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Leather — Raw Skins — Guidelines for Preservation of Goat and Sheep Skins

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Foreword

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Introduction

This guideline has been developed to define processes of preservation that lead to 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 guideline has indicated preservation procedures that need to be followed to prevent any of the following situations:

- conditions occurring through the preservation treatments which affect the processability of skins,
- various defects that may be formed on goat and sheep skins during 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 guideline defines 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 Specifications of salt and auxiliary substances used in preservation processes

2.1 Technical specifications of salt

For preservation by salting, clean salt should be used. Halophilic bacteria get acclimatised to salt media and can grow even in presence of high salt concentrations. During bacterial growth, they produce pink, red or violet pigments on salted skins which is 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 limits indicated below, otherwise the salt may negatively affect 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. On the contrary if salt particles are very coarse, they may 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 between 2 to 3 mm.

2.2 Quantity of salt

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

2.3 Auxiliary chemicals and preservation mixtures

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

2.3.1 Addition of sodium carbonate (Na_2CO_3) to the salt mixture prevents formation of iron stains on skins, which might form due to existing impurities in salt. If iron impurities exceeds 0.01 % in total mass, iron stains would occur in limed pelt and thereby cause inferior quality.

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

3 Preservation methods of skins

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 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 preservation process skins are conditioned by carrying out certain basic operations like cleaning, draining and trimming in order to ensure effective preservation. Subsequently, skins are cured, which may take 4-5 hours depending on environmental conditions. There are several ways to preserve skins to inhibit micro-organic putrefaction and autolysis.

Micro-organisms 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.

3.1 Drying

Drying is one of the earliest 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 may cause flash drying of outer layers but the inner layers still retain moisture. Hence, the drying is not homogeneous. Cross sectional transfer of water may take place in such cases thereby leading to decay during storage.

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

- Over dried 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 the defects indicated above, they might be degraded until castoff depending on the degree of existing defects.

3.2 Wet salting

Wet salting is the most common curing method of skins all over 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 reduces 55% of the total water out of skin mass. Skins are kept for 3 to 6 days 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 fibers 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 which long term preservation can be obtainable under convenient conditions. In terms of quality, water content of salted skins should be 40-45% and salt particulates should be penetrated throughout the cross section.

3.3 Brining

Brining is one of the most successful curing methods. Skins are submerged into brine solution of 22-24 Be' for 12- 24 hours. During the process salt penetrates throughout the cross section of skins and thus ensures long term preservation with minimum amount of dirt and organic deposits. After brining