

## **FREEZE MARKING FARM LIVESTOCK**

**Freeze markers can be used to "LEGALLY" show ownership in Washington. They may be recorded either as an ownership brand or in-herd identification number series brand.**

Freeze branding is a technique in which a supercold branding iron, properly applied to the animal's hide, kills the pigment producing cells. The result is that white hair, instead of colored hair, grows at the brand site. Freeze branding is effective on both cattle and horses, and some reports have shown good results on swine. One advantage of freeze branding is that it produces readable brands at any time of the year, is relatively painless, does not scab, and has no blotch factor. Some disadvantages include extra care in application, requires close clipping, and the use of a refrigerant is necessary. This process takes more time and the branding iron must be made of copper, brass, or bronze.

### **MATERIALS NEEDED:**

Holding or Restraint Chute & Twitch	Freeze Branding Iron
Dry ice and alcohol, or liquid nitrogen	Insulated container for the coolant
Insulated gloves	Electric or manual hair clippers
Watch with second hand	Pan for room temperature cleaning liquid
Grooming brush for cleaning the hide	Insulated container for storing dry ice

**BRANDING IRONS** are made of metal that will conduct cold well. **The best marker is made of copper** and has an inch of metal from the face to the back. **Brass or bronze markers are also satisfactory.** Conventional or Electric irons are not good substitutes, as they usually do not contain enough metal to maintain the cold during the freeze marking time. The face of the iron should be smooth to get good contact with the skin. The edges and corners should be rounded to get a clear freeze mark. Sharp edges allow the cold to "bleed" off the edges, producing a less clear mark.

**COOLANT CONTAINERS** An insulated container will be needed for the dry ice and alcohol. They can be improvised by putting a half-bushel basket, or other metal containers, inside a bushel basket with insulation on the bottom sides. An insulated picnic container is also satisfactory, however, it is important that the container be large enough so all the irons being used will be submerged in the coolant. A well insulated container will be needed for storing the ice prior to use.

**REFRIGERANT** may be either liquid nitrogen, **OR** a mixture of dry ice and 95% ethyl, methyl, or isopropyl alcohol.

**Liquid nitrogen** is a very good refrigerant and is available through artificial insemination organizations, some welding supply firms, and others. Liquid nitrogen will cool and recool your irons faster than the dry ice method. If you are using liquid nitrogen, pour the nitrogen into a chill box made of styrofoam.

**Dry Ice Alcohol Method** the alcohol content must be 95%! 70% alcohol (rubbing alcohol) will not work. As the water content of alcohol increases, the temperature of the dry ice/alcohol mixture becomes warmer, and the mixture may not produce a good freeze mark. Even 95% alcohol will gather water from the air on a rainy day and thus produce a mixture that is less cold. Dry ice can be shipped by truck or bus from suppliers in larger cities, or is often available from dairy processing plants or trucking firms. It can be kept for a day or two in a rigid plastic styrofoam box.

Pour enough alcohol into the coolant container to adequately cover the irons you will be using. Add dry ice, approximately two inch squares, into the alcohol. This will immediately create a boiling action in the liquid. This action will continue until the liquid is completely chilled or about 90 degrees below zero. The amount of dry ice in the liquid is not critical as long as some solid pieces are visible. Place the branding irons in the coolant. The irons have reached the temperature of the mixture when the rapid boiling action stops around the irons.

**PRECAUTION** Dry ice and the cold liquid can cause injury to humans, and precautions should be taken that these do not come in contact with your skin. **Use care** in handling either refrigerant. **Wear insulated gloves** to avoid severe freeze burns. Wear your pants over your boot tops so refrigerant does not get into your boots. Acetone and alcohol are inflammable and should be used in the open air, or a well ventilated building. Avoid smoking and keep this material away from open flames. Vapor from this liquid is also dangerous to the tissues of your eyes and nose. After use, do not put this liquid in a closed container until it has warmed up, as it may explode.

**RESTRAIN** the animal in a holding chute or use some means of keeping it completely still. It need not be severe because freeze marking is relatively painless. However, if you cannot keep the marking iron solidly on the marking site for the required time, your mark will not be clear. A chute should be used for cattle, and a twitch for horses, and a suitable means of restraint for other species. If the animal will tolerate being clipped and scrubbed, it will usually cause no trouble when the freeze marker is applied.

**HAIR CLIPPING** is absolutely necessary for this type of branding. A manual clipper may be used, but an electric clipper is almost a must when large numbers of livestock are being branded. Clip the hair as closely as possible from the area you will be branding. Use room temperature alcohol and a grooming brush to clean the branding area of all foreign matter. Immediately before applying the iron, again saturate the branding area with room temperature alcohol. It is important that this area is wet when the iron is applied. A squirt bottle, improvised from a plastic liquid soap container with a perforated cup, is an excellent dispenser for applying alcohol or acetone.

**Marking site** select a firm, fleshy location issued by the state brand office.

**Carefully** lift the marker from the refrigerant and shake it vigorously to remove the excess. Apply the marker to the branding site with firm pressure for the proper time as indicated.

**Apply the iron** to the hide with pressure, and make sure that all portions of the iron are in contact with the hide. Lack of pressure or uneven pressure will result in poor brands. Hold the iron on the hide at least 40 to 50 seconds on calves, and 50 to 60 second on cows. Immediately after use, place the marker back into the refrigerant. The marker should always be completely covered with refrigerant when it is re-chilled between animals.

**When you remove the iron**, the hide will have frozen indentations of the marker. In about 10 minutes, the area will begin to turn red and swell. This will persist for up to 48 hours. Scales will develop and the old hair coat will fall out. New supple skin will form under the scales. Do not remove the scales; let them fall off naturally. In about twenty-two days after branding, the hair where the brand was applied will have completely fallen out and the brand can be read. White hair will appear on the branded area in two or three months.

**The brand design** will always be distinguishable on the skin from the time the mark is made until white hair grows at the site. There will be no open sore to attract flies and invite infection. The animals will feel no pain at the site because the extreme cold inactivates the nerve endings for approximately four weeks.

**Cows have two hair growing cycles**, spring and fall. for this reason it has been experienced that cows branded in the middle of the winter did not grow hair on the branded area until spring. Thickness of the hide also seems to affect the application time of freeze branding. **Freeze marking time for white haired animals should be 10 seconds longer.**

**ANIMALS OTHER THAN CATTLE** Horses, sheep, goats and small black pigs will all freeze mark successfully.

**HORSES** Adult standard or draft horses require approximately **20 seconds** to produce white hair, although an old, tough-skinned stallion may require as much as 60 seconds. Adults of most pony breeds require up to 60 seconds marking time.

**SHEEP** Because of the long wool growth on the body, face brands are recommended. A white hair mark is very readable on a black-faced sheep. A bald mark can be made on the face of white sheep, but will not be visible from a great distance. Sheep and goats will freeze mark in about **20 seconds** with liquid nitrogen.

**SWINE** Freeze marking of small black pigs has been successful, but freeze marking of white pigs has not been satisfactory. Pigs have very deep-rooted hair, and freezing to the root of the follicle may damage the tissue to the point of scarring. For swine, **30 seconds** application time with liquid nitrogen is suggested.

**CANINE** Hunting dogs can be freeze marked on the body or on the ear. When marking on the ear, place a firm, smooth object, such as small board covered with neoprene rubber under the ear for a firm surface to push the marking device against. Apply the marking iron for **8 seconds** when using liquid nitrogen.

**All recommendations for application time are general, and the technician must adapt them to his conditions.**

**UNSATISFACTORY FREEZE MARKS** can be caused by:  
Over branding, causes contraction and narrowing of the mark  
Water in the Alcohol, causes the refrigerant to be too warm  
Incorrect clipping or cleaning, causes poor contact  
Failure to Time, unnecessary balding or too few white hairs