



ALISAM PRODUCTS DEVELOPMENT & DESIGN

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INTRODUCTION

Alisam is a registered mini tannery based in Kisumu, majorly specialized in exotic leather such as fish leather, rabbit, chicken among others.

WHAT IS LEATHER TANNING

- The reaction of collagen fibres in the hide/skin with tannins or other agents
- A general term for the numerous processing steps involved in converting animal hides/skins into finished leather.

NON CONVENTIONAL TANNING TECHNIQUES

- Mostly technologies with low environmental impacts therefore more respectful of the environment and therefore, precisely ecological
- At times refers to as Sustainable Green Tanning Technologies (SGTT)
- Uses tannins (a class of polyphenol astringent chemicals), which occur naturally in the bark and leaves of many plants.
- Eco friendly process which results in release of less pollutants to the environment.
- Amount of tannins can be determined by various methods: -
 - High pressure liquid chromatography (HPLC)
 - Mass spectrophotometer
 - Circular dichroism among others

STAGES IN GREEN TANNING TECHNOLOGIES

- It is a two stage tanning which includes penetration and fixing
 - Penetration: - involves diffusion of tannins into the skin
 - Fixing: - makes the penetrated tannins bind with collagen forming stable material

Factors that affects penetration and fixing of tannins

- PH – is the most important factor
 - the reduction of PH in tanning liquor increases the potential of collagen fibre to swell and increasing the tendency of tannins to bind with collagen.
- Temperature – increase in temperature results in high diffusion of tannins and gives high degree of tannage.
- Acid and salt content in tanning liquor – increases the physical condition of leather.

Types of Tannins

- ❖ Tannins are water soluble phenolic compounds capable of converting skins/hides into leather.
- ❖ Based on their structural properties, they are grouped into two types: -
 - (a) Hydrolysable Tannins
 - found only in dicotyledonous plants such as: - cassava sumach, myrabolans or chestnuts
 - (b) Condensed tannins
 - most common and found in almost all families of plants including: banana, mimosa or quebracho and cassava.

Organic tanning used on exotic leather at Alisam mini tannery

- Various organic tanning materials are used based in tannin concentration and also availability in plants at every steps i.e.
- Plants commonly used for tannins are;
 - Cassava – contains hydrocyanic acid – tannin content – 27%
 - Banana extracts – contains phenolic acids - tannin content – 10.9%.

- Tanning at Alisam follows normal process but with vegetal compounds and natural tanning agents, removing a lot of this strain and negative impact.
 - ❖ Preservation – the skin is treated with ash solution which renders it temporarily imputrescible
 - ❖ Soaking – water for purpose of washing or rehydration.
 - ❖ Bating – Papain is introduced to remove further proteins and to assist with softening of the pelt.
 - ❖ Degreasing – natural fats/oils are stripped or as much as possible from the skin
 - ❖ Frizing – physical removal of the fat layer inside the skin. Also similar to slicking
 - ❖ Pickling – strong natural acids are used to lower the PH value to the acidic region. Also helps with the penetration of certain tanning agents.
 - ❖ Depickling – skins are treated with natural alkaline materials to raise the PH out of the acidic region. It assists with penetration of certain agents.
 - ❖ Tanning – plant based tannins are applied to produce a strong, flexible leather which is able to resist decay and spoilage.

With banana and cassava extractive tanning agent, the tanning process could produce leather sheets with: -

- 1.17mm of thickness
- 4.7mm of softness
- 12.02 kg/cm of tear strength
- 239.58kg/cm² of tensile strength
- 174.12% of elongation

ENVIRONMENTAL BENEFITS OF ORGANIC TANNING

- Eco-friendliness – As the name suggests, organic leather is much friendlier to the environment than regular leather.
- The final products is safe for humans, animals and the environment.
- Durability – organic-leather is usually more durable and easier to care than regular leather
- In terms of sustainability, organic leather is the clear winner
- Organic-leather does not develop patina. Patina patrina is the soft, shiny layer that forms on other leather over time.
- Organic-leather is more resistant to staining.
- Organic-leather is usually way more affordable. Its cheaper to produce.

THANK YOU