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Raw sheep skins —

Part 1:
Descriptions of defects

Peaux brutes de moutons —

Partie 1: Descriptions des défauts

Reference number
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Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 4683-1 was prepared by Technical Committee ISO/TC 120, *Leather*, Subcommittee SC 1, *Raw hides and skins, including pickled pelts*.

ISO 4683 consists of the following parts, under the general title *Raw sheep skins:*

— *Part 1: Descriptions of defects*

— *Part 2: Designation and presentation*

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Raw sheep skins —

Part 1:
Descriptions of defects

1 Scope

This part of ISO 4683 describes the defects which may occur on raw sheep skins (see note 1). It is applicable to fresh and cured (air dried, wet salted or dry salted) sheep skins.

NOTE 1 Those defects which may appear only during or after tanning, without there being any indication of their presence on the raw skins, have also been listed in this part of ISO 4683.

2 Defects

The defects listed in this part of ISO 4683 are divided into the following three categories:

a) Ante-mortem defects,

b) Post-mortem defects, and

c) Preserving defects.

2.1 Ante-mortem defects

2.1.1 Abscesses; cysts

Either tearing or hardening of the dermis caused by the presence of raised lumps on wooled sheep skins.

2.1.2 Defects peculiar to wool-on skin

a) Fibre diameter and fibre growth irregularities that lead to fibre weakness and breakage; and

b) Wool/hair slips (tendency towards loss of wool/hair, as a result of illness).

2.1.3 Canary yellow wool

Canary yellow wool is wool with a bright yellow unscourable stain within the wool staple. It is caused by micro-organisms that grow in the fleece when it is damp and warm, e.g. in wet, humid summers. The condition can cause weakening of the wool fibres.

2.1.4 Dermatophilosis (lumpy wool)

The defect is visible as a crusty or scaby encrustation in the wool. It results from the exudate that arises from *Dermatophilus congolensis* (a bacterium) infection of the dermis. It is associated with follicular distortions which give rise to the grain defect known as white spot.

2.1.5 Earth stains

When laterite dust is settled on the epidermis, in large extensive patches, it gives rise to "ink stains" due to the presence of iron after the skins are vegetable tanned.

2.1.6 Ecchymosis

Spot on the flesh side of the skin, varying from dark red to brown, caused by sub-cutaneous bleeding, especially if the animal has been struck by a blunt object or if parts of the fleece have been roughly plucked before slaughter. This defect is commonly known as bruising.

2.1.7 Fire mark

Sheep skins deteriorate in quality due to fire-mark. This is a man made defect. Fire mark is generally inflicted in different parts of the body with a view to cure some ailments. In raw skin, the defect is readily seen on the flesh side and is also prominently visible on the grain finished leather.

2.1.8 Greasy skin

Skin in which the histological structure of the dermis is abnormally loose due to the penetration of grease. This state is revealed after tanning by an empty or a hollow skin, and can give rise to an alteration in the mass/surface ratio. Delamination may also occur in the greasy skins.

2.1.9 Heat sores

Small scabs, varying from light to dark yellow, visible at the base of the wool fibres and on the flesh side. They give rise to a defect in the grain, often called "mite sores".

2.1.10 Hyper-pigmentation

Black hair female sheep skins are found to be affected on the grain on both sides of the back-bone (particularly in the butt area) due to hyper-pigmentation. Hair loosening may be noted in the affected areas. Physical properties of the leather in the affected area are poor associated with grain erosion and sometimes resulting in perforation.

2.1.11 Marks on the fleece

Damage caused by paint, tar, wax crayon, aniline dyes, which devalues the wool, leading even to matting of the hair.

2.1.12 Moire

Long wrinkles in the direction of the spine, running parallel and symmetrical in relation to the spine. (They are a sign of a lack of density in the dermis and, depending on the finishing, often remain very clearly on the grain or flesh or on the wool).

2.1.13 Pin hole

When two or more wool follicles merge or kemp emerges from the follicles, it is known as pin holes in many countries. This is a genetic trait related to fine wool breed. This is invisible in raw sheep skins (also refer to 2.1.15.5 for pin holes of *Ectoparasite* origin).

2.1.14 Poor wool crimp definition

A wool staple is a natural grouping of wool fibres into discrete bundles. Crimp is the bold waves. folds or corrugations of wool fibres within the wool staple. Poor wool crimp definition is the loss of these corrugations and the straightening of the wool fibre to more resemble hair. This condition has been associated with age and nutritional deficiencies. Poor crimp definition can lead to increased felting of the wool during wet processing of wool-on sheepskins.

2.1.15 Problem arising from plant sources

2.1.15.1 Bushy or seedy skin

Skin with the dermis punctured by thorns or seeds which, when implanted, make a small hole or become embedded obliquely in the thickness of the skin and

which, in spite of the perforation, are difficult to remove during the process of transforming the skin into leather.

2.1.15.2 Burr

Prickles from certain plants and grasses may cause defect in sheep skins. These penetrated burr stick to the skin even after finishing into leather.

2.1.15.3 Thistle-laden skin

Skin with the fleece laden with thorny plant debris which mats together the fibres of wool.

2.1.16 Rib marks

Defects of genetic origin caused by already perceptible folds on the skins of certain lambs leading to persistant marks, formed in long parallel furrows, at right angles to the back-bone. Rib marks are of two types, Blind rib and Lap rib. While blind rib is visible on the skins only and can not be identified on wooled sheep skins, lap rib is more severe form of skin defect. Lap ribs can be seen in the raw wooled skins as patterns of wool growth. It is most obviously reflected in the merino stock.

2.1.17 Skins Infested with Ectoparasites

2.1.17.1 Bobble

This is considered to be a viral disease prevalent in sheep skins. In raw skin, the lesions are generally visible on the flesh side as round spots but after unhairing they become more prominent on the grain side. Bobble lesions have permanent stains on both chrome and vegetable tanned leathers and render them unsuitable for quality leathers.

2.1.17.2 Demodex

Skins on which it is possible to see, on the flesh side, nodules of varying size (several mm to more than 5 cm). The small nodules are not altered by beamhouse operations and show up on the tanned skin by a hardening of the tissue. On the other hand, if they measure more than 1 cm, they can form a pit by splitting the grain, or even a hole. This defect is caused by *Demodectice mange* (Follicular mange) mites. These mites may appear in:

i) nodular forms,
ii) squamous forms, and
iii) acute forms.

2.1.17.3 By lice

Because of the irritation caused by the biting or sucking type of lice, the animals scratch the affected parts of the body which leads to wounds and bruises. Lice species belonging to the genera *Linognathus* are found in sheep skins. Sheep skins infested with lice (*Linognathus ovinus, Order Anoplura*), are identified by visible transparency of the skins at the infected places.

2.1.17.4 By mites

Skins showing already advanced hardening of the tissue and a consequent thickening of the dermis, together with scabs of greater or lesser thickness, and often stripping of the wool, caused by mites and leading to alterations in the structure and grain.

2.1.17.5 Pin-hole

A defect of fine-wooled sheep skins consisting of prominent small holes penetrating the skins to a considerable depth but not through it. These holes are the results of skin disease called *Dermatitis micotica* due to a bacteria which develops in the epidermic layer (also refer to 2.1.12 for pin holes).

2.1.17.6 Pox marks

Hard circular lesion based defects leaving scar marks on the grain.

2.1.17.7 By Psoroptic mange

Psoroptes ovis is responsible for the disease 'Sheep-scab' in both woolly and hairy sheep skins. 'Sheep-scab' affects the quality of wool as well as the grain side of the skin. The lesions appear as small hard pustular nodes and are covered by long hair. After liming, the nodes are removed leaving a depression on the grain particularly on both sides of back-bone. In finished leather the defect appears on the grain as innumerable pin prick marks on both sides of the back-bone.

2.1.17.8 By Sarcoptic mange

Sarcoptic mange (*Sarcoptes scabiei*) mites burrow into the substance of the sheep skins causing galleries. Marked thickening and wrinkling of the skin takes place associated with the formation of scab as well as bald patches. Grain surface of the leather becomes rough showing cris-cross tunnels.

2.1.17.9 Cockle

A defect on sheep skins appearing as small, firm nodules in lines running at right angles to the back-bone to flanks, due to infestation by ked (*Meliphagus ovinus*) which causes modification of collagen.

2.1.17.10 Tick marks

Skins showing considerable hardening of the tissue caused by bites of parasites called ticks and subsequently leading, on tanned skins, to defects of structure and grain specific to this parasite. While ticks are visible on raw wooled sheep skins their effects are not.

Ticks affect skin quality to a considerable extent. Ticks responsible for tick damage though belong to various genera like Ixodus, *Haemophysalis, Dermacentor, Hyalomma, Boophilus* and *Rhipicephalus*, the most common livestock ticks responsible for damages in sheep skins belong to the general *Hyalomma* and *Boophilus*. They leave scar mark on the grain side of finished leather.

2.1.18 Sunlight yellowed wool

Discoloured yellow-brown wooltips on Australian woolskins, most severe along and near the back-bone line. The tipping is caused by UV radiation in summer sunlight and is exacerbated by moisture. The wool tips are chemically damaged and may dye unevenly. Additionally, the tips can bind chromium tanning agents further resulting in uneven dyeing.

2.1.19 Thin skin

Skin in which the quality of the fibres constituting the tissue is rendered defective by an abnormal thinning due to illness or malnutrition in the weeks preceding slaughter of the animal. After tanning, it produces an empty or a hollow skin.

2.1.20 Urine damage

Urine stain which damages the wool, scorches it or causes an alteration in the colouration of the fibres, liable to cause a change in the grain. Generally a reddish yellow colour, it is not found on the same areas as the *dermatophilosis*, but more particularly areas near the thighs.

2.2 Post-mortem defects

2.2.1 Butcher score

A score produced in the dermis caused by the knife or skinning tool without complete perforation. It is also known as flay damages.

2.2.2 Butcher strain

This terms applies to grain cracking arising from poor abattoir practices. It is quite different to grain crack arising from folding or pressure baling air dried skins. It is also known as strain grain.

2.2.3 Grain crack

Grain cracks are of following two types:

(a) Tearing or cracking of grain during skinning, drying or during storage. It is generally situated on the butt or belly.

(b) Breaking of the grain caused by folding or unfolding of a skin that has been over-dried. Usually found in the dorsal area. These are caused if the skins are baled incorrectly and these are commonly known as folding cracks.

2.2.4 Holes and shearer cuts

Accident in skinning resulting from the fact that the knife or skinning tool has completely pierced the skins or cuts arising out of shearing of wool.

2.2.5 Patches of fat or flesh

Small pieces of fat or flesh remain attached to the skin and cause grain defect, by bacterial decomposition as these pieces prevent correct dehydration of the skin.

2.2.6 Poor pattern (Deformation)

Presentation which gives the skin a defective shape and causes tears during processing. It includes over cutting of the neck or feet which deforms the skin and results in a loss of surface area.

2.3 Preserving defects

Raw sheep skins can be preserved using various methods. Depending on the method used, they can be presented in the form of skins preserved in the raw dry state(raw dried skins) or in the salted state (wet salted skins) or the dry state (dry salted skins). Each of these states have their corresponding characteristic defects. This seems to be a suitable point to classify below the preserving defects taking into consideration each of these states in addition to the general case.

2.3.1 Dried salted state

2.3.1.1 Defects caused by mineral salts

Colouration of the grain side of the skin and alteration of the structure of the dermis caused by the combined action of mineral salts, in particular those derived from iron, and the humidity in the ambient air. (These defects are noted in particular on skins stored for a long time).

2.3.2 Dry state

2.3.2.1 Blood stains

Presence of congealed blood visible on the flesh side of the skin, causing a stain on the grain after tanning.

2.3.2.2 Break-outs (from drying)

Long irregular wrinkles on the flesh side of the skin, dark maroon in colour and at right angles to the back-bone. They can stain the grain after tanning and sometimes even cause a deterioration of the dermis comparable to vitrification.

2.3.2.3 Damage caused by dermestes (hide beetles)

Damage caused on the flesh side of the skin by dermestes larvae which devour the dermis, thus reducing the strength of the skin and altering the regularity of its thickness. Skins infested in this way are frequently perforated; moreover, in certain cases the dermestes can cause damage on the grain side of the skin, and even holes.

2.3.2.4 Damage caused by moth larvae

Damage caused on the grain side of the skins by moth larvae which eat the wool, and may in time affect the flesh side of the skin.

2.3.2.5 Defect peculiar to sleeve type skins

Decaying due to the use of green wood as a stretcher in this type of skin.

2.3.2.6 Frosting

Cracking of grain in subsequent handling and folding of the hardened skins which have been preserved at a temperature lower than the required.

2.3.2.7 Glossiness

Hard and brittle form, of glossy or shiny appearance, taken on by the skin following defective drying and denaturing of skin protein, most frequently in the sun.

2.3.2.8 Mildew

Visible development of saprophytic fungus on the flesh side of the skin promoted by preserving in too humid an atmosphere; it can also result in an alteration in the grain on the tanned skin.

2.3.2.9 Rancidity

Skin in which oxidation and hydrolysis of the fats has occurred as a result of too long a storage.

2.3.2.10 Sticking

Sticking of the skins, flesh side to flesh side, occurring from the start of drying and causing decay.

2.3.3 General case

2.3.3.1 Putrefaction (decaying)

Bacterial degradation of the skins arising from improper temporary or permanent preservation or delay in such treatments. The degradation appears in its more advanced forms in the raw skins as wool looseness and weakness and/or holding of the skin.

2.3.3.2 Iron stains (rust)

Discolouration of the skin caused by its coming into contact with iron objects.

NOTE 2 Low levels of iron may not be visible but will show on vegetable tannage or retannage.

2.3.4 Salted state

2.3.4.1 Salt pitting

Small, white or beige depression, deeply indented in the skin.

2.3.4.2 Microbial colouring

Surfaces coloured red or violet, and in the latter case often accompanied by an exudation. It is also known as red heat.