

# ALIEN PROPERTY CUSTODIAN

## PROCESS OF SOAKING ALL KINDS OF DRIED AND SALTED HIDES AND SKINS

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This invention relates to a process of soaking all kinds of hides and skins in liquors, containing neutral-reacting phosphoric salts.

Hides, skins, and skins for fur are usually delivered to tanneries and fur dressers in dried or salted condition and, before being worked, must be brought in a condition similar to that of fresh hide, especially as far as the content of water is concerned. This is the purpose of the soaking process.

Soaking of dried hides and skins meets with certain difficulties, the dried collagen absorbing water but slowly. Long soaking periods, however, especially during the hot season, involve the risk of putrefaction caused by adhering dirt and leading to a loss of hide substance and a considerable reduction of the quality of the skins.

Since in many cases soaking with water alone does not satisfy, the addition of acids or alkalis has been proposed, which swell the hide and thus facilitate the absorption of water. Alkaline soaking has proved particularly effective, since by its fat-saponifying action it promotes wetting.

However, not only a suitable water content of the hide, but also its swelling condition is of great importance for the quality of the finished product. A suitably soaked hide should be in that special fallen condition by which it is characterized immediately after skinning. Acid or alkaline soaking, however, do not lead to the desired result and, moreover, their application includes certain risks consisting in the fact that acids and alkalis attack the hide, the result of which may be a loss of hide substance. For these reasons less aggressive chemicals have been searched for, which at a neutral reaction would allow to obtain the desired soaking effect. Thus, the application of wetting agents with neutral reaction, salts of aromatic sulphonc acids, ammonium rhodanate etc. for soaking purposes was arrived at. Finally, slightly alkaline solutions of enzymes have been introduced for soaking fur skins. The desired accelerating action of these compositions is, however, very limited.

Now, I have found that absorption of water can also be accelerated without swelling the hides, by soaking them in neutral or almost neutral-reacting liquors, the pH-range of which is between pH 5 and pH 8, preferably, however, between pH 6 and pH 7, these liquors being obtained by dissolving phosphoric salts, the solution of which in water is neutral or slightly acid. My soaking method is all the more surprising, since still at concentrations as low as 0,05 to 0,1% a marked effect can be observed, the intensity

of which will, of course, increase with higher concentrations. Thus, for instance, a dried hide in a 2%-solution of sodium hexametaphosphate within 2 days absorbed 266% of water, whereas in pure water the absorption was only 125%. The maximum of water absorption in the above mentioned solution of metaphosphate amounted to 406% and was reached within 8 days, whilst the maximum in pure water within the same period was only 131%. The special advantage of the described new process lies in the fact that it works in a practically neutral and absolutely inaggressive solution, the swelling effect of which is nevertheless quick and intense and at the same time never leads to abnormal swelling conditions of the hide. Although water is absorbed far quicker, numerous tests have shown that the working process according to the present invention does not at all affect the hide, the amount of dissolved hide substance being smaller than it is, even at sterile conditions, in pure water within the same period.

The soaking period having been essentially abbreviated by the new process, the addition of preserving agents to the treating liquors is as a rule unnecessary. On the other hand there is no objection to their being added, eventually in connection with wetting agents.

A further advantage of the process is the dirt-solving action of the phosphate-containing solution, the soaking process thus being at the same time a cleaning process, for example in the case of dirty sheep skins. In contradiction to other additions to the soaking water, the phosphates at pH 6 to 7 do not precipitate blood and other soluble proteins; therefore phosphates can also be added to the first soaking solution.

For the process according to the invention, phosphoric salts of any degree of hydration can be employed, as for example ortho-, pyro-, poly-, and metaphosphates, the latter ones showing an especially distinct effect. The phosphates may be alkali-, ammonium-, amine-salts or complex salts of the alkaline earths. If necessary, the pH-value of the phosphates must be adjusted by adequate additions.

The effect obtained by soaking with phosphates according to the invention is not so much a wetting effect than the result of a specific action upon the dried collagen. This is shown especially by comparing the soaking action of 0.5 to 1%-metaphosphate solutions with that of wetting agents recommended for soaking. The result of this comparison is, that within an equal period the material treated in a phosphate solution had

absorbed double the quantity of water of that in a solution containing a wetting agent, the maximum of water absorption in the case of phosphate treatment being obtained within a shorter period.

The addition of phosphates or pyrophosphates has previously been proposed, it is true, but by "phosphates" only the orthophosphates are understood which, however—as for example the trisodium phosphate usually employed for industrial purposes—react highly alkaline as well as the normal tetra sodium pyrophosphate. The soaking action of these phosphates within this pH-range is like that of other alkaline-reacting agents, such as soda, sodium sulphide etc., based on their swelling action, thus facilitating the absorption of water. It could not be concluded from this state of the art that the phosphates would accelerate the absorption of water also within practically neutral solutions where generally no swelling takes place, and that the soaking action of the phosphates in neutral solutions is even essentially better than in slightly acid or alkaline liquors.

*Example 1.*—1 kg of sodium hexametaphosphate, pH of which had before been adjusted to 6,2, is dissolved in 1 m<sup>3</sup> of water, in which solution abt. 300 to 400 kg of salted calf skins are treated. After a period of 24 hours the skins are well raised and clean. A feed and smooth leather is thus obtained.

*Example 2.*—Dried goat skins are soaked in a liquor, containing per liter 2 g of sodium polyphosphate of pH abt. 6 and 0,1 g of a preserving agent. Water absorption takes place essentially quicker than in pure water without attacking the hide substance.

*Example 3.*—Java dried kips are soaked in a solution of 500 g of sodium hexametaphosphate, 50 g of a wetting agent, and 50 g of a preserving agent per m<sup>3</sup> at pH abt. 6. Complete soaking is obtained within a relatively short period. The leather is of high tensil strength and has a smooth, elastic grain.

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