
**Leather — Raw skins — Guidelines for
preservation of goat and sheep skins**

*Cuir — Peaux brutes — Lignes directrices pour la préservation des
peaux de chèvre et de mouton*

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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This document was prepared by Technical Committee ISO/TC 120 *Leather*, Subcommittee SC 1, *Raw hides and skins, including pickled pelts*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This document provides guidelines for processes of preservation that lead to a higher quality of preserved goat and sheep skins. Such preserved goat and sheep skins are subsequently subjected to further treatments for manufacturing of leather and eventually for production of leather goods.

This document has indicated preservation procedures that should be followed to prevent either of the following situations:

- conditions occurring through the preservation treatments which affect the processability of skins;
- various defects that can form on goat and sheep skins due to inadequate preservation conditions and during the period of storage and delivery to the users.

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Leather — Raw skins — Guidelines for preservation of goat and sheep skins

1 Scope

This document provides guidelines for various preservation methods for raw goat and sheep skins. The preservation methods are needed to suppress microbiological activity and to maintain the quality of the skins during storage.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

4 Characteristics of salt and auxiliary substances used in preservation processes

4.1 Characteristics of salt

For preservation by salting, clean salt should be used. Halophilic bacteria get acclimatised to salt media and can grow even in the presence of high salt concentrations. During bacterial growth, they produce pink, red or violet pigments on salted skins, called red-heat. Sea or lake salt tends to be more susceptible to contamination risk and development of red-heat. Hence, using rock salt is advantageous as it is free from chemical impurities.

Salt used in preservation processes should preferably contain 98 % sodium chloride (NaCl) of total dry weight and should not contain clumped particles. The impurities should not exceed the following limits otherwise the salt may negatively affect the quality of the finished product:

- Total calcium (Ca) and magnesium (Mg) compounds in salt: 1 %.
- Total iron (Fe) compounds: 0,01 %.

Particle size of salt is also important to achieve effective preservation. If salt particles are very fine, salt tends to form pasty patches with uneven coverage. If salt particles are very coarse, they can immediately fall off the skin while handling. Particle size also affects speed of dissolution; therefore, to ensure an appropriate dissolution, particle size of salt should be 2 mm to 3 mm.

4.2 Quantity of salt

To ensure proper dehydration of raw skins, the quantity of salt should not be less than 30 % of the fresh weight.

4.3 Auxiliary chemicals and preservation mixtures

Improvement in preservation could be achieved by the use of additional substances along with common salt.

The addition of sodium carbonate (Na_2CO_3) to the salt mixture prevents the formation of iron stains on skins, which can form due to existing impurities in salt. If iron impurities exceed 0,01 % of the total mass, iron stains occur in limed pelt, resulting in inferior quality.

Restricted pesticides or other toxic substances, such as pentachlorophenol (PCP), should not be used in preservation mixtures.

5 Preservation methods of skins

5.1 General

When an animal is alive, the animal skin serves as an anatomical barrier between external physical, chemical and biological agents and the internal environment. After the death of the animal, the skin becomes susceptible to microbiological spoilage because of its natural structure and excess water content. Preservation is necessary to maintain the quality and commercial value of the skin.

Before the preservation process, skins are conditioned by carrying out certain basic operations such as cleaning, draining and trimming in order to ensure effective preservation. Skins are subsequently cured, which can take 4 h to 5 h depending on environmental conditions. There are several ways to preserve skins to inhibit micro-organic putrefaction and autolysis.

Microorganisms need humid conditions to survive. Hence, the most important step for preservation of skins is decreasing the water content of fresh skins, which will prohibit bacterial growth and activity.

5.2 Drying

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Drying is one of the oldest and simplest preservation forms, in which the water content is lowered to a certain level where microorganisms are inactive and unable to spoil skins. Although dry conditions are hostile for many microorganisms, some could stay dormant until the environment becomes favourable again.

In this method, dehydration of raw skins is carried out by natural airflow at ambient temperature in the shade. Extreme conditions and irregular foldings should be avoided. Direct sunlight and high temperatures can cause flash drying of outer layers but the inner layers still retain moisture. Hence, the drying is not homogeneous. Cross-sectional transfer of water can take place in such cases, thereby leading to decay during storage.

Dry cured skins should not contain the following defects or formations which negatively affect the quality:

- overdried and crusted areas and irregular foldings;
- discolorations and livid areas;
- small or large tears caused by autolysis;
- insect infestations and digested areas;
- wetted areas or skin masses caused by improper storage;
- partial gelatinisation due to application of high temperature while drying.

If skins have one or more of these defects, they might be degraded until castoff depending on the degree of existing defects.

5.3 Wet salting

Wet salting is the most common method of curing skins around the world. Wet salting is carried out by treating skins with common salt. After skinning, skins are salted at slaughterhouses to prevent decay. Wet salting removes 55 % of the water from the skin mass. Skins are kept for 3 d to 6 d in piles to drain excess water content.

The amount of salt used should not be less than 30 % of the total raw skin mass. Salt or salt mixture should be applied to both sides of skins and the salt particles should penetrate between the fibres on the skins. Properly salted skins should have a water content of lower than 48 % and the salt saturation should be at least 85 % in order that long-term preservation can be achieved under convenient conditions. In terms of quality, the water content of salted skins should be 40 % to 45 % and salt particulates should penetrate throughout the cross-section.

5.4 Brining

Brining is one of the most successful curing methods. Skins are submerged in brine solution of 22 Be' to 24 Be' for 12 h to 24 h. During the process salt penetrates throughout the cross-section of skins, thus ensuring long-term preservation with the minimum amount of dirt and organic deposits. After brining, skins are kept in piles to drain and left in that condition for 20 d to 30 d. Antiseptic additives can also be incorporated in the brine solution.

Brined skins should not contain the following damage, which negatively affects the quality:

- salt stains and hardening of fibrous structure;
 - salt crystallization inside the skin leading to coarsening;
 - salt stipples;
 - red and violet discolorations.
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5.5 Dry salting

Dry salting is an effective preservation process to provide additional hindrance to microbial activity. The flayed skin is salted by either or both of the wet-salting and brining methods and is then hung up to dry. This procedure reduces the weight and volume and thereby the cost of transport of skins. The moisture content of dry-salted skins is reduced to approximately 10 % to 14 %. Hence, they can be stored for longer periods than skins that have been treated only by wet salting or brining. Reduced weight along with homogeneously distributed humidity ensures easier transportation of the skins. However, special attempts should be made to rehydrate them at the early stages of leather processing.

5.6 Chilling

Chilling is an alternative method of preservation for short periods. It is carried out by blowing cool air on the skins to reduce their temperature to as low as 2 °C to 3 °C. Moist air should be used for chilling because overdried parts can occur in the flank portions of skins, leading to problems in quality and further processability of the skin. As the curing temperatures approaches freezing point, lack of moisture can lead to partial freezing of skin throughout the cross-section.

This method ensures transportation of the skins without any decay or quality loss.

Frozen skins should not contain the following damage, which negatively affects the quality:

- partially dried sides and folded flanks;
- cracks in fibre bundles due to freezing;
- decay due to prolonged storage at higher temperatures without any precautions.