

Freeze Branding Horses

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The use of specific identification systems for horses is valuable for several reasons. On large ranches and/or at riding stables, where several horses may be of the same sex, age or color (with similar markings), differentiation may be difficult in daily management practices. Marked horses are less likely to be stolen as they can be traced more easily by law enforcement officers. Also, specific identification of horses discourages fraudulent practices with registration papers. Lastly, many ranches or owners simply want to personalize horses they've bred, owned and/or those horses of which they are extremely proud.

Several identification methods are available, including tattooing, hot branding, blood typing and color/marking systems. In the past few years freeze (cryogenic) branding has become extremely popular because it is safe, economical and simple to do. Freeze branding can be done on horses of any age. It appears to be relatively painless and does not scar or damage the horse's hide. The brand is legible, permanent and difficult to alter; it can be seen from a distance all year long.

Skin Anatomy

The skin of a horse contains millions of hairs which make up the horse's coat. Figure 1 is an enlarged, simplified drawing of one hair shaft with its color (pigment) producing follicle (CF) and its growth follicle (GF), both shown below the skin.

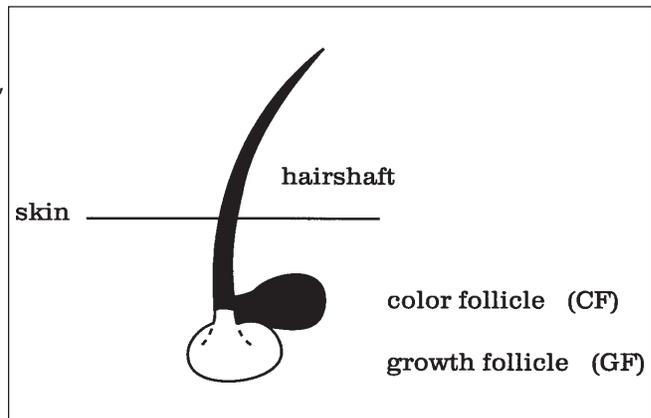


Figure 1. Hair shaft with color and growth follicles.

Under normal circumstances hair grows as a clear shaft (like a clear straw) from the GF. On colored horses, pigment (black, brown, red, yellow, etc.) is added from the CF below the skin to the clear hairshaft, which gives the hair its color.

When the intensely cold iron used in freeze branding is placed on the skin for the correct time and at the correct pressure, the cold temperature destroys the CFs at the brand site so they no longer can produce pigment; however, the hair still continues to grow from the GFs. The result is that hair growing at the brand site contains no pigment and appears white. This is the desired result—a uniform, white brand. If the iron is pressed to the skin for a shorter period of time and/or with less pressure than required, some hairs grow in colored and some hairs grow in white, so the brand has a streaked appearance. If the iron is held on a longer period of time, the cold temperature destroys the GFs as well, so that no hair grows at all. On a light colored horse this bald brand is desirable because the dark skin with no hair shows up better than a white brand.

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Equipment



Equipment needed for freeze branding.

At least three persons are needed for freeze branding – a holder, a timer and a brander. Equipment includes:

- Twitch
- Container at least 18 x 10 x 12 inches so irons can stand upright when the heads are submerged in liquid nitrogen
- Liquid nitrogen (available from A.I. technicians)
- Freeze branding irons (mark the tops of handles with the numbers or letters on the heads so they can be identified when the heads are submerged in nitrogen)
- Gloves
- Clippers (surgical blade preferred)
- Squirt bottle with 99 percent alcohol (lower percentages contain water which can cause an ice layer to form during branding and decrease the penetration of the cold through the skin)
- Stopwatch
- Fly spray

Note: Freeze branding irons can be purchased from commercial livestock equipment companies or custom made. Irons are made from various types of metals (stainless steel, copper, brass) and alloys (copper/brass, etc.). Standard iron heads are available in numbers and/or letters. Irons are available either in one piece or with screw-off heads, which can be valuable if a head is disfigured or if a handle is bent or broken. Heads are usually 2 inches to 6 inches high, and should be at least 1 inch from front to back to ensure that they will chill adequately.



Freeze branding irons: Copper/brass (left) stainless steel (right).

Branding Systems and Sites

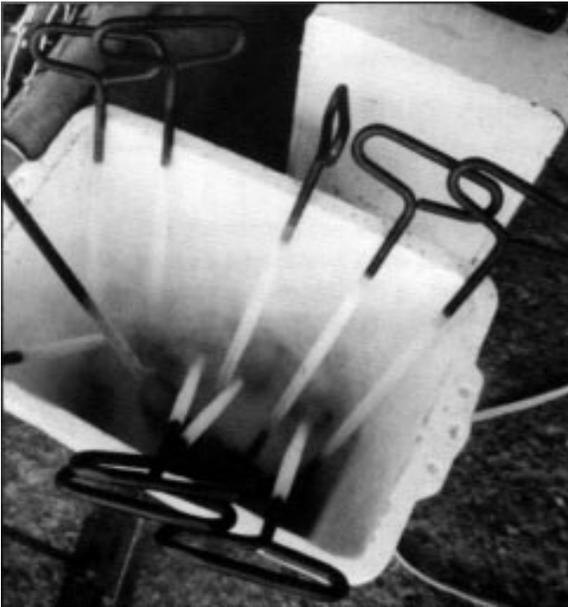
If owners are going to brand several horses each year for several years, some thought should be given to a branding system. Important information to include in a branding system may be sire, dam, date of horse's birth, individual horse number, etc., depending on the operation and how the horses are used or marketed. Branding systems are available from state livestock associations (Texas and Southwestern Cattle Raisers Association), brand inspectors and ranchers. Be sure to check with your county clerk, county Extension agent or state brand inspection agency about branding and brand ownership regulations.

Horses are commonly branded on the left or right jaw, shoulder, thigh or butt (beside the tail). Certain sites can be further divided if branding systems warrant. For example, the thigh area can be divided into four sites—12:00 (above center), 3:00 (right of center), 6:00 (below center) and 9:00 (left of center). When branding on the shoulder, be sure the iron head is not partially on a thinner muscle mass over the scapula with the remainder of the iron head on a heavier, deeper muscle mass not covering bone. Unequal head pressure can produce a non-uniform brand. This situation also can arise when branding on the butt if a portion of the branding iron head is partially on the rear of the pelvic bone and the remainder is on the muscle below.

Procedure

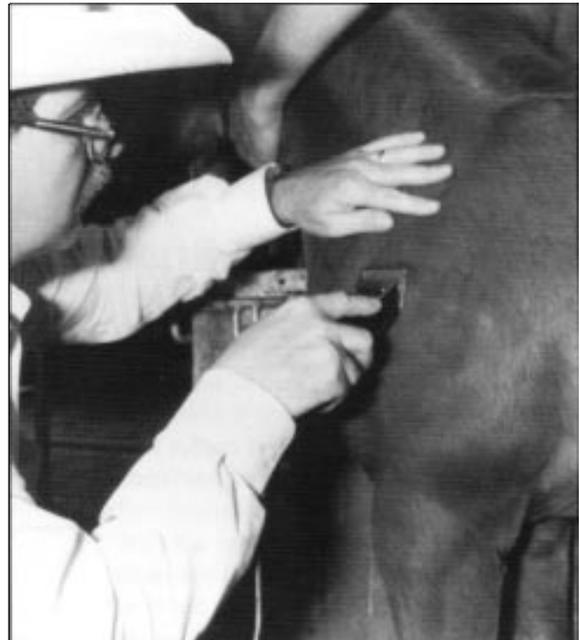
This is the step-by-step procedure for freeze branding horses:

1. Chill the irons to -300 degrees F in the container of liquid nitrogen. The surface of the nitrogen will appear as pinhead size bubbles (boiling action has stopped) when the irons are chilled to -300 degrees F and they are ready for use. Place the container of irons as close to the branding location as possible.



Chilling the irons.

2. Clean the brand site of foreign material. Clip the brand site as square as possible, particularly at the bottom, to aid in square placement of the brand. Thoroughly dry the brand site if the horse is sweating or is wet from rain or washing.



Clipping the brand site.

3. Make sure the horse is still. Fly spray may be needed. Twitching usually is not necessary on gentle horses, but may be necessary for young horses and those not accustomed to being handled.
4. Position the timer, equipped with a stopwatch, as close as possible to the branding site.
5. Squirt room temperature alcohol over the brand site. This removes some skin oils and helps transfer cold from the iron head to the skin. Caution: Keep alcohol away from open flames.



Applying alcohol.

6. Immediately after the alcohol soak, quickly remove the appropriate iron from the container, align it properly and firmly press the iron squarely on the brand site. As the iron is pressed to the skin the brander should say “on.” (If the timer says “on,” and then the brander has to align the brand, place it on the site, etc., a couple of seconds can be lost. It is better for the brander to say “on” to be sure the iron head is left on the skin the full amount of time.) The timer should immediately start the stopwatch. The brander should hold the iron head as still as possible on the skin, applying 35 to 45 pounds of steady pressure. No part of the head should lose contact with the skin during branding. A very subtle rocking motion of the handle is recommended; however, never wrinkle the skin. (Caution: Quick application of the cold iron head to the skin may startle some horses; therefore, the brander should be prepared to follow the horse’s motion if he moves. If a horse jumps and the iron is removed during the actual branding, it is nearly impossible to relocate the exact site and determine how much time had elapsed prior to the movement. Attempts at rebranding usually produce poor brands.) When the appropriate time has elapsed on the stopwatch, the timer should say “off.” The brander then immediately removes the iron from the skin.



Timing the brand.

Branding Times For Two Types of Irons		
Color (ages)	Stainless steel (used by TAMU Horse Center)	Copper/brass (used by TAMU Vet. Medical Center)
Dark horses (8 mos. & younger)	8 seconds	7 seconds
Dark horses (older)	8 seconds	10 seconds
Light horses (8 mos. & younger)	12 seconds	15 seconds
Light horses (older)	12 seconds	15 seconds

Branding times vary according to the type of metal in the iron and the age (skin thickness) and color of the horse. Branders should calibrate their freeze branding irons by branding the recommended times and keeping accurate records of times and results. Times can be adjusted if necessary to achieve the desired results. Fire branding irons can be used for freeze branding but usually aren't wide enough or deep enough to retain cold as well as irons specifically designed for freeze branding.

7. After branding, place the iron back in the container of liquid nitrogen immediately. It should be recooled to -300 degrees F before it is used again. Even when quickly returned to the container after use this may require 4 to 5 minutes. Irons left out of nitrogen for longer periods of time will require more time to chill before they can be used again.

Post Branding Results

On dark colored horses, expect the following sequence of events:

Times	Brand site
15 seconds	indented pattern shows
5 to 10 minutes	swelled pattern shows (resembles frostbite and is two or three times larger than indented pattern)
5 days	swelled pattern disappears
1 month	top layer of skin sheds
2 months	white hair starts growing in
3 months	white hair growth complete

On light colored horses requiring longer branding times (or on dark horses with irons accidentally left on too long) the sequence of results will be the same as above until 2 months. Where no hair grows the brand will be bald.

Be aware that brands placed on young horses will obviously increase in size as the horse grows. For example, a 2-inch-tall brand from a stainless steel iron placed on a 6-month-old foal will be 3 inches high when the horse reaches maturity. Remember this when deciding on the size irons to purchase.

Getting Horses Branded

Horse owners can purchase the equipment and brand their own horses or hire veterinarians or freeze branding technicians to perform this service. One company brands horses with a unique identification system (international alpha system using angles and alpha signals). Some companies provide anti-theft aids such as owner/horse identification cards and ranch warning signs, and also notify the breed registries and state livestock offices when horses are branded. When a registered horse is branded the breed association office should be notified so the brand can be officially placed on the horse's registration papers.



Finished brand.

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