



BSI Standards Publication

**Crocodile skins — Presentation,  
description of defects, grading  
on the basis of defects, size  
(length) and origin**

**National foreword**

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**Crocodile skins — Presentation,  
description of defects, grading on the  
basis of defects, size (length) and origin**

*Peaux de crocodile — Présentation, description des défauts,  
classement sur la base des défauts, de la taille (longueur) et de l'origine*





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ISO 11396 was prepared by Technical Committee ISO/TC 120, *Leather*, Subcommittee SC 1, *Raw hides and skins, including pickled pelts*.



# Crocodile skins — Presentation, description of defects, grading on the basis of defects, size (length) and origin

## 1 Scope

This International Standard describes the presentation of crocodile skins and defects which may occur. It provides guidelines for grading crocodile skins on the basis of defects, size (length) and origin.

## 2 Terms and definitions

For the purpose of this document, the following terms and definitions apply.

### 2.1

#### **scute**

bony external plate or scale of the crocodile skin

### 2.2

#### **flaying**

cutting open a carcass along specific lines and removing the hide/skin from the carcass

NOTE Flaying can be done either by hand or by using a machine.

### 2.3

#### **fleshing**

removal of the flesh or adipose tissue from hides and skins

NOTE The presence of extra fat and muscles left attached to the skin will hold moisture and cause pseudo-anaerobic conditions leading to putrefaction and loss of value.

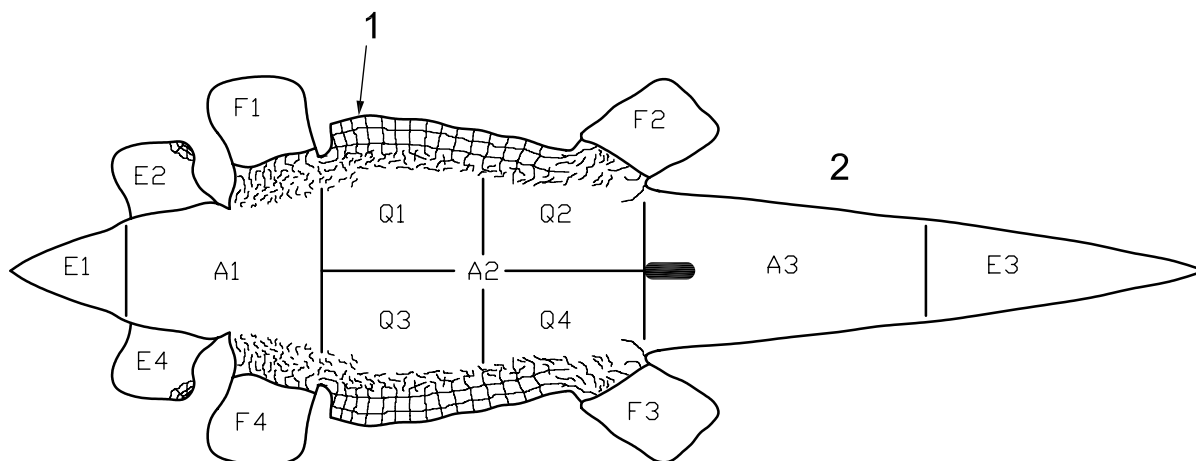
## 3 Presentation

**3.1** The presentation of a crocodile skin with the cut pattern splitting the hornback down the centre is shown in Figure 1. For the purpose of presentation of crocodile skins, the following terms are used:

- a) pattern area, symbolized as (PA);
- b) outside the pattern area, symbolized as (OP).

**3.2** The pattern area is divided into the following three parts, in order of importance, with the belly area having four quadrants:

- 1) head (A1);
- 2) belly (A2), with belly quadrants Q1 to Q4;
- 3) tail (A3).



**Key**

- 1 third scute behind the forearm
- 2 belly skin

**Figure 1 — Presentation of crocodile skins**

## 4 Defects

The defects in crocodile skins are listed in 4.1 to 4.6.

### 4.1 Buttons

Buttons are marks which are circular-like depressions.

### 4.2 Cuts or holes (C or H)

Cuts or holes are perforations that go through the skin. There are two categories:

- Category 1: a cut or hole diameter up to 10 mm in width and 5 mm to 20 mm in length;
- Category 2: a cut or hole diameter up to 20 mm in width and 5 mm to 40 mm in length.

### 4.3 Scars

Scars are damages made to the crocodile skin prior to flaying or harvest (i.e. before slaughter) that have had time to heal.

NOTE Cuts, holes and scratches leave permanent scars, imprints or damage to the skin.

### 4.4 Scratches

Scratches are damaged areas present on the crocodile skin during slaughter or flaying. A scratch is normally depicted by a point where the scale is broken.

NOTE Scratches emanate from crocodiles crawling over rough surfaces with sharp abrasive edges, thorny plants or trees that could potentially break or damage scales through to the inner skin layers beyond the stratum germinatum. If this occurs, the skin is exposed to permanent damage that is conspicuous in the finished state.



#### 4.5 Subcutaneous blemishes

Subcutaneous blemishes are caused by parasitic worms and bacteria. These worms bore into the belly scales and feed on the sub-scale dermis.

NOTE In certain cases, a brownish, spot-like colouration may be observed; this is indicative of bacterial infection. At severe levels, the dermis is denatured and a denuded scale or “eroded like” appearance is observed.

#### 4.6 Scale slip

Scale slip is experienced when, either on touch or by itself, a scale loosens or detaches from the skin.

NOTE This is usually caused by bad curing techniques or preservation methods. Scale slip is similar to “hair slip” in cow hides or sheep skin.

### 5 Grading on the basis on defects

#### 5.1 General

For the purpose of this grading system, each grade is scrutinized for the following:

- a) scars, scratches, scale slip, subcutaneous blemishes, cuts and holes;
- b) condition or preservation of the skin;
- c) shape of skin;
- d) proficiency of flaying, skinning and fleshing;
- e) cleanness;
- f) tainting or colouration.

#### 5.2 Grade 1

**5.2.1** The skin falling in this grade should be properly cured, flayed and fleshed to attain an optimal preservation state. Over-cured skins should be avoided to obtain soft and flexible material. Grade 1 skins should be full-sized, measuring at least

- 30 cm to 51 cm in width for saltwater crocodile skins, or
- 35 cm to 51 cm in width for freshwater crocodile skins.

**5.2.2** The skin should be wholesome and free of any type of damage (including the subcutaneous or adipose side of the skin) in the pattern area (PA). In addition, the skin should have the four leg appendages and four rows of hard horns or scutes. The pattern area (PA) and the button area (refer to Figure 1) should not have any cuts or holes (C or H). However, Grade 1 skins could have a maximum of two cuts or holes of Category 1 outside the pattern area (E1 to E4).

#### 5.3 Grade 2

**5.3.1** The skin in this grade is equally well flayed, fleshed and cured. The skins should be full-sized, measuring at least

- 30 cm to 51 cm in width for saltwater crocodile skins, or
- 35 cm to 51 cm in width for freshwater crocodile skins.

**5.3.2** The skin falling under Grade 2 may contain one cut or hole of Category 1 on the belly (Q1 to Q4). Preferably, there should not be any defects in A1 and A3.

**5.3.3** However, if there is one cut or hole of Category 1 in A1 and A3, this may be included in Grade 2, as long as there are no defects in A2.

**5.3.4** The skin may have scale lifting or scale slip on a maximum of 5 to 6 pieces in any localized spot within the pattern area (PA).

**5.3.5** The skin falling in this grade could have one leg missing.

**5.3.6** The skin should have more than half of the tail present. The skin should have at least one or two buttons within the pattern area (PA). Adipose or subcutaneous defects are permissible in areas outside the belly (i.e. Q1 to Q4). The evident defects should not be in more than two sections as shown in Figure 1 and, at any time, those defects should not cover more than 20 % of the section so affected.

**5.3.9** Skin which has two out of the three conditions or defects enumerated in 5.3.2, 5.3.3 and 5.3.5 should be declared as Grade 3.

## **5.4 Grade 3**

**5.4.1** The skins should be full sized measuring at least

- 30 cm to 51 cm in width for saltwater crocodile skins, or
- 35 cm to 51 cm in width for freshwater crocodile skins.

**5.4.2** In addition, the following guidelines provide the evaluation criteria for Grade 3.

- a) The skin may contain one cut or hole of Category 1 within the pattern area (PA).
- b) The skin may contain one cut or hole of Category 2 in the belly area (Q1 to Q4).
- c) The skin may contain one cut or hole of Category 2 in the head (A1) and tail area (A3).
- d) The skin may have scale lifting or scale slip of less than 20 % of the total skin area.
- e) The skin may have two or more legs missing.
- f) The skin may have less than 75 % of the tail present.
- g) The skin may have 10 or less buttons within the pattern area (PA).
- h) The skin may have adipose or subcutaneous area defects in one belly quadrant. Not more than 20 % outside the belly area should be damaged.

**5.4.3** Skin which has any two of the conditions stated above, with the exception of the condition in 5.4.2 d), should be declared as Grade 4.

## **5.5 Grade 4, culls or reject skins**

**5.5.1** Grade 4, culls or reject skins are any skins not declared as Grade 3 and/or those which have not been properly flayed, fleshed and cured.

**NOTE** Material exhibits initial levels of putrefaction due the improper curing or inappropriate storage techniques. The indicators of such conditions could be a characteristic ammonia smell and/or spongy appearance of the skins elucidating a state of decay.

**5.5.2** Skins falling in this grade have a width

- less than 30 cm in the belly area for saltwater crocodile skins, or
- less than 35 cm in the belly area for freshwater crocodile skins.

**5.5.3** Skins falling in this grade have abrasive marks, severe scale slip, and skins that are over-cured or under-cured.

**5.5.4** Skins falling in this grade have any one of the above conditions, or have any combination of such conditions in more than 50 % of Category 1 and Category 2 types of cuts and holes (4.2).

## **6 Grading on the basis of size (length)**

**6.1** The length of the skin should be measured from the third scute behind the forearm to the tail area. This is a measurement to be used after the horn back has been removed. However, it should be ensured that four rows of the horn back are not included in the measurement.

**6.2** The following sizes are recommended:

- 95 cm to 105 cm;
- 120 cm to 170 cm;
- 180 cm to 200 cm;
- above 200 cm.

## **7 Grading on the basis of origin**

Sometimes, the geographical source of the skin is also considered, e.g. if it is the Nile type (i.e. *Crocodylus niloticus*). There are several types of crocodiles, including the Indo-Pacific or the saltwater crocodile, swamp crocodile, Nile crocodile of Africa, Cuban crocodile, Morelet's crocodile, Orinoco crocodile and American crocodile.





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