



## Freeze Branding for Identification

There is considerable interest in the use of freeze branding for identification of beef cattle. Ear tags are commonly used, but frequently they get lost, the number fades, or the tag becomes difficult to read because of mud, manure, etc. If several people are involved with the herd - such as the one at West Virginia University - easy-to-read, permanent identification is important and necessary for accurate record keeping. Freeze branding has a place in some herds for this purpose.

Brands traditionally have been used to identify ownership. However, as reported in the 1995 National Beef Quality Audit, hide defects including brands are responsible for a significant loss in hide value. Therefore, we do not recommend widespread use of brands to denote ownership. But in certain breeds of cattle, freeze brands can be very useful in permanently identifying a cow herd with unique numbers. Unique brands are necessary to avoid mistakes -- no two cows in a herd should have the same number.

There is only one correct way to freeze brand. If your goal is to get the best/most readable brands, you will want to use dry ice and alcohol. (Caution: some people use liquid nitrogen instead of dry ice, but because it is so much colder, timing is much more critical and varies with age, weight, and condition of the cattle. The temperature of liquid nitrogen is  $-320^{\circ}\text{F}$  compared to  $-109^{\circ}\text{F}$  for dry ice.) Alcohol must be 95% or higher and can include ethanol or methanol. Rubbing alcohol is unacceptable

because it contains too much water. It takes approximately  $\frac{1}{2}$  to 1 pound of dry ice per head and 2 to 3 gallons of alcohol per 20 head.

We recommend branding replacement heifers at approximately 1 year of age when you are working the cattle through the chute for some other purpose. If done properly, the freeze branding process kills the pigment in the hair follicle and the hair grows back white. If the brand is held on too long, the hair follicle is destroyed and no hair grows back, causing it to look more like a hot brand. If the iron is not held on long enough or is not cold enough, you get nothing.

What do you need?

1. Freeze brands made of copper alloy. The face should be  $\frac{7}{16}$ -inch.



2. Foam or metal cooler to hold the dry ice-alcohol solution. Branding irons are placed in this solution when they're not being used. Solution should be  $\frac{3}{4}$  to 1 inch deeper than the depth of the irons. Allow 20 to 30 minutes initially for irons to get cold.

3. Clippers, preferably with a sheep head to clip area to be branded.
4. Rice root brush to brush clipped area free of dirt and hair.
5. Alcohol – 95% or better. Wet the area on the animal to be branded with alcohol after you have brushed the dirt away. This will allow the iron to make good contact with the hide.
6. Dry ice. Keep in a second foam cooler until used. It may take several pounds of dry ice to cool the alcohol and irons initially. Once they are cooled, it will take only small amounts to keep the solution and irons cold. Allow sufficient time for irons to cool initially (approximately 20 to 30 minutes) and sufficient time between uses to get cold again (approximately 2 minutes). Handle irons and dry ice with heavy gloves to avoid frostbite.
7. Squeeze chute with drop down side panels to restrain cattle.
8. Stopwatch. Each iron should be applied to the hide with reasonable and firm pressure for 50 to 55 seconds. (Use of liquid nitrogen requires different timing.) Timing is extremely important.
9. When freeze branding, good, readable brands should be the goal, and not speed. Take your time and brand with just one number at a time. If you are going to place a brand on an animal, the preferred location is the hip because freeze branding causes some hide damage and there will be less loss if located on the perimeter. However, at WVU, we brand on the side because it does not seem to irritate the cattle as much as branding on the hip. Because the cattle stand better in the chute, we believe we get better brands. A third

location that some people use is the shoulder with numbers running vertically.

Fig. 1



Step 1: Put dry ice, alcohol, and branding irons in cooler to get cold. Allow at least 20 - 30 minutes to get cold. Bubbling should stop.

Fig. 2



Step 2: After you get the animal in the squeeze chute, clip the area to be branded. After you have finished clipping, brush dirt and loose hair away with a brush.

Fig. 3



Step 3: Apply alcohol to area to be branded so the branding iron will achieve good contact with the hide.

Fig. 4



Step 4: Apply the brand with firm pressure making sure the entire brand has contact with the hide for 50 - 55 seconds. Have a second person with a stopwatch do the timing. Notice, this individual is wearing gloves.

Fig. 5



The finished brand will swell up and a scab will form (as in photo above). After about 10 to 14 days, this scab will start to peel. White hair will grow in the area (as in figure 6 below). The time it takes for this to occur will vary depending upon the season of year when the branding was performed.

Fig. 6



Figure 6 shows the finished product one year later on a 2-year-old Angus cow. This brand is visible from a significant distance. At WVU, the brand, ear tag, and tattoo are all the same number.

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