



Tanning Deer Hides and Small Fur Skins

Guide L-103

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Because preserving hides and furs is an ancient art, many successful preservation methods have been developed through the years. Native Americans used wood ashes to remove the hair and used brain matter as a tanning agent. Native Americans also chewed the hides to produce soft buckskin, but few modern hobby tanners are willing to try these methods.

Deer hides and small fur skins can be tanned at home through a variety of techniques. Tanning requires few tools, and chemicals required for some methods can be obtained locally. However, chemicals needed for other home tanning techniques, such as glutaraldehyde, can be difficult to find and dangerous to use. There are various home tanning kits available commercially that offer contemporary methods of tanning. These kits often include all or most of the chemicals needed as well as detailed instructions. Such kits and tanning supplies can be found in taxidermy or leather-craft supply catalogs or Internet Web sites. Three techniques for tanning described below are for those willing to try more traditional home tanning "recipes." Because possession of wildlife pelts is governed by game laws, consult your local game warden before you begin.

Tanning leather or furs requires time and patience. No tanning formula is foolproof, and success can be attained only through hard work, close observation, care and patience. Inexperienced tanners should realize that their first attempts will not produce professional-quality leather. If the fur or hide is valuable, it would be best to send it to a

professional. Use a less valuable hide for beginning projects.

Deer and squirrel hides are probably best to start with, primarily because they are easy to prepare for the tanning process. Others such as rabbit are thin-skinned and require more care to avoid damage.

CAUTION: Extreme care must be taken when working with any chemical throughout the procedures described below. Carefully read product labels and follow all safety precautions.

I. PRELIMINARY PREPARATIONS²

Materials:

- Sharp knife
- Large flat working surface such as an old work bench or a sheet of plywood
- Technical grade salt or non-iodized salt

If not already done when skinned, split the tail of the hide the entire length on the underside. If the hide was skinned cased, split it neatly down the middle of the belly. Cut away any pieces of flesh that may still be attached. Ragged edges also should be trimmed, being careful to cut from the flesh side. If tanning cannot begin within one day, hides or pelts must be treated or cured promptly. Failure to do so can lead to deterioration of the hide and hair slipping later on. Also, salt curing aids in the

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²For a complete explanation of preparing skins prior to tanning, see Extension Guide L-101, *How to Prepare Pelts*.

breakdown of globular proteins, helping the hide to accept tanning agents later on.

Curing Small Animal Pelts

To preserve small animal pelts, such as rabbit, air-dry them thoroughly. For hobby tanning, simply tack the skin flat to a board with the flesh side out and allow the skin to air-dry thoroughly. Although air-drying is sufficient treatment for small animal pelts, salting the hide as described below for large animal pelts may be done instead of air-drying.

Curing Large Animal Pelts

Although small hides will dry thoroughly from air circulation alone, large pelts must be salted. Promptly salt deer hides and other large pelts (such as coyote skins) to remove moisture, prevent spoilage and discourage flies. In general, hides should be tanned soon after they are dried. However, dry hides may be stored as late as the onset of warm weather in April or May. Do not keep untanned hides or skins over the summer because they may deteriorate and be damaged by insects.

Salt the hide: Spread the hide, hair side down, on a flat surface. Sprinkle fresh, clean salt over the flesh side of the hide, using a pound of salt for each pound of hide. Be sure to sprinkle salt on all parts of the flesh side; rub the salt into the cut edges, neck, legs and wrinkles. Remember, any unsalted spot is unprotected. The salting procedure should be repeated after the first application of salt becomes saturated with moisture, usually in two to three days.

To cure several hides at once, pile them with the hair side down, and salt each one on the flesh side. Be sure not to disturb the salt layer when piling on another hide, as this will cause unsalted spots and spoiled hides. Tilt the pile slightly so liquid from the hides drains away from the pile and doesn't collect on the bottom hide.

Dry the hide: Position the hide so that fluid can easily drain from it. The salt will serve to remove most of the moisture from the hide in 10 to 14 days. If needed, hang the hide after salt treatment until thoroughly dry.

II. SOAKING AND CLEANING

Before tanning, the hide must be softened and cleaned thoroughly so it is free of flesh and grease.

Materials:

- 5- to 10-gallon nonmetallic container such as a wooden barrel, plastic garbage can or earthen crock
 - Large smooth board
 - Scraping tool such as an old hacksaw blade
 - Baking soda or Borax—available at local grocery stores
 - Dishwashing soap (optional)
 - Stirring paddle
 - Single-edged knife
1. Soak the skin in several changes of clear cool water. Use a wooden barrel, large earthen crock or 5- to 10-gallon plastic garbage can for all soaking and tanning processes. Never use a metal container, as the salt and tanning chemicals will react with the metal.

While a skin must be soaked until soft, do not allow it to stay wet longer than necessary because the hair may start to slip. Soaking time depends upon the condition of the skin; some skins require only about two hours while others need a much longer time.
 2. When the skin begins to soften, lay it on a smooth board and begin working over the flesh side to break up the adhering tissue and fat. (To work the skin, hold the skin taut and pull it back and forth over the edge of a board.) All dried skins have a shiny tight layer of tissue that must be broken up and entirely removed; this can be done by alternately scraping and soaking the hide. Take care not to injure the true skin or expose the hair roots, especially on thin skins.

A good tool for scraping the tissue is a metal edge with dull saw teeth or with notches filed in it. An old hacksaw blade works well. (The flint scrapers Native Americans used were good tools for this task.)

3. When the skin is almost soft, put it in lukewarm water containing an ounce of baking soda or Borax per gallon. For greasy skins, adding a tablespoon of dishwashing soap per gallon of water may help clean the skin. Use a paddle to stir the skin around in the solution. This treatment promotes final softening, cleans the skin and cuts the grease.
4. Place the skin on a smooth board, flesh side up. Work the skin with the back edge of a knife held nearly flat against the side. This operation is called “scudding” and is of utmost importance. Scudding removes unwanted fatty and glandular tissue, dirt and other debris that remains in the skin after scraping. Scud until all loose tissue and debris are removed from the skin (this may require rewetting the skin in the solution used in step 3).
5. Rinse the skin thoroughly in lukewarm water. Squeeze out most of the water, but do not wring the skin.
6. Repair any unwanted holes or tears by stitching with a waxed thread. Dental floss works well for thin skins. Take care not to pull hair through the holes while stitching. If the skin is to be tanned with the hair on, proceed to the section on tanning.

III. HAIR REMOVAL (OPTIONAL)

If you are tanning a deer hide into buckskin, remove the hair before tanning.

Materials:

- Hydrated lime—available at landscaping supply stores or nurseries
 - USP lactic acid—may be available at local pharmacy
- Or—
- Vinegar—available at local grocery stores

1. To dehair, mix 4 to 5 quarts hydrated lime with 5 gallons of water. Make sure the hide is completely immersed and no air is trapped in the hide. Soak the hide until the hair slides off easily with a push of your hand (6 to 10 days). Place the hide over a board and push off all the hair with the backside of a dull knife. Scud both sides of the hide as in step 4 above to remove hair follicles and other debris.
2. After the hide has been dehaired, soak it in clean water for four or five hours, then scud the skin again.
3. Fill a container with 10 gallons of water and stir in 1 ounce of United States Pharmacopoeia (USP) lactic acid, mixing thoroughly with a wooden paddle. (If you cannot get lactic acid, substitute 1 pint of vinegar for each ounce of lactic acid.) Soak the hide in this solution for 24 hours to stop the action of the lime.

IV. TANNING

The best results for home tanning can probably be achieved by using tanning agents that are available commercially in home tanning kits. For those wishing to make their own tanning solutions, three procedures are given below. *Salt and alum tanning* is the least expensive method and probably the most common of the three. *Alcohol and turpentine tanning* is a simple but less common method best suited for small fur skins. *Brain tanning* offers a simple old-fashioned process for those who are more adventurous. With experience, home tanners may modify these methods slightly through trial-and-error based on individual preferences.

Salt and Alum Tanning

This is an old, widely used method for fur skin tanning. When properly carried out, it produces skins with stretch and flexibility. However, alum-tanned skins often come out stiff and hard and must be worked repeatedly or sometimes retanned.

Materials:

- Non-metallic container

- Ammonia alum (ammonium aluminum sulfate) or potash alum (potassium aluminum sulfate)– may be available at local pharmacy, farm supply store or through taxidermy supply catalogs
- Washing soda (crystallized sodium carbonate)– available in laundry section of many supermarkets
- Salt (preferably technical grade, but non-iodine will work)
- Flour (if applying as a paste)
- Brush or scraper knife
- Borax

1. Prepare a salt-alum tanning solution by dissolving 1 pound of ammonia alum or potash alum in 1 gallon of water. Dissolve 4 ounces of washing soda (crystallized sodium carbonate) and 8 ounces of salt in 1/2 gallon of water. Pour the soda-salt solution very slowly into the alum solution while stirring vigorously. The soda-salt solution must be poured slowly enough to prevent an overflow of foam from the container. Amounts may need to be increased proportionately for larger skins.
2. Immerse the skin in the tanning solution for 2 to 5 days, depending upon its thickness. Two days should be sufficient for a rabbit skin, while a deer hide may require up to 5 days. Since a hide cannot easily be over-tanned using this process, it would be better to leave the hide in solution too long rather than not long enough.

OR:

Because alum affects some furs, it may be best to first test a scrap piece of the fur in the tanning solution. If the test fur is affected or there are no scrap pieces to test, it may be best to apply the tanning solution as a paste to the flesh side only.

- Mix the tanning solution with sufficient flour to make a thin paste, adding the flour in small quantities with a little water and mixing thoroughly to avoid lumps.

- Spread the hide so it lies smoothly and tack down, flesh side up. Using a brush or scraper knife, coat the skin with the tanning paste about 1/8" thick. Let stand until the next day.
 - The next day, scrape off most of the paste and apply another coating. Apply two or three coatings at daily intervals. Only thick hides should need as many as three treatments. Leave the last coating on for 3 to 4 days.
 - Scrape off the paste.
3. Rinse the hide clean in a gallon of water containing about 1 ounce of Borax. Rinse again in clean water. Put the skin on a smooth board and use a dull edge to press out most of the water. Proceed to the oiling and finishing process.

Alcohol and Turpentine Tanning

This method is best suited and perhaps the easiest for small fur skins (rabbit and squirrel). Although simple, alcohol and turpentine tanning is a method more valuable for preserving hides than for producing quality skins.

Materials:

- Large-mouthed gallon jar
- Wood alcohol (methanol paint remover)– available at local hardware stores
- Turpentine–available at local hardware stores
- Dishwashing soap or laundry detergent

1. Mix the tanning solution in a large-mouthed gallon jar with a screw top. Add equal parts wood alcohol and turpentine to the jar to cover a small fur skin. A half pint of each is sufficient for a squirrel or rabbit skin.
2. Immerse the skin in the solution and secure the lid. Shake or stir the solution each day, because the alcohol and turpentine will separate.

3. After 7 to 10 days, remove the skin and wash it in dishwashing soap or laundry detergent water to remove the alcohol, turpentine and grease.
4. Rinse the skin well several times to remove the detergent. Dry the skin by squeezing, not wringing. When the skin is partly dry, proceed to the oiling and finishing process.

Brain Tanning

Materials:

- Pig or horse brain (pig brain may be available at local butcher or meat market)
- Chlorine-free water
- Large board or stretching frame
- Smooth wooden tool such as a canoe paddle or axe handle

1. Prepare the tanning solution by combining 1 pound of pig or horse brain with 2 gallons of warm water. For best results, use untreated water such as rainwater. If you do not have access to rainwater, purchase bottled spring water at your local grocery store. Water treated with chlorine may reduce the effectiveness of tanning solution.
2. While the hide is still damp and pliable from preparation and cleaning procedures, immerse it in the brain tanning solution. Soak the hide overnight.
3. Remove the hide from the solution. Remove a majority of the solution from the hide by squeezing it thoroughly or running carefully through a clothes wringer.
4. Nail the hide to a board or stretch with a frame. A smooth tool such a canoe paddle can be used to work the hide. The hide should be worked by pushing and stretching it in a stroking motion until it dries.
For thick hides, some prefer to reapply the warmed solution to the flesh side, cover with cloth overnight and repeat step 4 to ensure that the solution has been adequately worked deep into the hide.

5. The final step for brain tanning is smoking the hide. Brain tanned hides are most durable if they are smoked for several hours in a smokehouse. However, be careful not to heat the hide too much. Use dry, semi-rotten wood to produce lots of smoke and low heat.

V. OILING AND FINISHING

Materials:

- Fat liquor or tanning oil (such as Sulfated neatsfoot oil)—available through taxidermy supply catalogs
- Household ammonia
- Paintbrush
- Sheet of plastic
- Electric fan
- Sheet of plywood
- Nails (no. 6 finish)
- Gasoline (optional)
- Hardwood sawdust, bran or cornmeal
- Sandpaper block

Let the wet, tanned leather dry somewhat. While it is still damp, apply a coating of suitable fat liquor oil (such as sulfated neatsfoot oil). The amount of oil required will vary depending upon the natural oiliness of the skin. For instance, a raccoon skin, which is naturally very oily, will require proportionately less oil than a deer hide.

1. Make the fat liquor oil by mixing 3 1/2 ounces of sulfated neatsfoot oil with 3 1/2 ounces of warm water and 1 ounce household ammonia. This fat liquor solution is for a 10-pound deer hide. Adjust the measures accordingly for smaller hides.

2. Place the hide on a flat surface hair side down. Apply part of the fat liquor solution to a portion of the hide and spread it evenly with a paintbrush or your hand. Continue until one-half the solution has been applied to the hide. Allow the hide to stand for 30 minutes, and then apply the remainder of the oil in the same manner.
3. Cover the hide with a sheet of plastic and let stand overnight. If several hides are fat-liquored at one time, they may be piled flesh side to flesh side.
4. The next day, drape the skin, hair side out, over a pole or sawhorse and allow the hair to dry (the flesh side should remain moist and pliable). Use an electric fan to speed the drying.
5. While the flesh side is still moist and pliable nail the skin, flesh side up, to a sheet of plywood, stretching the skin slightly. Space the nails (no. 6 finish) every 5 to 6" around the circumference and about 1/2" from the edge. The flesh side will begin drying and should be kept at room temperature.
6. When the skin is nearly dry but still slightly damp, remove the skin from the plywood board. Work the skin in all directions, stretching it from corner to corner and working the flesh side over a stake or a wooden edge, such as the back of a chair or a board clamped in a vise. The skin may also be worked this way through smooth metal rings.
Success in producing a soft skin lies in repeated working, which must be done while the skin is drying out, not after it is dry. This process may be repeated several times if necessary; simply dampen the hide evenly and work it again while it dries.
7. After the skin has been softened and dried, it can be given a hasty bath in white or unleaded gasoline, especially if the skin is too greasy. This bath also helps to deodorize some skins, such as skunk. **CAUTION: Gasoline is extremely flammable and should be used outdoors away from fire or flame. The gas must be used in an appropriate pan or receptacle and disposed of safely.**
8. To clean and brighten the fur, tumble it repeatedly in dry, warm sawdust—preferably hardwood sawdust. Bran or cornmeal may also be used. Clean the particles out of the fur by gently shaking, beating, combing and brushing the fur.
9. If necessary, the hide's flesh side may be smoothed by working it with a sandpaper block. This also helps to further soften the skin. If desired, thicker sections of the skin may be thinned and made more flexible by shaving off some of the skin.

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