



Lizard-look leathers from chicken-paw skins

Hafiz Rub Nawaz and Uzma Nadeem

Leather Research Centre, PCSIR, Karachi, Pakistan

Millions of laying chickens come to the end of their life each year. Most of these are sold for use in food products, and in particular the paws (lower leg and feet) when free of the skin are used for soap preparation.

These paw skins are usually discarded as waste, and thus constitute an environmental problem. Hence an project was set up to see if it was possible to add value to this waste by creating a new and novel leather.

Bulk collection of paw skins was made over a four month period from the Karachi area, and after fleshing these were preserved using three methods:

- Soaking in brine solution for 6 hours, then lightly salting
- Air drying without salt or preservatives
- Freezing at -20°C to -25°C.

After one month it was found that the frozen skins were in good condition, but the brined and air dried skins were too hard and difficult to rehydrate. This may, in part, be due to the very hard structure of the epidermis.

Analysis of the raw skins shows a high natural fat content, being on average 19%, hence there is a need for some form of degreasing process. This was taken into account in a series of trials to find the most appropriate method of processing after the following treatment:

Process	Chemicals	Control
Wash	200% water at 30°C	
Liming	300% water at 30°C	Run 5 min
	3% Sodium sulfide	Lay 30 min
	3% Lime	24 hours
Wash	200% water 35°C	10 mins
Deliming	2% Ammonium sulfate	30 min
		Colourless to pp
Bate	2% Bate powder	60 min
Wash	200% Water 30°C	x 3 at 10 min

The following four permutations were then employed:

1. Non-degreased - vegetable tannage - acrylic resin/veg retannage
2. Paraffin degreased - chrome tannage - syntan/veg retannage
3. Paraffin degreased - chrome tannage - syntan/acrylic retannage (A)
4. Paraffin degreased - chrome tannage - paraffin degrease - syntan/acrylic retannage (B)

The paraffin degreasing pre-tanning was performed using 80% float, 5% paraffin and 1% degreasing agent for 30 minutes at 30°C.



Image shows a lizard-look bag and purse made from chicken-paw leathers.

Post-tanning, the temperature was 60°C. The pickle and chrome, tannages were basic using 6% chrome, and the vegetable tannage employed 6% mimosa. The retanning, dyeing and fatliquoring were also basic, using moderate levels of retanning agents.

After nail drying, the non-degreased vegetable tanned leathers were very firm, glazable and suited for tags and other hard leather items. The chrome tanned leathers with the single degreasing produced leathers were classified as soft, but the double degreasing procedure produced very soft leathers. All of the chrome tanned leathers showed a shrinkage temperature above 100°C, and all leathers performed well regarding tear strength, tensile strength and elongation at break.



Dyed chicken-paw leathers being nail dried.

The area of each paw is small averaging between 20-32 cm², so the easiest outlets are fancy goods such as tags and small watchstraps. However, as the tensile strength is good and the leathers are stitchable, where labour costs are low it is economic to join sections together thus create a piece of substantial area.^(Legend)

These leathers have a lizard-like appearance, and outlets include:

- Tags for keys, shirts, trousers and swing tags
- Belts and watch straps
- Purses, money pouches and wallets,
- Mobile phone covers, photo frames and pen covers.

These leathers can also be used to trim or enhance other leather products, such as sandals, shoes, shirts, jackets and brief cases.

Legend

It is common practice where labour costs are low to stitch small trimmings together to form large sheets. These are often multi-coloured and utilised for leather bags, certain clothing and similar items.