REPUBLIC OF KENYA

KENYA INDUSTRIAL RESEARCH AND DEVELOPMENT INSTITUTE

WET WHITE LEATHER AS ECO-FRIENDLY OPTION FOR THE LEATHER INDUSTRY

BY

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1st WORKSHOP ON ECO-TANNING PROCESSES IN KENYA AND THE EAST AFRICAN REGION.

NAIROBI

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INTRODUCTION: ABOUT KIRDI

- Kenya Industrial Research and Development (KIRDI) is the National Industrial Research, Technology and Innovation Institution; established in 1979 under the STI Act, Cap 250, Laws of Kenya (currently KIRDI Act 2022).

- Mandated to undertake Research and Development in Industrial and Allied Technologies:
  - Mechanical & Chemical engineering, Building materials, Food, Textile and Leather Technologies; Energy and Environmental sustainability.

KIRDI SUPPORT TO THE LEATHER SECTOR

- ❖Research and Development
- ❖Transfer of leather technologies
- ❖Technology incubation and access to common manufacturing facilities
- ❖Training and Capacity Building
- ❖Curriculum Development
- ❖Quality Control and Testing Services
- ❖Fabrication of tanning drums

CURRENT RESEARCH FOCUS AREAS

- Production of value added products from tannery and leather waste, e.g.
  - biogas, fertilizer/vermicompost, protein based nano fillers.
- Efficient resource utilization in the leather industry.
- Enzyme based unhairing system.
- High performance waterproof upholstery and garment leather.
- Production of value added exotic leathers.

CHROME TANNING

- Accounts for 90% world leather
- High hydrothermal stability (Ts 100 ºC – 110 ºC)
- Faster and versatile
- Stable in acidic/alkaline conditions

Chrome tanning powder

Wet blue leather

CHROME TANNING

- Poses risk to the environment, human & aquatic life.
- Toxic/hazardous solid waste
- Non biodegradable
- High cost of effluent treatment
- Consumer pressure and strict regulatory requirements calls for continuous improvements.

Effluent discharge

Chrome shavings waste

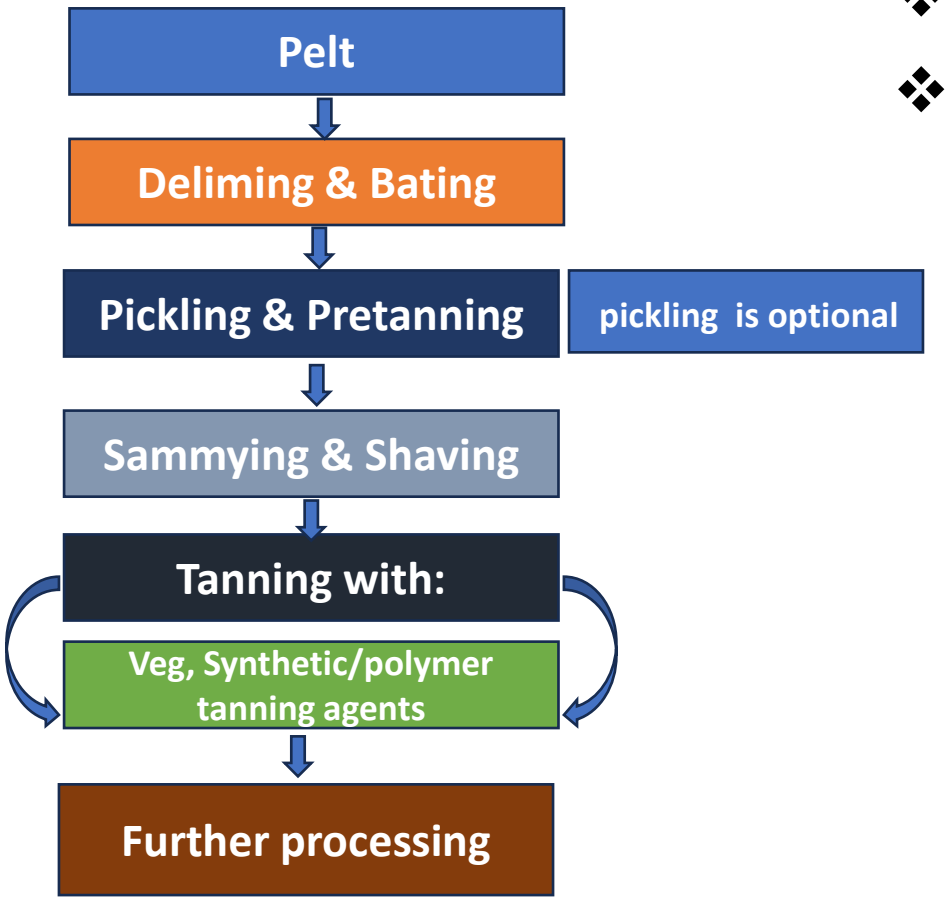
WET WHITE TANNAGE

- Technically refers to chrome-free tannage
- White in colour
- Considered eco-friendly tanning
- Driven by demand in chrome-free automotive leather industry.
- Tanning based on/or combination of the following:
  - Aluminium, Titanium, Zirconium salts
  - Phosphonium salt (THPS)
  - Syntans
  - Aldehydes (glutaraldehyde derivatives),
  - Oxazolidines
  - Polyacrylates
  - Silica gel (silicon dioxide)

Wet white leather

WET WHITE PROCESS FLOW

- **Wet white process**



❖Typical pH range 3.5 – 5.0 (except Zir: < 2.0).

❖Hydrothermal stability: Ts 75 ºC – 85 ºC

WET BLUE/WET WHITE CRUST

Wet blue crust leather

Wet white crust leather

WET WHITE: ENVIRONMENTAL BENEFITS

- Reduction of chromium effluent discharge to the environment.
- Non hazardous/toxic leather shavings/trimmings/splits
- Reduction in solid waste.
- Reduced COD load in the effluent.
- Reduced chloride in effluent discharge where pickling is omitted.

CONSUMER INDUSTRY

- Automotive industry (main)
- Upholstery furniture industry
- Garment/clothing industry
- Footwear industry (shoe uppers)

THANK YOU

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