying symbolic messages about events such as celebrations, wars, death, and emotions. Through music and dance, the masks are brought to life and used to recount the history of a particular tribe. While some masks are intended for public use, others are not. They are fashioned from a variety of materials including bone, ivory, metal, fiber, and primarily wood [18].

The masks may take on natural or abstract forms, often characterized by bold geometric shapes, and are representative of various qualities like nobility, beauty, courage, humor, and more. One thing that is common to all masks is: They are expressions of inner feelings and not copies of nature [19]. The researchers are of the view that in modern civilizations using vegetable-tanned leather will turn this into a decorative leather artifact and therefore will defuse the association of religious worship with it. This there will broaden the usage of vegetable-tanned leather and also aid in the sustainability of leatherwork and conservation of wood or forestry as there is an alternative for mask material.

### 3. MATERIALS AND METHOD

The study mainly employed the experimental research process and depended much on studio activities. These studio activities required the usage of materials such as vegetable-tanned leather, wooden carved mask, stretching boards, thumb tugs, wooden board's sea-sand, and white glue spatula burnisher. The purposive sampling process was used to select the materials for this research. The research process was carefully observed and meticulously recorded.

#### 3.1. Preliminary preparation for mask formation

The vegetable-tanned leather is given a second treatment to remove excess flesh and eliminate the offensive odor that emanates from it. This was done by sanding the flesh side and also immersing it in a lime solution after which it was stretched on a board to dry.

#### 3.2. Experiment: molding leather on a carved wooden mask

The mold carved from wood was selected from a stock of masks. This was then laid on a board. The vegetable-tanned leather was soaked in a plastic basin for four hours to soften it for the process. Simple leather work tools were employed for the process. This includes thumb tugs, mallets, spatula, brush and burnisher. The leather was spread over the mold and cut to size. It was then positioned on the mould and aligned for pre-picking of the projected relief details. After pre-picking the leather was covered with polythene and left on the mould overnight to set on the mould. With the hand and spatulas, the minor details were carefully picked, and the leather surface was burnished for refined projection of the sunk and lower relief details. As the moisture content reduced appreciably to a bone-dry state, the leather surface was smoothed and the tension was released. The leather was exposed to dry on the mould to permanently assume the shape of the mould. Finally, the leather was removed from the wooden mould to obtain the first leather mask. Finishing of the leather mask was carried out by trimming the rim and a solution prepared from sea sand and wood glue was used to coat the interior circumference of the leather mask to reinforce it. Support was prepared with a straw board and a frame design and constructed and fixed on the support. The work was mounted on the support and the edge was thonged with whip thonging technique.



Fig. 1. Mounted Mask.



Fig. 2. Finished leather mask



Fig. 3. Carved wooden mould



Fig 4. Finished leather mould

#### 4. RESULTS AND DISCUSSIONS

The vegetable-tanned leather is processed and conditioned to achieve moulding processes. The properties of vegetable-tanned leather such as softness, suppleness, and mouldability were achieved after the soaking process. The soaking process during the experiment restored the suppleness of the leather after the preliminary treatment of the leather. The researchers release that vegetable-tanned leather can be moulded on the wooden mask to achieve the desired shape as the mould. The researcher discovered a single mould can be used to produce several copies of the mask, therefore, reducing the usage of wood and using leather for unconventional products, therefore, promoting the sustainability of leatherwork.

#### 5. CONCLUSION

The experimentation of using vegetable-tanned leather has proven that it can be conditioned and molded into the mask and other carved works with all the aesthetic features of the carved mould being clear and visible. Also, the experimentation has shown that the soaking of vegetable-tanned leather has an impact in it pick out the shapes and features.

The study outcome indicates the versatility of leather as a material for the production of masks and carved wood artifacts which is an unconventional material used in that regard. This, therefore, will improve the sustainability of the usage of vegetable-tanned leather and the leatherwork industry in Ghana.

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