



Back to Basics: A Framework for Leather Manufacture

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The behaviour of pieces in machine operations as a function of temperature and moisture content

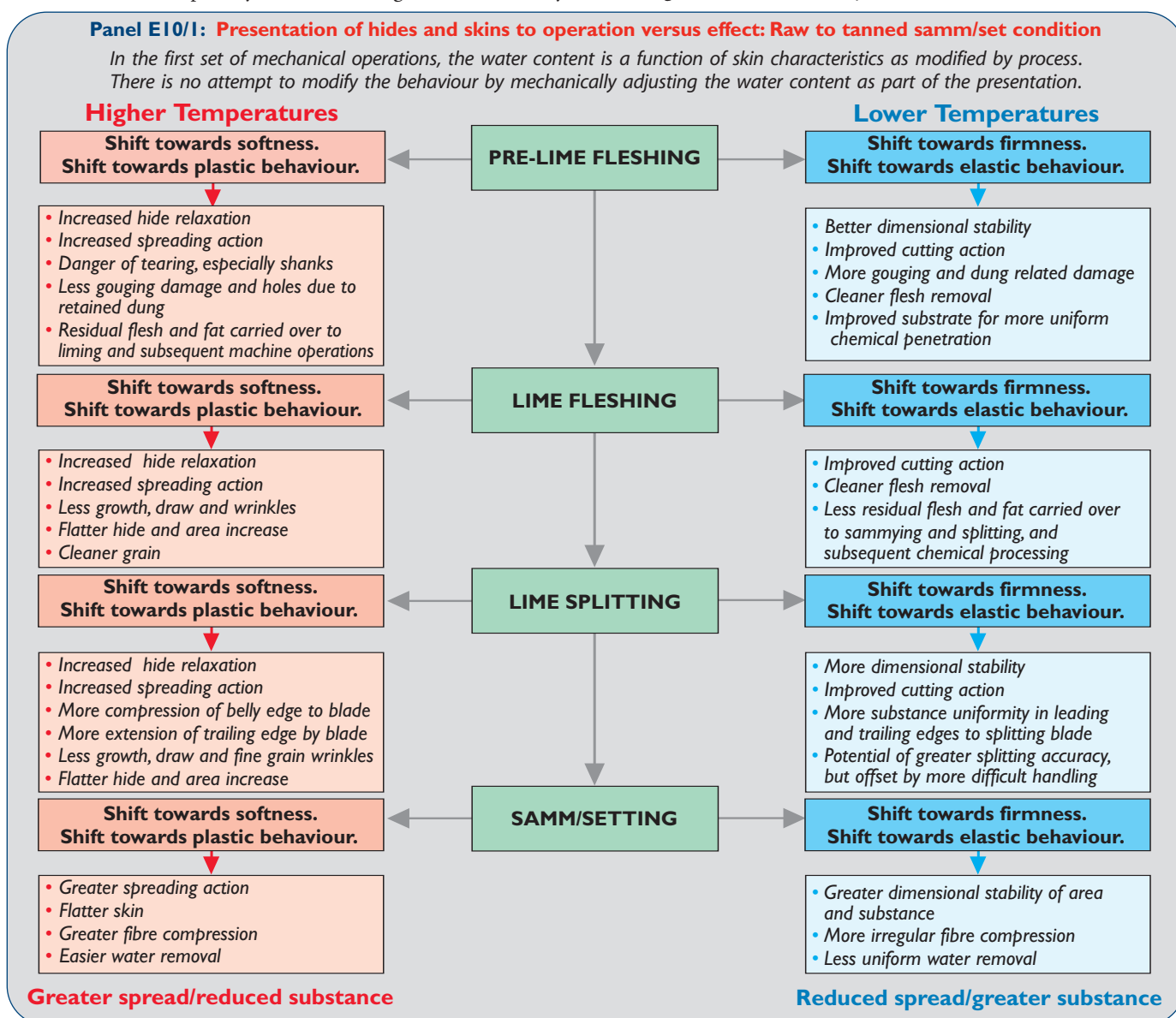
In the early mechanical operations much of the focus is on cutting, and for optimum effect the skins must be held flat against the cutting blade or knife. This requires a stretching action for good presentation, which is mainly provided within fleshing and shaving operations by spiral cutting blades on the rotating cylinder. In the splitting operations this is achieved by the helically-grooved gauge roller, and, in part, by the movement of the knife blade, as well as in presentation to the samm/setting operation by the setting cylinder.

Over and above the objective of the operation, stretch is involved at the point of contact between the hide and blade. This action can be considerable, and the physical properties of the skin at that time—especially the ease and degree of extendibility,

compression and recovery—strongly affect the outcome of the operation.

Adjustments are made, both to machine settings and presentation, to achieve the best balance of results. But success is a balance between the way force is applied by the machine and received by the skin. It is an equal partnership, but however sophisticated the machine or perfect the application, variations still occur.

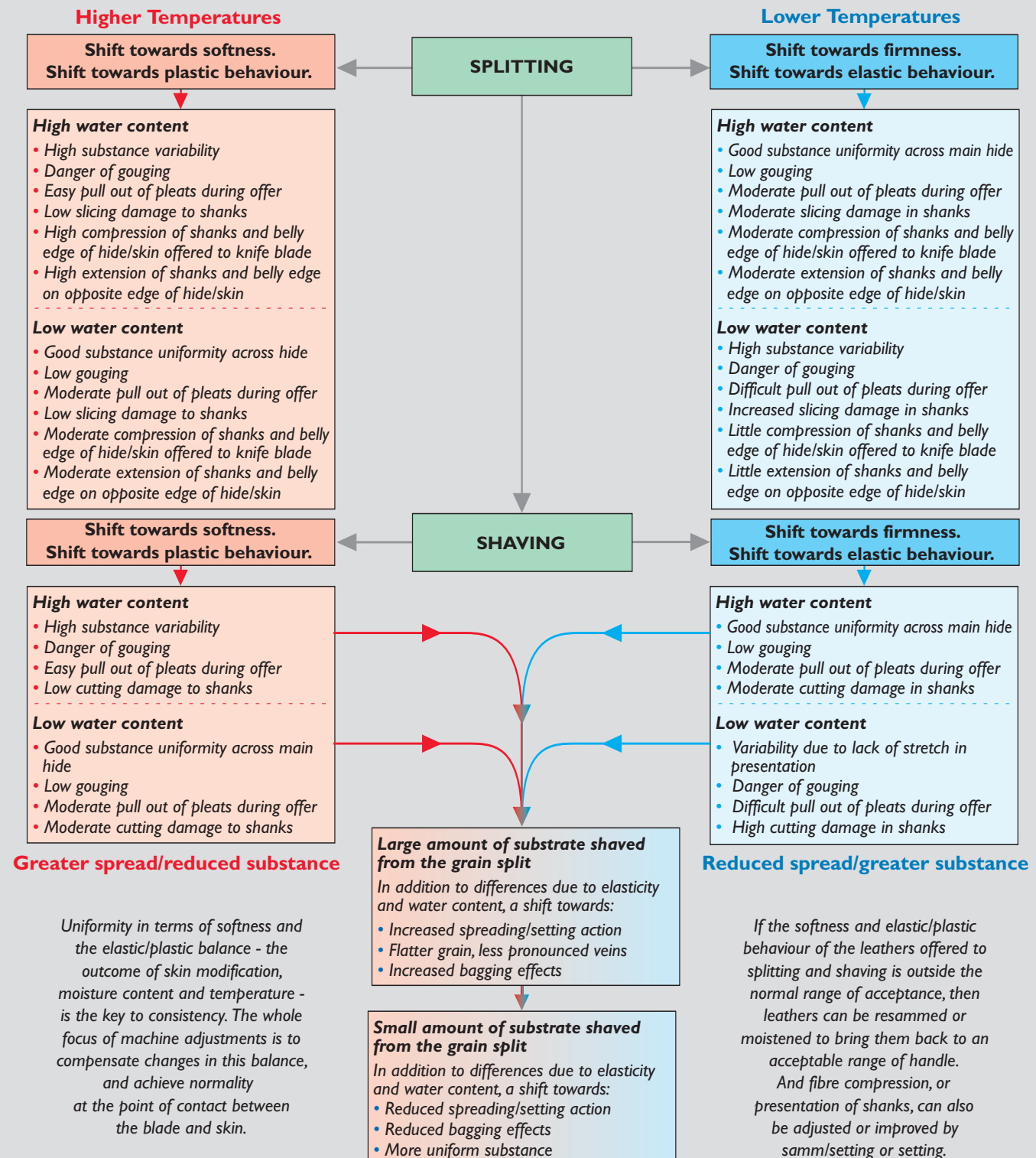
The following diagrams provide an insight into the behaviour of mechanically-stressed pieces dependent upon skin condition. Over and above inherent skin variations, as hides and skins progress within manufacture the permutations that generate change increase enormously.





Panel E10/2: Presentation of hides and skins to operation versus effect: Splitting and shaving

In the second set of mechanical operations, the moisture content has been adjusted by the samm/setting operation. It is important to appreciate that the objective of this operation is not simply to remove water, but to control both the softness, and balance between the elastic and plastic-like behaviour of the skin. This is the fundamental skin requirement at this stage to ensure uniformity of the final substance.



Shifts in softness/firmness and elastic/plastic behaviour mainly work together, even so, they represent two different properties of any material. In the context of these diagrams, this behaviour applies irrespective of raw material type, beamhouse processing or tannage.