

**Making Leather:
AN OVERVIEW OF MANUFACTURE
Part 10 of 10**

Annex

Content

**Making leather: THE TECHNOLOGY OF MANUFACTURE
Making leather: FINISHING TECHNOLOGY TO SPECIFICATION**

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**Panel 1
Panel 2**

Making Leather: THE TECHNOLOGY OF MANUFACTURE

Author: Richard Daniels

“Overview” is a tool for technicians. It follows the most common methods of converting cattle hides into footwear leathers, then expands into different leather types, including small skin manufacture.

It makes it clear that different raw materials suit different purposes. It provides broad leather making principles, and gives insight into refinements that are required.

However, for making leather, a better understanding of the role of force is needed, and the way that chemical processes are designed and controlled.

This is the objective of “Technology”: it builds upon “Overview” for an improved perception of leather making, its development, and its management. “Technology” is for the Leather Technologist.

Technologists are people who have a good understanding of sciences. However, they apply their knowledge to manufacture instead of taking an academic path. In leather manufacture, these understandings include chemistry, physics and materials science. Other essential areas are sustainability, and the environment. These cannot be separated from responsible manufacture.

Central to “Technology” are the three leather making elements:

- i] Hides and skins, and the properties that prevail throughout all procedures.**
- ii] Force, and its application throughout manufacture.**
- iii] Chemical processes and their management.**

It involves:

- i] How these elements interlink.**
- ii] Their manipulation to advantage in commercial leather manufacture.**
- iii] Sustainable manufacture: more efficient processing, minimised water and energy use, recycling of residual chemicals, and viewing waste as new raw materials.**

Making Leather: FINISHING TECHNOLOGY TO SPECIFICATION

Author: Paul Evans

The intent of “Finishing” is to provide the technology for leather to meet customer requirements. It needs to provide the technologist with knowledge and the ability to meet both aesthetics and performance to specification. This requires a clear-cut perception, since customers want:

- A blend of surface appearance and uniformity. There should be no skin to skin variation, for both manufacturing and end use.
- Individuality: to create appearance specific for a customer.
- Correct performance, for both the manufacture and the consumer.

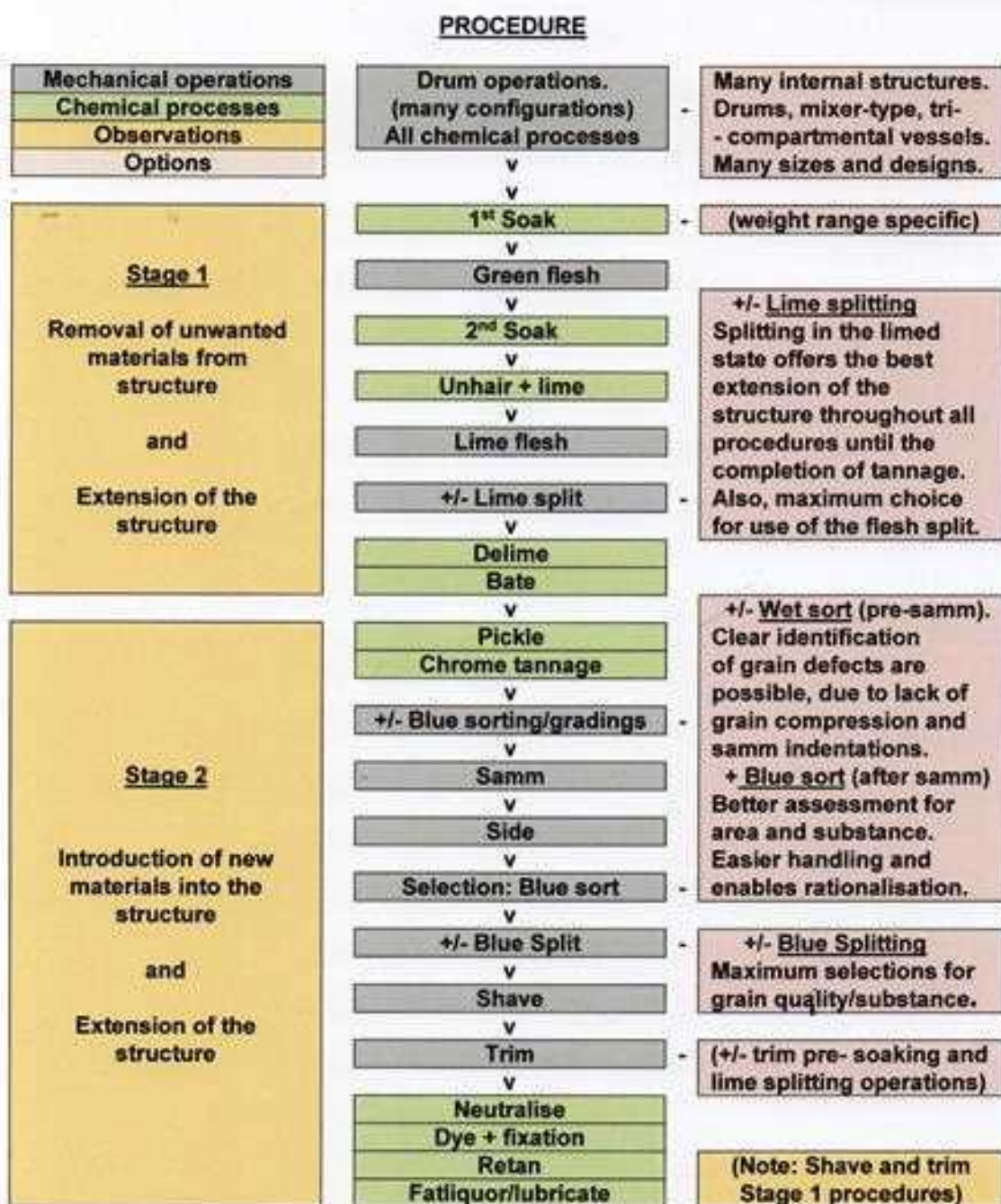
This is to be provided through delivering:

- A greater understanding of what leather finishing is able to do.
- The science needed to change subjective requirements into objective (*or measurable*) detail.
- An understanding of customer perceptions: for example, colour, filling, covering, adhesion, brightness, handle and texture.
- Some basic manufacturing techniques. This involves some detailing of chemistry within formulations, physics within applications, and requirements for mechanical operations.
- Knowledge to be able to balance performance, appearance and economics.
- Sustainable clean technology as is understood currently (health and safety, environmental).

Stages of manufacture and procedures
Bovine hides: chrome tannage: footwear leathers

Schematic 1(a)

"Overview" © R.P.Daniels



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Details set down for broad information only with variations in procedures according to hide classification, plant and equipment, and end requirements.

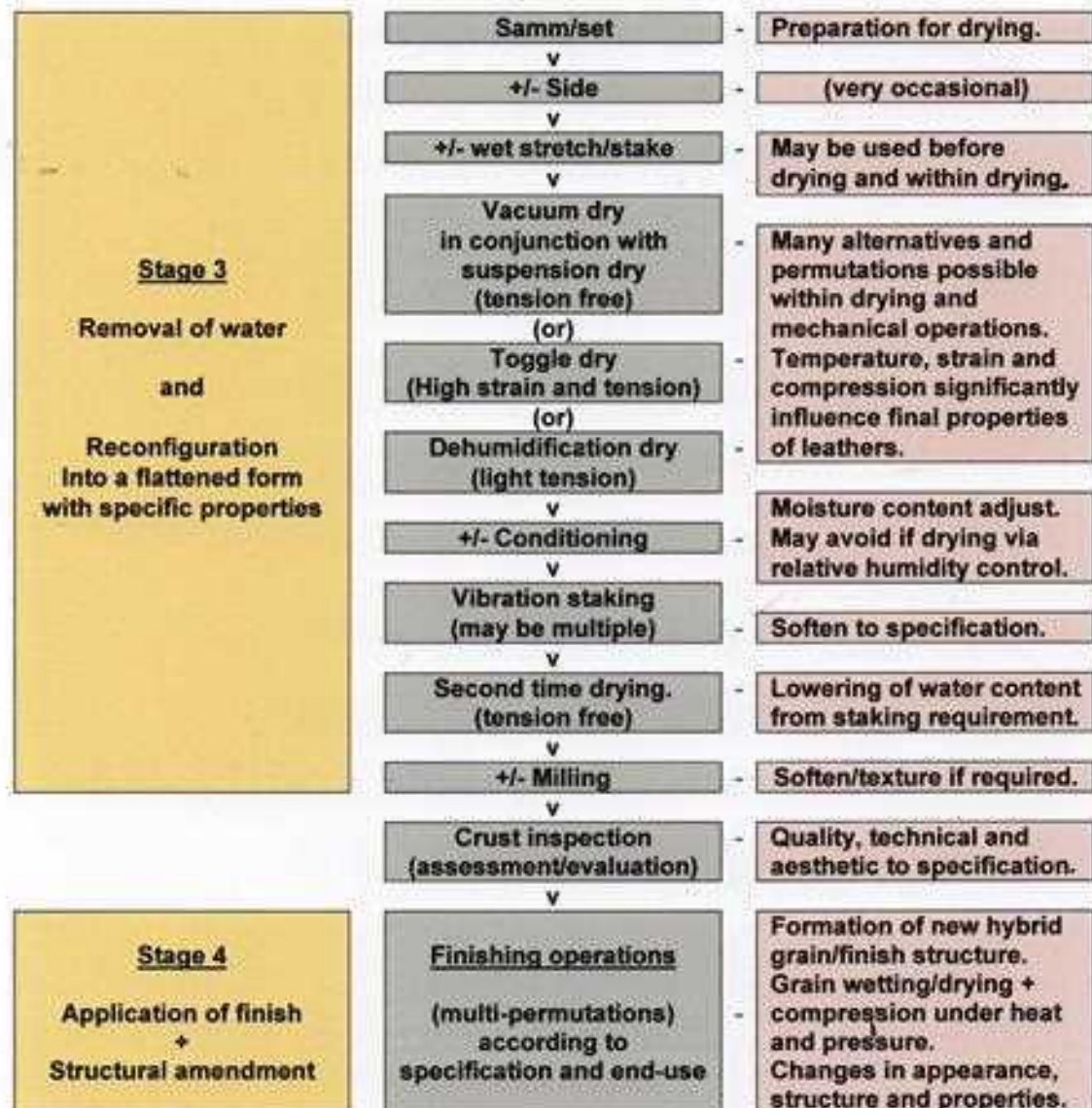
Stages of manufacture and procedures
Bovine hides: chrome tannage: footwear leathers

Schematic 1(b)

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"Overview" © R.P.Daniels

PROCEDURE



Details set down for broad information only with variations in procedures according to hide classifications, plant and equipment, and end requirements.

Panel 1

“Overview” © R.P.Daniels

Characteristics of different tannages

<u>Tannage</u>	<u>Properties of dried leathers (tanned only)</u>	<u>Shrinkage temperature (saturated) and Charge</u>	<u>Dyeing, retanning and fatliquoring (anionic products)</u>	<u>Properties of final leathers and End uses</u>
Chrome	Blue-green colour. Hard and thin.	100C. Cationic	Good dye properties. High uptake of retanning agents and fatliquors.	Very versatile. Very soft to firm. Footwear, auto, furniture, bags, leather goods etc.
Glutaraldehyde	Light yellow brown colour. Soft to medium. Thin with poor retention of shape unless heavily supported by syntans/resins.	Approx 75C. Anionic	Poor dye properties. Poor uptake of retanning agents and fatliquors.	Very soft to firm. Good aging properties. Auto use – mouldings and seats if heavily retanned. Footwear, upholstery.
Other tannages (Many options)	White to pastel colours range. Moderately soft / firm.	75C – 85C. Anionic	Poor dye properties. Lower requirements for retanning agents and fatliquors.	Soft to firm. Many variations, with mainly glutaraldehyde – type properties.
Light vegetable	Cream to light brown colour. Moderately soft.	Approx. 85C. Anionic	Poor dye properties. Low requirement for retanning agents and fatliquors.	Soft to firm with good shape retention. Well filled leather suited for shoe linings and leather goods. Anti-bacterial properties and warm handle.
Heavy vegetable	Light to red-brown. Firm, with dense structure.	Approx. 85C. Anionic	Dyeing and retannage mainly not required.	Offers excellent shape retention. Suited for soles, harness, belts, moulding and carving.

Note:

- Information for general guidance only.

Panel 2		"Overview" © P. Evans	
Finish variations			
Structure	Category		
Full grain	Aniline	Semi-aniline	Pigmented
Corrected grain	Aniline	Semi-aniline	Pigmented