4.8. Procedure for Checking the Area Measurement of Chamois

Chamois is natural leather made from skins of sheep and lambs that have been oil-tanned. Chamois are irregularly shaped, **varying in thickness and density,** which makes area measurement difficult. ~~Because of these characteristics, an accurate area determination can only be made using an internationally recognized method of conditioning (rehydrating) and measurement. Chamois is produced in a wet manufacturing process, so it has high moisture content at time of measurement. Chamois is hydroscopic; therefore, its dimensions and total area change as it loses or absorbs moisture~~. ~~It is also subject to wrinkling. Because of the variation with thickness and density, and therefore the weight per unit area of chamois, an estimated gross weight procedure cannot be used to verify the labeled area declaration.~~

~~Standard Test Conditions: As with all hydroscopic products, reasonable variations in measure must be allowed if caused by ordinary and customary exposure to atmospheric conditions that normally occur in good distribution practice. Both federal and international standards specify procedures to restore the moisture content of chamois so that tests to verify dimensions and area can be conducted.~~

~~Federal Test Method Standard 311, "Leather, Methods of Sampling and Testing," (January 15, 1969) defines the standard atmospheric condition for chamois as 50 ± 4 % relative humidity and 23 ± 2 °C (73.4 ± 3.6 °F). The chamois is considered to be at equilibrium moisture when the difference in two successive weighings, made at 1 hr intervals, is no greater than 0.25 % (e.g., the maximum change in weight on a 100 g sample in two successive weighings is less than 0.25 g (250 mg).~~

The area of chamois is verified using **either the graph paper test method** audit procedure **or the gravimetric test procedure for area measurement** ~~two- stage late procedure~~. ~~This test is used for field audits because it is simpler to perform and does not require the chamois to be conditioned.~~ ~~The field audit~~ **Section 4.8.1**. **Graph Paper Test Method Audit Procedure** is used to identify chamois that are potentially ~~under~~ **short** measure. ~~It is not as accurate as the gravimetric procedure because some error results from reading the area from the template~~. **Section 4.8.2. Gravimetric Test Procedure for Area Measurement** ~~should be used~~ **is used** for compliance testing**.** ~~because it includes conditioning (rehydrating) the chamois.~~

4.8.1. ~~Template~~ **Graph Paper** Test Method **Audit Procedure** ~~(for field audits~~)

Chamois is **typically** labeled in uniform sizes in terms of square decimeters and square feet, and are sized in increments of **2.32 dm² (**¼ ft²) (e.g., **9.29 dm² (**1 ft²)**, 11.61 dm² (**1 ¼ ft²)**, and 13.93 dm² (**1½ ft²).

4.8.1.1. Test Equipment

- ~~Use~~ **Graph Paper: 43.18 cm × 55.88 cm (17 in × 22 in) with 0.5 cm or ¼ in squares.** ~~a transparent, flexible template that is graduated in square centimeters or square inches and that has been verified for accuracy. The template must be large enough to completely cover the chamois under test.~~

- **Ruler or tape that is graduated in 0.5 centimeters or ¼ inches**

4.8.1.2. **Audit** Test Procedure

1. Select a random sample of chamois. ~~Separate the chamois into different sizes and define the inspection lot by specific sizes~~ **It is recommended that a minimum of three packages be tested.**

2. **The** ~~Place the~~ **graph paper** ~~template over the chamois specimen~~ **must be o**n a smooth surface. **Prior to using any graph paper use a ruler to verify the dimensions of squares at several random points across the page.** ~~Determine the area by counting the number of squares that cover the surface of the chamois. Estimate parts of the template that do not completely cover the chamois by adding the number of partially covered blocks. (See Figure 4-3. "Template for Checking the Area of a Chamois") Compute the total area and refer to Section 4.8.3. to determine if further action is necessary.~~ **Place the chamois on the graph paper. Carefully draw around the outline of the skin on the paper.**

Note: Graph paper of an appropriate size shall be used. However, if a single sheet of appropriate-sized graph paper is not available, it may be necessary to tape sheets of graph paper together to create an area sufficient in size to measure the area for a chamois (e.g., chamois greater than 23.22 dm² (2.5 ft²).)

3. Determine the area by counting the number of squares the chamois covers. Use a ruler to help calculate the area. Add the number of partially covered squares. (See Figure 4-3. "Template for Checking the Area of a Chamois.")

4. Compute the total area and refer to the Evaluation of Results, ~~Decision Criteria~~ **Section 4.8.3. to determine if further action is necessary.**

First Stage – Decision Criteria

If the average of the samples is a plus error or a minus error that is 3% or less of the labeled quantity, the audit test results should be accepted. Move on to inspect other chamois. If the average **of the samples is a** minus error **that** exceeds 3 % of the labeled area, the chamois may not be labeled accurately. To confirm the finding, ~~the sample~~ ~~must be taken to a laboratory for conditioning and testing using~~ **use** the gravimetric test procedure.
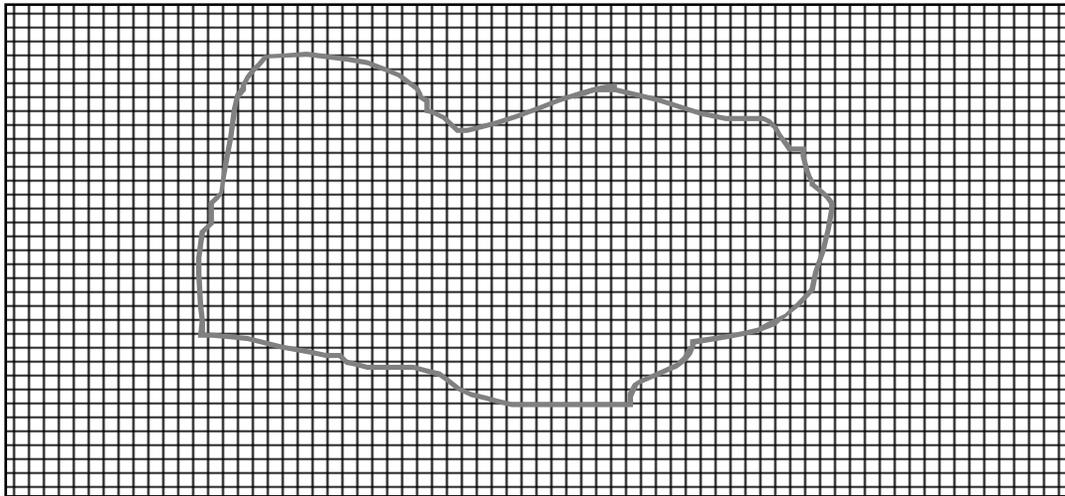

Figure 4-3. Template for Checking the Area of Chamois.

4.8.2. Gravimetric Test Procedure for Area Measurement

~~This test cannot be performed in the field because the samples must be conditioned with water before testing.~~ This method is intended for use in checking full or cut skins, or pattern shapes. ~~Open and condition all the packages in the sample before determining their area on the recommended paper. Conditioning and verifying chamois can be accomplished without destroying the product. When successful tests are completed, the chamois may be repackaged for sale, so do not destroy the packaging material.~~

4.8.2.1. Test Equipment

- Scale with a capacity of 1 kg that is accurate to at least ± 0.01 g and a load-receiving element of adequate size to properly hold the chamois **(record to 0.1 g)**

- ~~Atomizer or trigger-type sprayer and sealable, airtight polyethylene bags~~

- Medium weight drawing paper (e.g., drawing paper, medium weight (100 lb), regular surface or comparable)

- A household iron **set on the lowest** ~~with low~~ temperature **heat** setting**, (e.g., silk, nylon)** ~~30 °C to 40 °C (86 °F to 104 °F)~~

- Ruler or tape that is graduated in **0.5** centimeters or ¼ inches

- Instruments for cutting paper (e.g., razor blade, scissors, x-acto® knife, cutting board)

~~Sample Conditioning~~

- ~~Remove each sample from its package and weigh and record each weight. Using an atomizer-type sprayer, spray water in the amount of 25 % of the weight of each skin uniformly over its area. Place wetted chamois in an airtight polyethylene bag; seal the bag, and leave it in this condition at room temperature for 24 hours.~~

- ~~Open the bag, remove the chamois, and reweigh the chamois to confirm that it retained maximum moisture. (This is done by confirming that the difference in the two consecutive weighings conducted an hour apart does not exceed 0.25 %.)~~

- ~~Place the chamois flat on a continuous piece of drawing paper. To remove wrinkles and make the chamois lie flat, use a normal domestic iron that is heated to a maximum of 30 °C to 40 °C (86 °F to 104 °F). Place the iron on the bottom of the skin, and iron the skin up from the center to the top. Then, iron the skin from the center out to each side. Iron until the skin is fully extended and perfectly flat.~~

4.8.2.2. Test Procedure

1. **Follow Sections 2.3.1. through Section 2.3.4. to define an inspection lot. Use "Category A" sampling plan in the inspection; and select a random sample.**

1. **Use a household iron set on the lowest heat setting (e.g., silk) to remove wrinkles. Continuously iron the skin from the center of the chamois to the outer edges in all directions to spread and flatten out the wrinkles. Use a swift, steady motion, being careful to not let the iron stay in contact with the chamois surface for too long. Excessive heat will shrink the chamois. You may not be able to remove all wrinkles.**

2. ~~1.~~ **2.** Immediately after ironing **the sample**, carefully draw around the outline of the skin on the drawing paper. Remove the skin; carefully cut along the outline of the skin~~; weigh the cutout pattern, and record to the nearest 0.1 g Sample Weight 1 (W_1)~~.

3. ~~2.~~ **3.** Lay out the pattern and cut an accurately measured rectangle of a size not less than one-half the area of the pattern. **Do this step for each sample.** Weigh the cutout rectangle and record the weight to the nearest 0.1 g Sample Weight 2 (W_2). ~~Calculate the area of the rectangle cut from the patterns by multiplying length by width and record as Area (A) in centimeters or square inches.~~

3. **4. Weigh the entire cutout pattern (the outline of the skin which includes the cutout rectangle), and record to the nearest 0.1 g Sample Weight 1 (W_1).**

4. **NOTE: To ensure the proper weighing of the paper outline of the skin and the cutout rectangle it is recommended that the pieces be folded in a way so that the entire pattern is centered and not hanging over the load receiving element.**

5. **5. Calculate the area of the rectangle cut from the pattern by multiplying length by width and record as Area (A) in centimeters or square inches.**

6. Calculate the area of the original chamois.

➢ For metric units – calculate the area of the original **chamois** ~~skin~~ being checked as follows:
$$W_1/W_2 \times A = Skin\ Area\ in\ cm^2/100 = Area\ in\ dm^2$$

➢ For U.S. customary units – calculate the area of the original **chamois** ~~skin~~ being checked as follows:

$$W_1/W_2 \times A = Skin\ Area\ in\ in^2/144 = Area\ \textbf{\underline{in}}\ ft^2$$

4.8.3.   Evaluation of Results

Compute the average error for the sample and follow the procedures in Section 2.3.7. "Evaluate for Compliance to determine lot conformance.

The MAV for area declarations on chamois is 3 % of the labeled area as specified in Appendix A, Table 2-8. "Maximum Allowable Variations for Packages Labeled by Length, (Width), or Area".