"SYNTAN" AND "SYNTHOL" – A RESPONSE TO CURRENT ISSUES

NICOLETA TRANDAFIR[1], GHEORGHE PINTEALĂ[2], MARIAN MOCANU[2], DANIEL CARSSENTI[2]

[1] *West University of Timişoara, ntrandafir09@gmail.com*

[2] *"Politehnica" University, Timisoara, Romania, gheorghepinteala@yahoo.com, mmocan@gmail.com, danielcarssenti@yahoo.ro*

In this paperwork are presented some solutions needed for both, professionals and beginners in the "secrets" of retanning leather. Modern management of the leather business involves a large number of skills and guidelines, many of them involving skills related to the problem, solving rational and logical thinking. Also, the paper presents real solutions -syntans lineup, because leather and fur skins items have restrictions on the content of some chemicals considered toxic under the regulations stipulated in the various product standards or technical specifications. Importance of the retanning operations has increased recently because of liming and tanning operations, which are more streamlined. Today, everything is done through a standard process, and the specific properties of different types of leather are adjusted during retanning and fat liquoring. To obtain the desired character of the finished leather product combinations are used, each recipe so perfectly combined tend to find the optimum, to match the desired leather sample.

Keywords: syntan, synthol, retanning.

INTRODUCTION

Decision on Retanning

While defining decisions, Drucker suggests that they are judgments, then he suggests that decisions are choices between alternatives. We can observe in his analysis that decisions are considered processes (judging is a process), or they are considered the results of the processes (the chosen alternative).

Decisions on retanning are several criteria used for decision categorization:

- Considering the organizational area which decisions affect (IPPC Bureau, 2013), decisions can be identified which concern people (human resources); money (budgeting); buying and selling (marketing); how to do things (operations); or how to do things in the future (strategy and planning);
- Considering their reiterative character, decisions on retanning can be categirized: routine decisions (decisions that need to be made on a recurring basis); non-routine decisions (unique, random, non-recurring decision situations);
- Considering the period of time these decisions affect, there are: operational decisions are concerned with the day-to-day running of the business; strategic decisions are those concerned with organizational policy and direction over a longer time period.

Decision Making in Models Retanning Process

The rational model is the most used model for decisions on Retanning making.

Several models have been developed in order to solve rational problems. Risk problem solving and uncertainty problem solving are a part of this paradigm.

Another model identified is normative model. In this view decision making is constrained by managers' limited ability to process information ("bounded rationality") and their use of shortcuts and rules of thumb based on prior experience with problems that seem similar to the current situation. Given these constraints, in real life managers don't actually optimize as much as they satisfy that is, they choose a solution that is just good enough to solve the problem and get on with it. It's a satisfactory solution, not necessarily the best or optimal solution (if there even is such a thing).

The third identified model is the bureaucratic model (Aydin *et al.*, 2012). In the bureaucratic model, decision on retanning makers interpret rules to formulate decision. These rules form part of an organizational master plan. While not suitable for highly dynamic environments, the bureaucratic model of decision on retanning making can be successfully applied in organization where the decision environment is mostly routine or predictable.

Judgment decision making, the fourth used model, deals with known processes and logically structured decision steps,judgment decision making deals with intuition and instinct.This is a characteristic of naturalistic decision making.

Decison Making Complexity

From the contextual model, it can be seen that a number of tangible and intangible factors affect a decision outcome and the decision making in retanning process. The key element of this model is the explicit acknowledgement of the effects of context over both the decision making process and the information that is used to produce decision outcomes. Informational factors consist of data that is processed in such a way that it increases the knowledge of the person using it. Contextual factors provide the lens or environment in which information is examined. While not an explicit consideration in a decision, a contextual factor shapes both the way the decision is made and the way in which the information is used (figure 1).

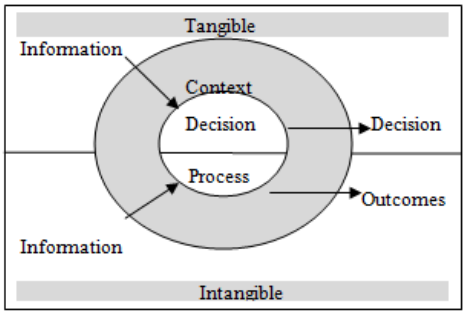

Figure 1. Contextual decision making model (Gully and Stainer, 2006)

Decision making becomes more than a rational model-together with its several technological tools. The truth is that when a person makes a decision, it is influenced by his personal background-we would call this category the personal factors, but also by organizational factors. The modern management of leather business involves many skills and orientations, many of them assuming abilities linked on rational resolving of problems and logical thinking! Situational management is a trial in underlining the

importance of the management's flexibility in function of a biggest number of working situations possible, but it's not telling managers how to act to be more efficient. It seems that there is a serial of managerial actions applicable to any situation (listening, showing importance to all people, use of all resources), since other actions are specific to some unique situations.

This means that the leather industry managers should have general managerial knowledge, but to understand also some specific aspects of the organization and of the working situation that these aspects are placed.

EXPERIMENTAL

Making Samples Retanning

In this study were randomly selected skins sheep, goats and cattle of different sources, from Romania, France, Egypt, Tunisia, USA, Nigeria, India and Brazil. Importance of the retanning has increased in recent years because of liming and tanning operations were more streamlined. Today, everything is done through a standard process (Albu *et al.*, 2011), and the specific properties of different types are adjusted during retanning and anointing. Putting together all this information to achieve the objectives samples grafted on the principle of sustainable production can design different manufacturing recipes (COTANCE *et al.*, 2012). To obtain the desired character of the finished leather product combinations are used, each recipe so perfectly combined tend to find each target to achieve the desired skin sample. Before starting we need to know exactly what you want to achieve through the process and what optical aspects and technical specifications must be respected. The samples were carried out both in the in-pilot station tanneries which have signed one accept the collaboration.

We took into account the achievement of three objectives:

I. Making skins to produce footwear children items, leather and upholstery (furniture and car) by obtaining support type wet-white;

II. Simplifying retanning with vegetable leather by sustainable techniques;

III. Develop range of manufacturing automotive leather upholstery and furniture with low formaldehyde free.

To obtain the wet white support for baby shoe upper, leather goods and upholstery (car and furniture), we have started from the hypothesis that the wet white tanned leathers (Chrome free) will give much different articles comparing with the ones obtained from wet blue (Chrome tanning).

Most of the wet white tanned articles are treated with gluter-aldehyde after pickling. The shrinkage temperature are lower than the ones from the wet blue, this being the reason why in the wet white tanning, syntans are also used. Used of syntans are also positively influencing the setting out and shaving operations after the tanning. The leathers will not be "burned" during the shaving operation.

Wet white tanned leather that will be stocked for a longer time should be treated with syntans based on gluter-aldehyde or modified formaldehyde, due to the fact that long time stockade changes the structure and the leather properties. This is not happening with the wet blue stock, where only an acidification (due to the sulfuric acid released) can be observed. The collagen fibers should be lubricated in such a way that the leather main properties: milling, elasticity, softness, be granted. Fat liquoring is also influencing other leather properties such as: elongation, tear strength or fogging value.

Different chemical products have been used, whose main characteristics are shown in the tables 1 and 2.

Table 1. The oils used and their essential characteristics

No.	Product name	Chemical base	Electrical load	Active substance %	Ph (10% sol)	Stability in formic acid	Stability in NaCl	Stability in Crom	Stability in pickle	Stability In mimosa
1.	Synthol CP 996	Vegetable sulphited oil and synthetic oil based on paraffins	anionic	50	6,5	>2h	>2h	>2h	>2h	>2h
2.	Synthol FL 327	Polymers emulsions and synthetics oils		47	5,5	+/- 30 min	1 h	1 h	0 min	>2h
3.	Synthol PD 990	Synthetic oils, esters phosphates and succinic acid		48	6,5	1 h	1 h	1 h	< 15 min	0 min
4.	Synthol WP	Synthetic phosphated oils and esters of succinic acid		45	7,0	min	0 min	0 min	0 min	1 h
5.	Sulphirol CF 177	Fish Oil particular		65	7,0	>2h	>2h	>2h	>2h	>2h
6.	Synthol CS 606	Polymers natural phosphates and synthetics		37	7,0	>30 min	0	>30 min	0 min	1 h

Table 2. The syntans used and their essential characteristics

No.	Product name	Chemical nature	Active substance	Aspect	pH (10% sol)
1.	Syntan SF 156	Phenol sulfonic acid condensed	> 95%	white	6,0-7,0
2.	Syntan SG	Phenol sulfonic acid condensed	> 93%	powder	4,5-5,5

For realizing the second objective of simplifying of retanning of vegetable tanned leathers by sustainable techniques, it started with hypothesis that syntans, resins and the polyacrylates or agents additional or alternative used instead of chrome and vegetable tannins during the processes. There is a big variety of syntans, more or less bio-degradable. The ones with low free phenol, having a minor impact on the environment are commercial availed.

To realize the third objective, of enlarging the range of articles with low free formaldehyde, we started with the premise that formaldehyde is on RSL list.

RESULTS AND CONCLUSIONS

- Mostly the wet blue support used for waterproofing articles cannot be controlled by its producer. We can somehow influence the quantities of salts and soaking agents contained, by repeated washings performed before starting the re-

tanning process, in order to eliminate the excess of these substances that have a negative influence on the waterproofing effect. When the tanning quality is doubtful a re-chroming should be applied prior the re-tanning process.

- Washings remain an important factor along the entire re-tanning process, the one after the neutralizing being crucial in obtaining good waterproofing effects. To easy the penetration of the waterproofing agents into the leather, a small quantity from these products it's added together with a polymer, before the addition of the acrylic resin. We should note that big pH variations should be avoided all along the re-tanning process. This can be done by using low temperature bath (35-40°C) and adding the formic acid necessary for the fixation, slowly, in a long time. This method avoids the formation of some deposits in re-tanning agents in the external layers of the leather, which would negatively influence the waterproofing properties of the crust.
- Top dyeing is preferable to be done in a new bath, between the re-tanning and fat liquoring processes, method which allows obtaining vivid and intense colors and without affecting the waterproofing properties.
- Washings between the different re-tanning processes have a positive effect on waterproofing. Dyestuffs should not be added into the fat liquoring bath. The technological time of the fat liquoring should be well monitored, the waterproofing leather properties not being in direct proportion with the duration of the fat liquoring process. For the fixation of the waterproofing agents used, 2% of Chrome sulfate is enough. Bigger quantities will not be absorbed and will not increase the waterproofing but will be present into the exhausted bath.
- The re-tanning agents used are non-astringent and have a relaxing action on the leather fibers, which allows a good dyestuff penetration and repartition, as well as of the other re-tanning agents or fat liquors.
- The crust leather obtained is very soft and has a "spongy" feel. After milling a very fine and homogeneous grain is obtained on the entire leather area.
- Re-chroming and neutralizing can be performed into the same bath. This is bringing a better Chrome fixation. Acidity should be neutralized but a too strong neutralizing can bring looseness problems. That's why the neutralizing process can be done in two steps, in order to avoid a sudden pH increase. It has been used sodium formate and a neutralizing agent for the first 30 minutes, adjusting than the pH by sodium bicarbonate, up to a value of 5.8-6.0, stopping the drum after and leaving the leathers into the neutralizing bath. Use of ammonium bicarbonate is not recommended because of the bad "fogging" values of it!
- The fat liquor mix used in the shown recipes slows down the wet- white leather drying and facilitates their wetting back.
- The 2% phenolic syntans used together with the sodium bicarbonate in the neutralizing bath confers a good filling to the sheep and goatskins. For the softness they can be used into the re-tanning bath, having their own tanning properties and bringing a medium softness to the crust, desired article.
- Another question asked was: "should we perform a pre-fat liquoring and to re-tan after it or we should to re-tan first after the neutralizing and to perform a single fat liquoring, after the re-tanning? These two options have being performed and compared. In the first way, pre-fat liquoring brought a drier crust and showing more looseness. In the second way, we have re-tan, fat liquored and again re-tan and fat liquor, obtaining better results. We have concluded that re-tanning and fat liquoring should be applied in

separate steps. The chemical products are better absorbed and the obtained crust has a smaller shrinkage tendency.

- The resulting crust is fuller and with a more pleasant, waxy touch.
- The grain of the crust is natural, smooth and uniform.
- Are obtained excellent soft leathers for garment and furniture upholstery.
- Excellent lubrication of the leather fibers that reduce the friction between the leather and the drum walls.
- No foam is forming in the drum and a better setting out effect is obtained.
- The chemical products used in the shown recipes are entirely exhausted.
- The leather flexibility and the fat liquors fixation into the leather are increased.
- The chemical products used disperse in an efficient way the natural fat of the leathers and promote the rapid penetration of the tannins.
- The chemical products used bring brilliant and intense dyeings.

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