

U.S. Hide, Skin & Leather Industry

# EDUCATIONAL GUIDEBOOK

From the History of the U.S. Cattle & Beef Industry  
to the Future of Hides, Skins & Leather

2019



Written by Dick Veale





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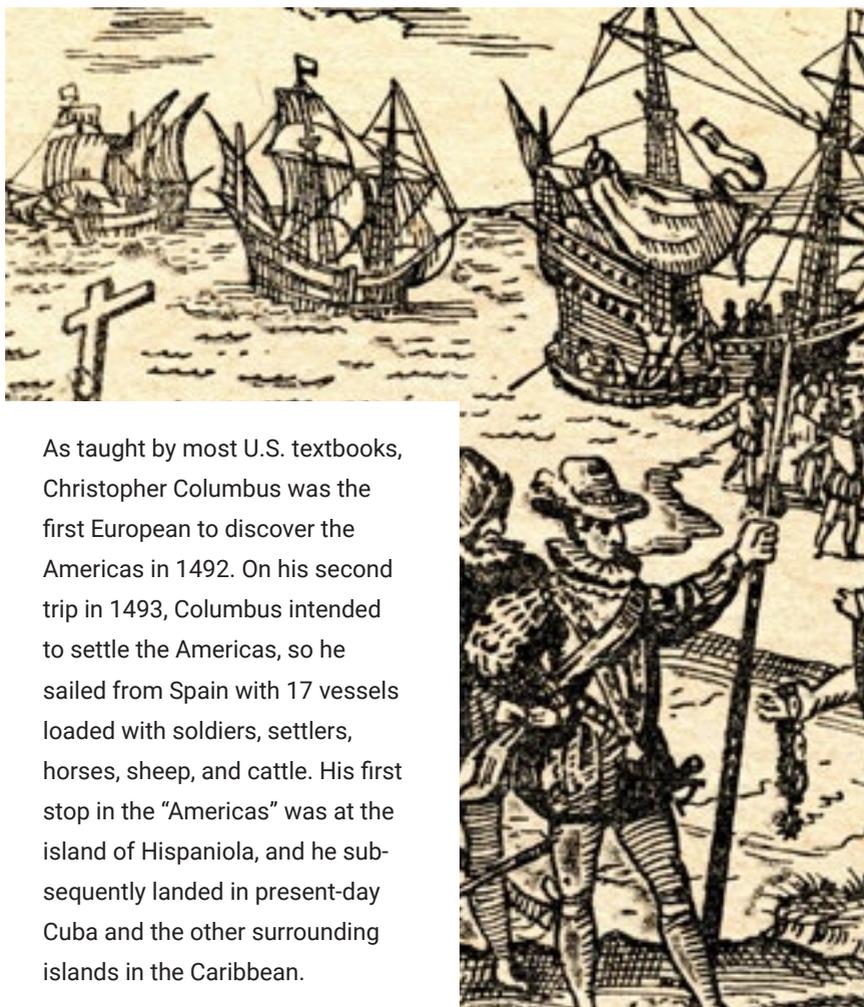
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# HISTORY OF THE U.S. CATTLE & BEEF INDUSTRY

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As taught by most U.S. textbooks, Christopher Columbus was the first European to discover the Americas in 1492. On his second trip in 1493, Columbus intended to settle the Americas, so he sailed from Spain with 17 vessels loaded with soldiers, settlers, horses, sheep, and cattle. His first stop in the “Americas” was at the island of Hispaniola, and he subsequently landed in present-day Cuba and the other surrounding islands in the Caribbean.



*The first colonization trip in 1493 and subsequent trips by Columbus and other explorers brought mostly European-bred cattle to North America. As a result, European cattle ended up in every North American colony and outpost that the settlers established.*

The cattle that the early settlers brought were almost all of the European longhorn breed, and by the early part of the 1500s, there were longhorn cattle spread all over the southeast area of what is now the United States and Mexico. Cattle ranches flourished throughout the 1500s and 1600s.

**IN 1836**, the State of Texas seceded from Mexico and became an independent country for a brief time; and most of the land-holding Mexican ranchers fled south to Mexico as a result. However, they left their cattle behind, which allowed the remaining Texans to establish their own extensive cattle ranches. By the mid 1800s, beef became

an increasingly popular food source in the region and beef animals became a major source of revenue for the Texas ranchers. Once again, the cattle population expanded, as did the number and size of ranches throughout the region.





**IN 1861**, when the American Civil War broke out between the northern states and the southern states, many Texas ranchers left their homes to fight in the war (Texas was now a part of the United States). Although the war devastated most of the southern states, the cattle in Texas and the Great Plains, left to their own devices, further expanded in numbers. It is estimated that over 5 million longhorn cattle roamed the southern states of the U.S. by the end of the Civil War.

The problem at the time was that there were no major markets for beef in the south. Any cattle brought north to the cities of Chicago in the Midwest or to the large East Coast cities, such as New York or Philadelphia, could fetch ten times more than what they were worth in Texas. This geographic market inequity brought about

the start of the cattle drives that history and movies depict so aptly in the “American Cowboy” western lore. During these cattle drives, cowboys would spend weeks driving large numbers of roaming cattle from Texas and other southern states to the lucrative consumer markets in the north.



**FROM 1867 UNTIL THE EARLY 1880s**, the cattle business flourished in the U.S., ranches once again expanded in size and numbers and as more Native American populations were moved off their lands in the Great Plains and onto special reservations. Consumer demand for beef increased as well. Besides the increased consumer demand for beef, the expansion of railroad service in the U.S. was another major reason for cattle herd expansion. Instead of driving cattle all the way to Chicago or other major cities on the East Coast, cattle drivers were able to drive herds of cattle up from Texas to Abilene, Kansas to be loaded on freight trains and transported to the slaughter plants located in the major cities.

#### **BY THE LATE 1800s IN THE U.S.,**

however, there was a major collapse of the beef industry. Several factors caused this collapse, but a few of the major reasons include:

Cattle ranchers brought more breeds of cattle over from Europe to experiment with breeding and genetics. Many of the breeds brought over from Europe did not do well and simply died in the open ranges of the Midwest and Southwest regions of the U.S.

As the U.S. population expanded due to a sharp increase in immigration, populated areas expanded in the West and there was less open grassland for cattle to pasture on.



**IN 1883**, a major drought effectively ruined a lot of the available grassland in the Great Plains of the U.S. Thirsty and starving cattle perished by the thousands.

A major reduction in consumer beef demand due to an economic recession during the time period resulted in the bankruptcy of many ranchers and cattle slaughtering companies.

**THE WINTER OF 1886** proved to be disastrous to the cattle industry. Freezing temperatures and severe weather conditions killed thousands of cattle and several hundred cowboys.

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The invention of **barbed wire** in 1874 meant that large swaths of open pastureland could be fenced in easily and cheaply. Cattle were no longer allowed to roam the Great Plains but were instead limited to enclosed pens. Barbed wire essentially made cattle drives obsolete.



Other factors also caused the cattle and beef industry “bust” in the late 1800s in the U.S. One was the rapid expansion of sheep herds. With the expansion of the U.S. towards the West, large numbers of **sheep herders** showed up, and that resulted in more competition for the land. Worst of all was the manner in which sheep graze.

Sheep tend to chew the grass all the way down to the root, leaving nothing left for cattle to graze on. The war between the cattlemen and the sheep herders, along with the fights with land settlers on previously open pastureland, all contributed to the contraction in the cattle industry in the U.S. during this time period.





**IN THE EARLY 1900s**, with the start of the Industrial Revolution, the population in the United States increased substantially. Large numbers of immigrants arrived in New York and Boston from Europe and elsewhere and settled on the East Coast or moved into the Midwestern region of the country.

All of this growth required more food to feed the expanding population. Beef became popular in the American diet once again and the development of beef processing plants located in and around major Midwest cities all helped to re-invigorate the cattle industry. The introduction of ice-chilled refrigerated railroad cars in the market proved to be a major factor in transporting beef from the meat packing plants in the Midwest cities, such as Chicago and Kansas City, to the consumer hubs on the East Coast.

At the same time, cattle were being introduced into feedlots near the beef processing plants, which transformed the industry.

**Feedlots**, as the name implies, are confinement lots or pens that contain as few as 6 head of cattle up to thousands of head. In feedlots, the cattle are provided a highly programmed feed formula that enhances weight gain as well as the health of the animals. There were still some small, local cattle drives in Texas and



Kansas where ranchers and farmers would bring cattle to the Midwestern cities and put them in stockyards and feed yards at the time, but nothing like in the heyday of the 1860's. Ranchers and beef producers noticed that cattle placed in the feedlot put

on more muscle mass in a shorter period of time than cattle raised on grass alone, thus providing more meat per head. The feedlot system thus expanded as it proved to be more profitable for the producer.



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**FROM 1940 TO 1970**, the number of cattle on farms in the U.S. grew substantially. As a result, more feedlots were established to handle and prepare cattle prior to slaughter. Meat packing plants were eventually built all over the Midwest, located near or even next to the feedlots that supplied them the fed cattle for processing. This is largely where most of the U.S. meat packing plants remain today.



vehicle highway transportation system in the 1950s. With an extensive highway system built, both live cattle and processed beef could move faster and more easily than ever before. Cattle could be loaded in the afternoon in one location and moved hundreds of miles to another location to be processed at a meat packing plant the next day. Today, the U.S. cattle industry relies almost exclusively on trucking to get animals from the farm to the processing plant, as well as the meat to the consumer.

**ANOTHER FACTOR** that played a significant role in the history of the cattle industry in the U.S. was the development of the motor

The cattle population in the United States varies from year to year and certainly is reflective of the cycles of beef supply and demand. Normally, the total cattle population in the U.S. totals approximately 94 – 98 million head in any given year. Of this total, approximately 10 million are cows, such as Holstein cows, that are raised primarily

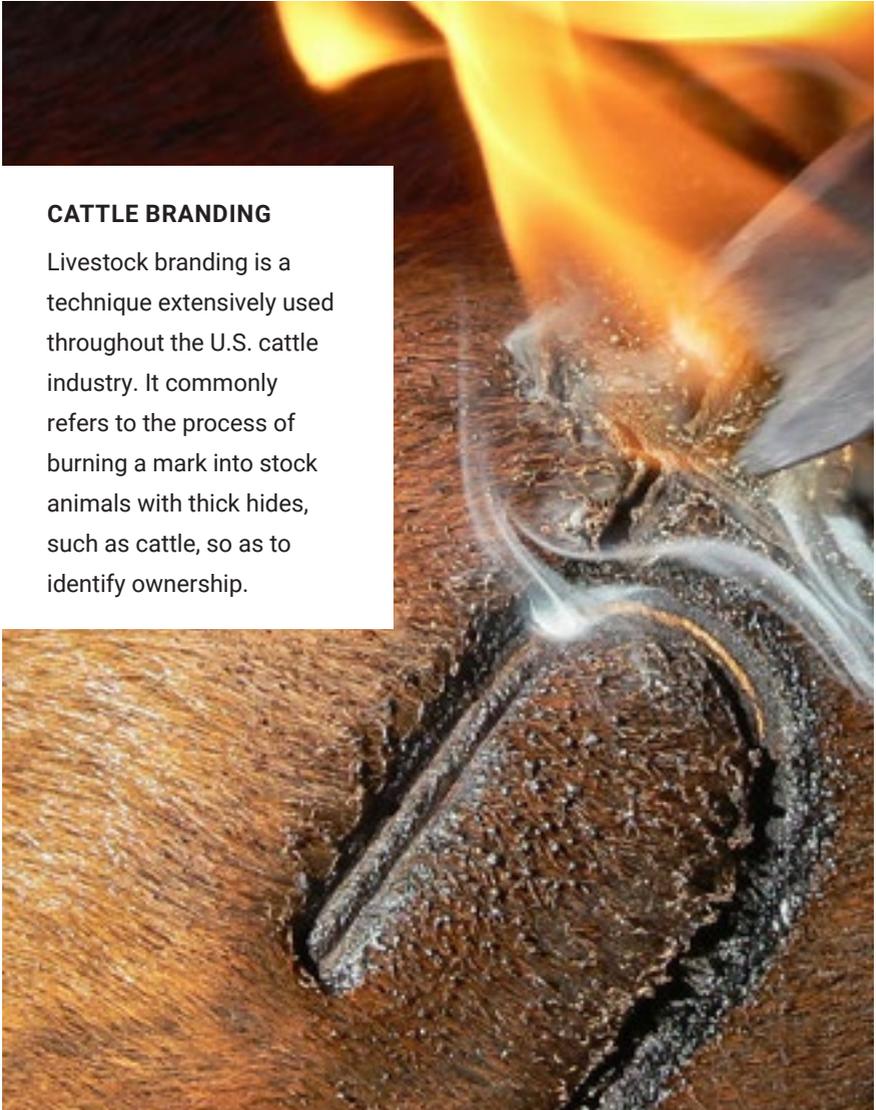
to produce milk. Another 30 million cattle are farm raised animals that ultimately end up being slaughtered for beef. The balance of around 50 million consists of steers, heifers, and calves. Both Federal-inspected and non-federal inspected cattle and calf slaughter totals are approximately 34,000,000 a year.

**January 1: U.S. All Cattle & Calves Inventory in Millions**  
1867-2018 (2018 Inventory 94,399,000)



### CATTLE BRANDING

Livestock branding is a technique extensively used throughout the U.S. cattle industry. It commonly refers to the process of burning a mark into stock animals with thick hides, such as cattle, so as to identify ownership.



Originally, livestock branding only referred to hot branding with a branding iron, though the term now includes alternative techniques, including freeze branding. The word “brand” originally meant anything hot or burning, such as a “firebrand.”

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The act of marking livestock with **fire-heated marks** to identify ownership has origins in ancient times. The practice is particularly widespread in nations with large cattle grazing regions, such as the Great Plains region of the U.S.

In the U.S., a **“branding iron”** consists of an iron rod with a simple symbol or mark, which cowboys historically heat in a fire. After the branding iron turns red hot, the cowboy presses the branding iron against the hide of the animal. The resulting mark clearly identifies the owner of the animal and helps to prevent problems related to “cattle rustling,” or theft of cattle.

In the past, the unique brand also meant that cattle owned by multiple ranches could graze freely together on the open range. Cowboys could then separate the cattle at “roundup” time for driving to market. Brands became so numerous in use that laws were

passed requiring the process for registration of brands with local governments, and the inspection of cattle driven through various territories. Penalties were imposed on those who failed to obtain a bill of sale with a list of brands on the animals purchased. To this day, many U.S. states, primarily in the West, still have laws and regulations requiring cattle branding.

The presence of a brand on a hide is considered a defect by leather tanneries. The brand is an undesirable scar that must be buffed or removed during leather production, resulting in lost usable area of the finished leather. Therefore, the price of hides containing a brand are typically discounted when compared to hides without brands. The size and location of the brand on the hide will also dictate the price differential. These specific differences are discussed later in this document.



# LIVE CATTLE PRODUCTION IN THE UNITED STATES

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*The live cattle industry in the U.S. can be broken down into two main production segments or phases:*

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**1.**   
THE COW/CALF  
OPERATION

**2.**   
THE FEEDLOT  
OPERATION





## THE COW/CALF OPERATION

The Cow/Calf operation is the most commonly used method in the United States to raise cattle for beef. Cow/Calf operators, usually independent farmers or ranchers, maintain a permanent herd of cattle on their property for the purpose of producing calves for sale at a later date. The majority of cow/calf operations have less than 50 head of cattle in their herd, and typically engage in other farming ventures as well.

*Cow/calf operations generally have two separate profit streams.*

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### 1.

**THE FIRST PROFIT STREAM** is to raise calves to become “feeder” cattle that are then sold and further raised in feedlots. Generally, these cattle are sold to feedlots when they are slightly under a year of age and have been weaned from their mother. In feedlots, the animals are typically fed grains such as corn and soybeans. Therefore, once these animals are slaughtered, they produce what is known as “grain fed” beef.

### 2.

**THE SECOND PROFIT STREAM** consists of raising and keeping cattle exclusively on grass pasture for one to three years before being sold directly to meat packing plants for slaughter. These animals result in “grass fed” beef products because they were only fed grass from pastures their entire lives.

Most Cow/Calf operations raise their animals on pastureland with their primary feed being grass,



hay, and other plant roughage with little or no grain. Breeding is an extremely important part of the operation, as ranchers and farmers specifically breed cattle to meet the demand for beef but also to attain specific traits in the cattle herd. Such traits include leaner meat,



resistance to illness, and adaptability to the environment. In the breeding process, cows are inseminated either naturally by a male bull or by artificial insemination. Bulls are released into the cow herds for natural breeding typically six weeks after the cows have last calved and usually during the summer months.

Most cow/calf herds consist primarily of older female cows, their young calves, and heifers, which are young female animals that have never had a calf. Heifers can be held back at the farm or ranch for future breeding, but they will not be called a “cow” until they have birthed a calf.

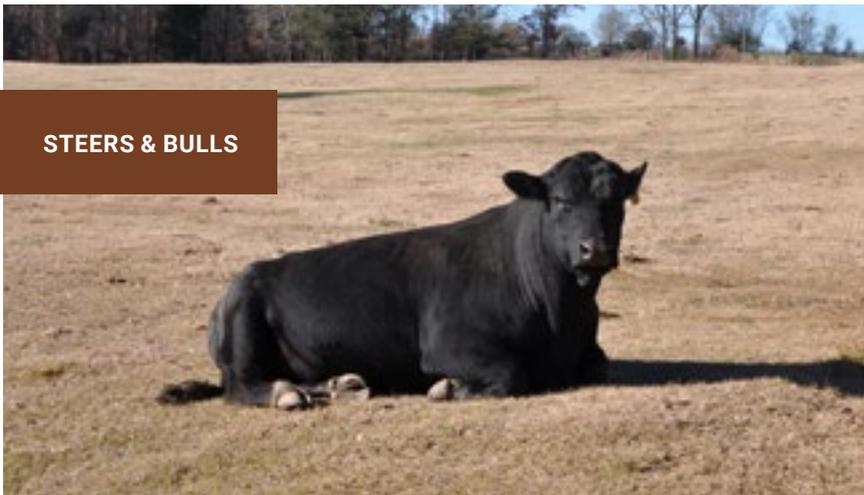
**WEANING** is the process of taking the calves off their mother’s milk and encouraging the calves to drink and eat independently. Generally, calves are weaned at six to eight months of age, and the weight of the calf at the time of weaning is typically 500 to 600 lbs.

The inventory of mother cows on a cow/calf operation, also known as brood cows, come from one of two sources: female calves that are raised on the cow/calf farm and are retained for about one to two years until they are old enough for breeding, and female calves that are purchased from specialized stock companies that produce purebred cattle. Therefore, female cattle on cow/calf operations, after they are weaned, can either be held back for breeding or are sold to the feedlots for grain feeding and weight gain prior to slaughter. A cow that is no longer fertile and cannot yield more calves will be sold to a meat packing plant for lean beef production.

*All male calves born on the beef cow/calf farms are divided into two categories:*

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## STEERS & BULLS



**STEERS** are male bull calves born on the farm that are castrated when they are 3 to 5 months old. Turning a bull into a steer simply involves castrating the animal with both testicles being removed. There are two major reasons for castration. First, bulls are notoriously aggressive animals that get agitated easily and end up fighting other bulls. This bad behavior is curtailed by castration. More importantly for beef production purposes, removing the testicles alters the hormone system of the male animal, which will change the flavor profile of the meat for the better.

The other option for a male calf born on the cow/calf ranch is to be left as a **bull** for future breeding once it has matured. Due to its temperament and reproductive urges, bulls are normally separated into their own pens on the ranch and only released into the cow herd during mating season. Once a bull is no longer considered desirable for breeding purposes, it will be sold to meat packers for production of lean beef.



Of course, cattle are also raised for milk and dairy purposes in the U.S. The production practices for the dairy industry are slightly different than the beef industry. Most of the cattle raised in the U.S. for dairy purposes are Holstein breed cows with the iconic black and white coloring.



**A HOLSTEIN DAIRY COW** is inseminated for impregnation in order to begin the milk production cycle. If the dairy cow gives birth to a female calf, the calf is typically raised for future dairy production purposes. If the cow gives birth to a male calf, the male is placed into one of three different categories: *Veal, Holstein Steers, or Bulls*.

**VEAL** is meat harvested from a young milk-fed Holstein calf. Most of these animals are placed in pens after weaning from their mothers, and are fed a milk-based formula. The veal calf is slaughtered at about 20 weeks of age with a live weight of about 500 lbs. produces a very light-colored meat that is a feature of many cuisines, especially Italian. *The skin is known as kipskin*. In the past several decades, there

has been a marked decrease in veal meat production in the U.S. due to the high cost of the meat, changing diet preferences, and price competition with other protein meats.

**HOLSTEIN STEERS** are the second category of production and over the last several decades the U.S. beef industry has seen substantial increases in this cattle category selection. Once again, the Holstein bull calves are turned into steers and put into feedlots, similar to other beef breeds. Some Holstein Steers are placed in a feedlot at 200 lbs and never leave that feedlot until they have grown to the weight of 1300 lbs.

The third option for the Holstein **BULL CALF** is to be retained on the farm as a breeding bull, similar to bulls used for beef production.

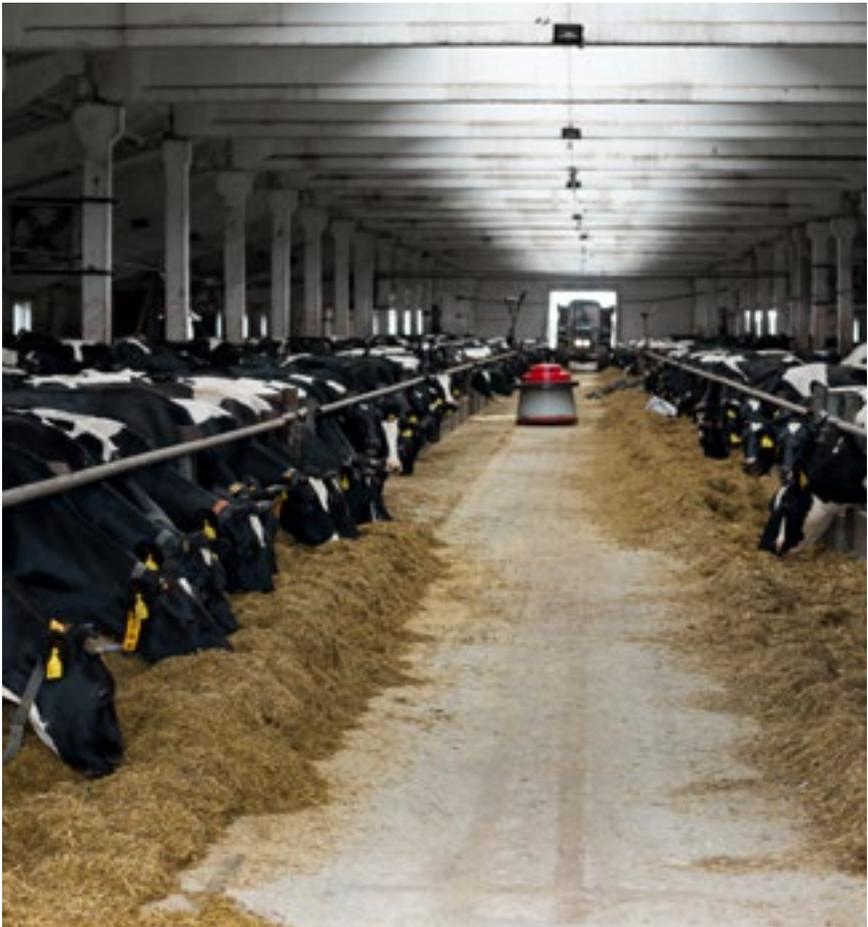


### THE FEEDLOT OPERATION

**A COW/CALF OPERATION** will generally sell its weaned calves to a feedlot for further fattening prior to slaughter. Feedlots in the U.S., therefore, generally function as “finishing” operations for preparing cattle for slaughter. A typical steer or heifer put in a feedlot at **600 lbs.** will gain about 3 lbs. per day and end up at a ready-for-slaughter weight of about 1200/1300 lbs. in 200 days. It is interesting to note that in order for a steer or heifer to gain the required 3 lbs. a day, it has to eat about 20-25 lbs. of corn and about 2-3 lbs. of hay each and every day. Weather plays a factor in the feeding operation, as cold, wet winter weather will alter the weight gain of cattle as they use more calories to stay warm.

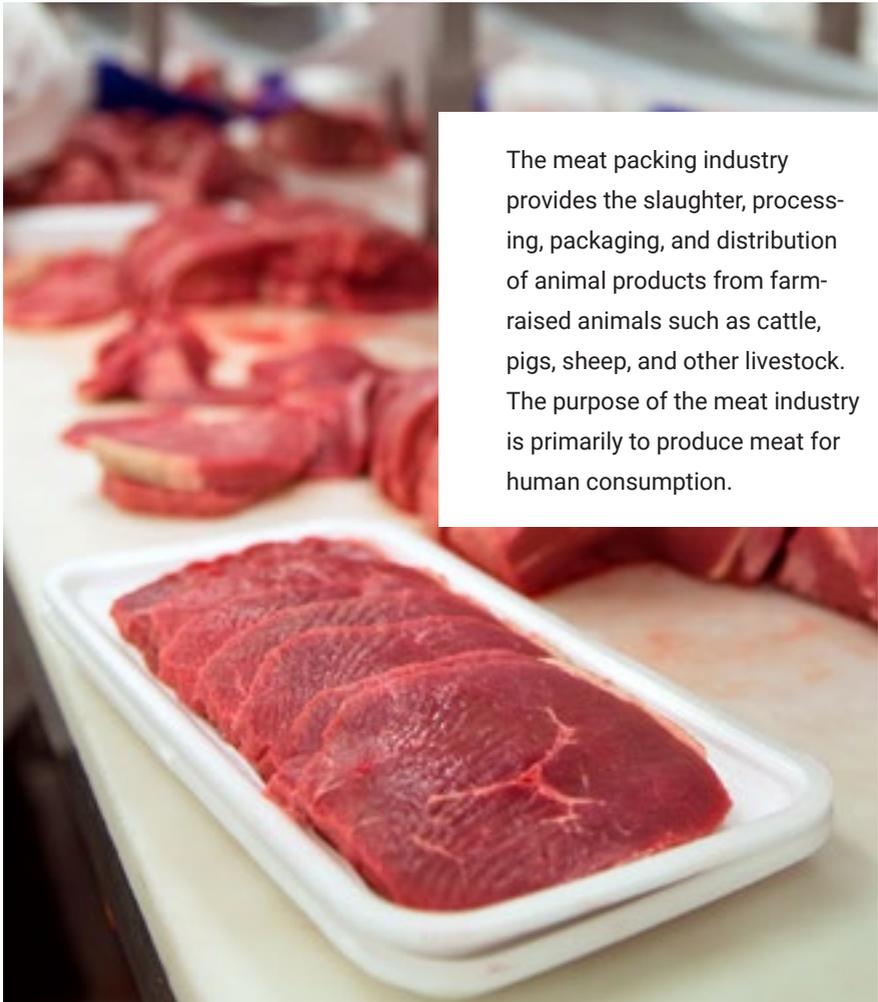


At any given time, there are about **12 million** head of cattle in feedlots in the U.S. that are in various stages of slaughter readiness. Feedlots fill their pens with cattle from farms, ranches and other feedlots on a regular basis. Industry statistics released by the U.S. Department of Agriculture, known as the Cattle on Feed Report, show the number of cattle put on feed each month and break down the numbers and availability based on weight ranges. Most cattle are placed in feedlots in the 600 lb. to 800 lb. live weight range, yet many cattle over 1,000 lbs. are put on feed each month according to the report.



# THE U.S. MEAT PACKING INDUSTRY

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The meat packing industry provides the slaughter, processing, packaging, and distribution of animal products from farm-raised animals such as cattle, pigs, sheep, and other livestock. The purpose of the meat industry is primarily to produce meat for human consumption.

Slaughter of beef cows and steers in the United States **DATES BACK TO THE EARLY COLONIES** established along the East Coast.



There, the early settlers slaughtered deer, elk, and bison in a primitive fashion – simply hanging the animal from a tree limb. Cattle slaughter was localized. Farmers and ranchers slaughtered their own cattle or local butchers were paid to slaughter the cattle. After the American Civil War in the

1860s, the expansion of cities in the U.S., along with increases in population, created more demand for beef. In response to the growth, larger meat packing plants that were built, primarily in the cities of Chicago, Kansas City, Milwaukee, and other Midwest locations.

## HISTORY OF U.S. MEATPACKING

*A man named PHILIP ARMOUR, who was from the city of Milwaukee, Wisconsin, opened the first major beef packing plant in Chicago, Illinois. This plant was adjacent to an efficient and large cattle stockyard that serviced the Midwest. The construction of the Armour plant was followed by an even larger beef meat packing operation in Chicago. This plant was started by Boston entrepreneur Gustavus Swift.*

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The invention of the **ICE-COOLED RAILROAD BOXCAR IN 1881** allowed the meat packers in the Midwest to ship cattle carcasses to large cities with growing populations all over the Midwest and East Coast of the U.S. Because of these Chicago meat packers, ranchers all over the states of Montana and Wyoming and as far south as Texas were able to reliably market their live cattle easier and at much better prices than ever before. Consumers, likewise, were able to buy better quality beef and a wider variety of meats than ever before.

**AFTER WORLD WAR II**, the stockyards and meat packing plants located in the city of Chicago largely closed down and moved their operations closer to live cattle farms and ranches. New meat packing plants opened up in places like St. Paul, Minnesota; Sioux City, Iowa; and Los Angeles,



California. Most packing plants scattered across the U.S. in that time period were relatively small operations processing fewer than 100 animals per day.



**MODERN TECHNOLOGY**, along with cost-saving economies of scale, created a major change in the meat packing industry starting in the 1960s. This change was mostly led by the establishment of the *Iowa Beef Processors (IBP)* company. IBP first built a large-scale meat processing plant in Denison, Iowa. It then followed up with other plants in Kansas and Texas. Prior to 1960, almost all meat packing plants were built as multi-story buildings located in major metropolitan cities such as Chicago, Milwaukee, and Kansas City.



***IBP revolutionized the meat packing industry by locating their plants outside cities in areas where the cattle were situated.***

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This lessened the transport time for the animals from feedlot to the packing plant. By building meat packing plants near the cattle, IBP not only reduced freight costs but also increased product quality as well. However, the biggest advantage of moving plants to where the cattle were was the ability of the packer then to do business directly with the cattle producers, cutting out middlemen and, therefore, reducing procurement costs. In addition, IBP changed the building structure of meat packing plants from being a multi-storied plant to a more

economical one-story facility.

This change from vertically-designed to horizontally-designed plants allowed the meat packing companies to increase automation techniques such as installing and making use of conveyers and rail systems to simplify meat processing.

Overall, this revolutionary change

to meat processing greatly increased productivity as well as reduced costs. Other meat packing companies followed suit and built high volume economical beef and pork plants all over the Midwest and Western states.



## MODERN U.S. MEATPACKING INDUSTRY

***Very large meat packing plants, with the capacity to process up to 6,000 head of cattle a day, are now found throughout the states of Kansas, Texas, and other Midwestern locations.***

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Approximately 80% of the cattle slaughtered in the United States today are steers and heifers that originate on a cow/calf ranch, moved to a feedlot where they gain maximum weight, and finally, end up in the packing plant for slaughter. These “fed” cattle provide domestic as well as foreign consumers some of the best quality beef produced in the world. Cross-breeding and other animal husbandry practices starting on the farm and running through to the packing plant have resulted in a higher quality of beef produced in the U.S. in recent years.

The remaining 20% of all cattle slaughtered in the U.S. are processed by smaller packing plants that handle mainly beef cows, dairy cows, and bulls. Some plants process both steers and heifers as well as cows and bulls, but that is the exception rather than the rule. Small packers, with slaughter capabilities of anywhere between 20 to 150 head a day, used to be the backbone of the U.S. meat packing industry back in the early 1900s. As stated earlier, these plants were located in almost all American cities with populations over 50,000 people.



## THE MODERN U.S. MEAT PACKING PLANT OPERATION

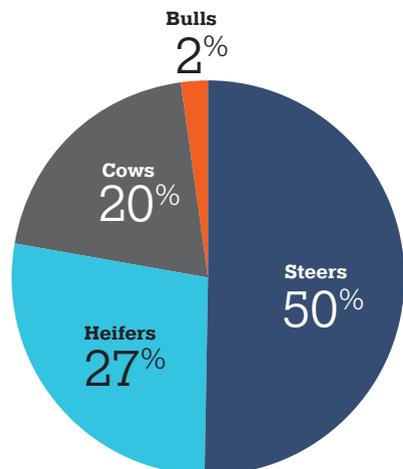
Today, cattle that are processed by U.S. meat packers are purchased from either the feedlots or directly from farmers. In many cases, the meat packing companies themselves may own the feedlots and, therefore, the animals they process are their own. The animals are transported, usually by truck, to the meat packing plant, which can be as short a distance away as 100 yards or a matter of several hundred miles. On arrival at the plants, the cattle are weighed and unloaded into pens to wait for processing. Groups of cattle are selected and maneuvered in the pens and herded into chutes that enter into the packing plant. Once the animals enter the plant, they enter the main slaughter area and are stunned using a variety of methods to place the cattle in an unconscious state. This is an important step so that the animal experiences no pain in the slaughter process. Stunning is normally accomplished by a sharp concussion to the brain by an instrument such as a metal bolt or a pin hitting the top of the animal's head above and between the eyes.

### CATTLE AND MEAT BY THE NUMBERS:

***Roughly 61% of the weight of the cattle when alive ends up being used as beef – that is after the hide, the intestines, the organs, the hoofs, the blood, and the head are removed.***

A 1200 lb. animal will, therefore, be a 750 lb. carcass after all of those items are removed and will provide about 490 lbs. of boneless trimmed beef.

According to the U.S. Department of Agriculture, total U.S. cattle slaughter breaks down into approximately the following types of animals.



# THE U.S. RENDERING INDUSTRY

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## ONE OF THE MAJOR BY-PRODUCTS OF THE U.S. MEAT PACKING INDUSTRY IS RENDERING.

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Rendering companies primarily take products created in meat packing plants that cannot be used for human consumption and turn them into valuable products that can be used in other applications. The word “by-product” itself means a “secondary product obtained during the manufacture of a principal commodity.” Rather than one product, the process of rendering produces a long list of by-products that include the following:

- Hides and Skins
- Meat and bone meal
- Meat meal
- Tallow – white or yellow grease
- Feather meal
- Blood meal
- Livestock feed
- Biofuels
- Pet food



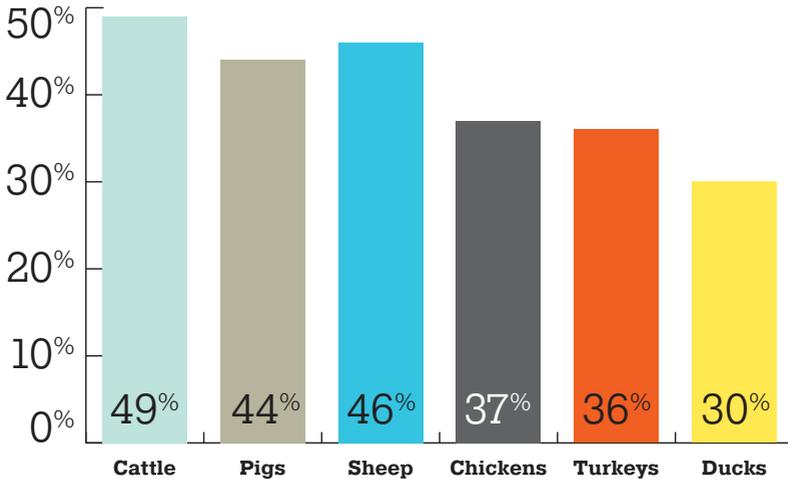
Rendering is important for the leather industry because these companies end up producing a large number of hides and skins.

**RENDERING** has a long history of uses, starting with the Native Americans using the blood of processed animals for fertilizer as well as tallow for making candles and soap. Today, roughly 270 rendering facilities are located all over the United States and Canada.

The pet food industry is one of the largest users of rendered products. In the United States alone, about 45 million households have cats and about 57 million households have dogs. Those numbers increase every year. Rendered ingredients from the meat packing industry are extremely popular in pet diets. In fact, total U.S. household expenditures on feeding pets add up to approximately \$60 billion a year. If not for the rendering industry, there would be major shortages of foodstuffs, both dry and wet, to feed those pets.

**The following table highlights the approximate amount of tonnage of non-human product that is produced from each type of meat industry species:**

In all, approximately **56 BILLION LBS.** of non-edible animal material produced in the U.S. and about 6 billion lbs. produced in Canada have to be rendered every year.



of live weight not used for human food  
Pigs/Hogs - 44% of live weight not used for human food

**TWO MAIN TYPES OF RENDERING COMPANIES EXIST:**

- 1** | *Meat packers that have the facilities to do their own rendering on site at a slaughter plant and ...*
- 2** | *Independent rendering companies not associated with one particular meat packing plant.*

***The raw materials that renderers receive to process consist of the following:***

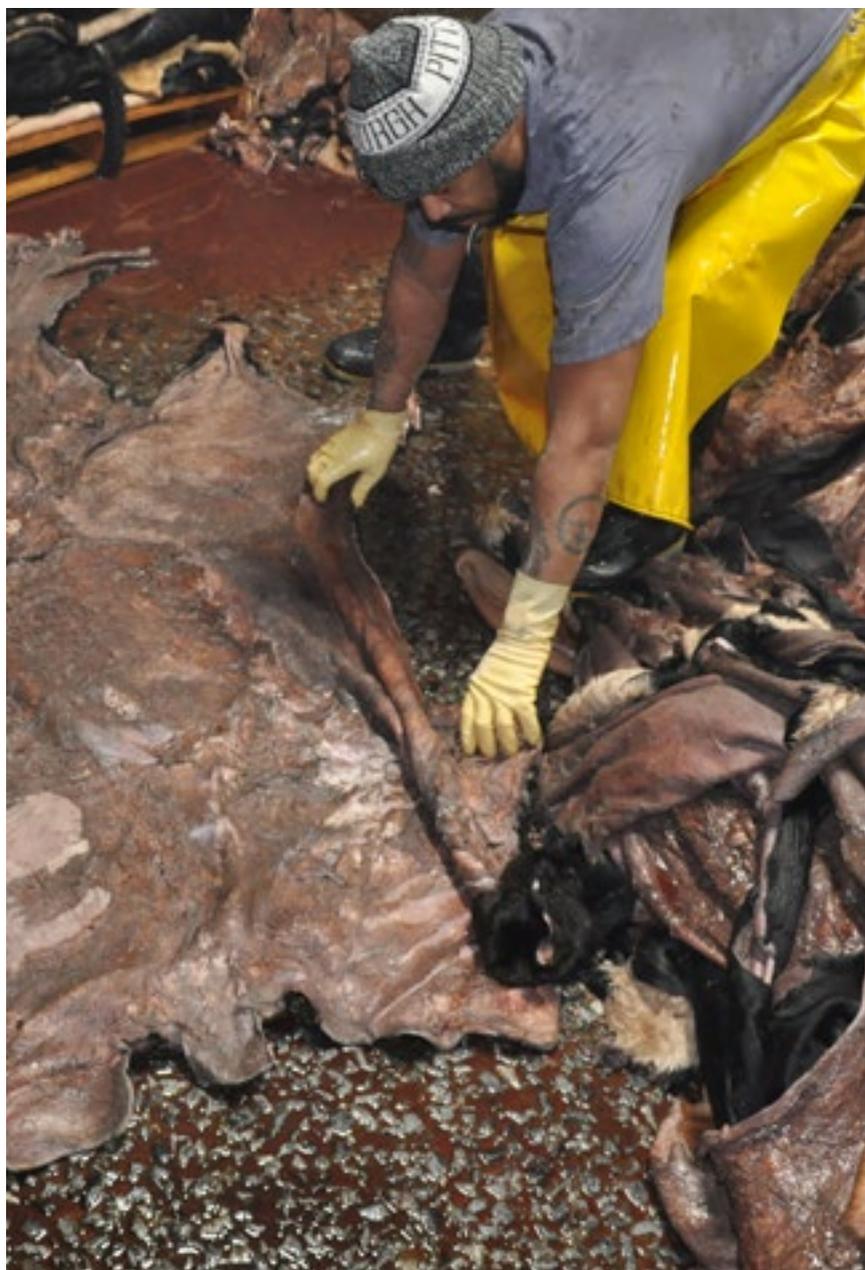
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- Non-edible offal
- Bones, fat and trimmings
- Hides
- Restaurant grease
- Feathers
- Grocery store material such as 2.7 billion lbs. of expired meat and seafood produced every year.
- Animals that die of natural causes on farms – including about 1.7 million adult cattle, 2.4 million calves, 18 million pigs, and 350 million lbs. of poultry.

**“EDIBLE”** simply means that a product is produced for human consumption while “non-edible” is a product that is not fit for human consumption. Once something goes to be rendered, it can never go back to being used for human food again. However, through a number of processes and treatments, such product is still safe for animal feed.

**AS IT PERTAINS TO HIDES AND SKINS**, rendering companies are a major source of these products the United States. Renderers send trucks out to farms and feedlots, as well as meat packing plants, to pick up dead animals that never make it into the human food supply chain and die from weather, disease, accidents, and other natural causes.

**TODAY**, in most cases, renderers are large corporate operations that have sophisticated machinery and processing facilities. Historically, hides and skins that originated from renderers were considered lower-quality products by the industry, but many of the hides and skins produced by the modern rendering industry are of a decent quality that can be used to make nice finished leathers.



# U.S. CATTLE HIDE SELECTIONS, REMOVAL PROCESS AND GEOGRAPHIC REGIONS

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U.S. hides, and cattle hides in particular, provide a wide spectrum of uses for leather production that run the gamut from footwear, gloves, belts, and bags to furniture and automobile seating.

**WITHOUT LEATHER TANNING THAT TRANSFORMS HIDES INTO USEFUL AND LUXURY GOODS**, we would have a potential environmental disaster as we tried to compost or eliminate the millions of unused hides produced from meat packing. The following chapter explains how U.S. hides are removed from cattle after slaughter, sorted into different product selections, and provides some information related to the different geographical regions in the U.S. and the impact they have on hide characteristics.

## BIG PACKER VS. SMALL PACKER HIDES

As mentioned in earlier chapters, hides are a by-product of the meat packing industry. Generally, when an animal is slaughtered in the meat packing plant, the hide of the animal has to be removed to allow the packer to harvest the meat. The hide is also a major source of pathogens that may affect food safety of the meat, so the meat packer has an incentive to remove the hide from the carcass as quickly as possible. The hide by-product is then either processed for leather production onsite at the meat packing plant where it originated, or it is transported to an independent, regional hide processor that collects hides from a large number of packing plants.

Cattle hides produced today in the U.S. by meat packers are referred to as either “BIG PACKERS” or “SMALL PACKERS.”

“**BIG PACKERS**” refer to hides removed by a machine pulling system in a large meat

packing facility. Typically, the machines are located on or near the slaughter floor of the facility, and quickly remove the hide from the carcass shortly after slaughter is complete. The machine pulls the hide away from the carcass in a quick, uniform manner.

“**SMALL PACKERS**,” also known as “locker butcher hides,” generally refer to hides removed from the animals by hand with the use of butcher knives after slaughter. Small meat packing plants, sometimes called “locker plants,” mainly produce these types of hides. However, in recent years, some of the small meat packing companies have come to realize the increase in hide values associated with a machine-pulled hide over a hand-removed hide and have installed mechanical puller operations. For this reason, it is estimated that less than 10% of the hides produced in the United States today could be classified as small packer hides.



## THE HIDE REMOVAL PROCESS AT THE PACKING PLANT

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The hide removal process using a machine puller operation can be accomplished with as few as one worker on each side of the animal. Often, though, multiple stations with several slaughter floor personnel work from platforms that move up and down the line performing various hide “take-off” functions. The number of workers involved is a direct result of the number of cattle processed in an hour. Naturally, a meat plant with a capacity of 400 head processed per hour would have more employees on the line than a plant only processing 100 an hour. Also, each packing plant has its own priorities as far as care for the take-off of the hides. Most plants are very concerned about the hide removal, as the hide is the single largest by-product value produced in a beef packing plant. Packers are conscious of the need to produce high-quality hides, so they consistently monitor this “take-off” process. In the U.S., most meat packers produce excellent hides with minimal damage.

The **“TAKE-OFF”** process for a machine pull starts with the head of the animal after it has been slaughtered. The hide is cut across the top of the head with another cut from the horned poll area to the nostril. The skin on the front of the face is then removed (this is known as “skinning out”), and then the entire head is removed from the carcass.

**THE NEXT STEP** involves skinning out the rear unshackled leg of the animal. The leg is cut just above the hoof, and an incision is made down the center of the inside surface of the leg. After the leg is removed, a hoist hook is inserted into the tendon opening on the trimmed leg, and then the other leg is trimmed and both legs are hoisted by two leg trolley hooks and spread apart.



The tail is slit along the inside and the tip is freed. The tail portion of the hide is then pulled free by the machine puller. The mid-line is now split down to the brisket and electric knives are used to release the flank areas of the hides down to the navel.



At this point, the hide is loosely opened on the flanks of the carcass, so the machine hide pulling device or chain is attached to the hide, and then is pulled up or down, depending on the machine. From this point on, the hide puller is assisted by personnel with electric air knives. The hide is finally pulled off the face of the animal, released from the puller, and sent to storage or hide processing area.



The importance and value of the mechanical hide puller cannot be over-emphasized. The machine not only saves the labor costs of several workers, but it also ensures that dirt and hair are less likely to be scattered on the carcass. This also helps with food safety for the meat, as dirt and hair can carry pathogens. Other benefits that result from using a mechanical puller include less chance of gauging the carcass by a knife and less chance of holes and scores in the hide from a knife.



## U.S. CATTLE HIDE SELECTIONS

***Both Big Packer and Small Packer cattle hides are selected, graded and sorted in the hide plant into the following general classifications:***

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**HEAVY NATIVE STEER HIDES** – This selection refers to steer hides with no brands. Generally, native steer hides are the most valuable and expensive hides in the U.S. and are preferred by automobile seat upholstery tanners due to the large cutting areas. Also, shoe leather tanners prefer to use this selection, if the costs justify the high price of the hide. Other uses of the native steer hides include belts, saddles, and footballs.

**BUTT BRANDED STEER HIDES** – This selection refers to steer hides with one or more brands located only in the butt area of the hide. Automobile seat upholstery tanners and shoe leather tanners both use the majority of these hides.

**COLORADO BRANDED STEER HIDES** – This selection refers to steer hides with one or more brands located in the midsection or front shoulder of the hide. Practically all these hides are used by shoe leather tanners and a few baseball glove tanners. These hides are sometimes referred to colloquially as “Collies.”



**HEAVY TEXAS STEER HIDES** – This selection refers to all steer hides produced in Southwest states primarily around the Texas pan-handle region. Native, butt and Colorado steer hides are all included in this selection and sold as one steer hide selection.

**BRANDED STEER HIDES** – This selection refers to steer hides produced in the Western states. Generally, the majority of these steer hides are branded but there may be native hides included as well.

**HOLSTEIN STEER HIDES** – This selection refers to steer hides that are of 100% Holstein breeding. A by-product of the dairy industry, the Holstein steer tends to be mostly native without any brands. Since Holstein steers are mostly kept in feed lots their whole lives, the hides generally have fewer defects and grade better than the beef-breed native steer hides. Tanners of high-end end shoe, handbag, and automobile seat upholstery leathers prefer these hides.

**HEAVY NATIVE HEIFER HIDES** – This selection refers to fed female cattle that have not produced a calf and have no brands. Heifers are generally lighter in substance and have smaller yields than the steer hides. This selection is popular with automotive seat leather upholstery tanners and shoe leather tanners.

**BRANDED HEIFER HIDES** – This selection refers to fed female cattle that have not produced a calf and have one or more brands. This selection is preferred by shoe leather tanners.

**HEAVY NATIVE COW HIDES** – This selection refers to female cattle with no brands that have been primarily raised on farms for breeding purposes before being processed for beef. This selection is preferred by tanners of handbag, furniture upholstery, and shoe leathers.

**BRANDED COW HIDES** – This selection refers to female cattle with one or more brands on any area of the hide that have been primarily raised on farms for breeding purposes before being processed for beef. This selection is preferred by tanners making furniture upholstery and shoe leathers.

**HOLSTEIN DAIRY COW HIDES** – This selection refers to female dairy cattle of the Holstein breed. Although there can be some branded hides in the Western area of the U.S., almost all of these hides are black and white and native. Due to the thin yet strong substance of the hide, this selection is preferred by tanners making furniture upholstery, garment, lace, and baseball leathers.



**BULL HIDES** – This selection refers to un-castrated male cattle used primarily for reproduction purposes. Grading separates these selections into native or branded bulls. Bull hides tend to be very large and the substance is thicker than other hides. This selection is preferred by footwear sole leather tanners and some automobile seat leather tanners.

**MIXED HIDES** – This selection refers to both steer and cow hides produced by small packers. There is no separation for natives or brands, but there are separations by weight. This selection is preferred by small leather article or shoe leather tanners.

**RENDERED HIDES** – This selection refers to both steer and cow hides that come from dead stock picked up by a rendering company on the farm, feedlot, or at the packing plant. Generally, the animal is dragged to the trucks that transport them to the rendering processing plant. The resulting drag marks on the hides limit their usage normally to tanners of shoe leathers.

**NUMBER THREE HIDES** – This term refers to the grading selection found in the Standards Governing the Sale of North American Cattle Hides and includes both steer and cow hides that are misshapen, have one hole longer than 6 inches or visible grain damages larger than a hand. These are low grade hides that work for tanners of specialty item and shoe leathers.

## U.S. HIDE GEOGRAPHICAL REGIONS

Cattle hides in the U.S. have different general characteristics depending on where an animal was born, raised and slaughtered in the U.S. In general, hides from a geographic region originate from animals produced and processed in that particular region. However, there are variations to this general rule, as some animals are transported from farms and feedlots in one region to meat packing plants in another region. Therefore, when speaking of U.S. geographical regions, we can say with certainty where the animal was slaughtered, but we cannot 100% guarantee that the animal was born and raised in that same region.



The United States is broken down into six primary geographical regions when referring to American hide production:

- EASTERN
- SOUTHEASTERN
- NORTHERN
- MIDWEST
- SOUTHWEST
- WESTERN

## THE EASTERN REGION

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This geographic region would include the U.S. states of New York, Pennsylvania, and all New England states. There are, today, two major packing plants in this area, plus a good number of small packer plants slaughtering cattle. All of these plants have the ability to process steers, cows, and bulls, and almost all of the animals processed at these plants are from the same geographic area or from as far away as the Eastern part of the Midwest and as far south as North Carolina. Generally, the hides from this region are Native with no brands and hide substance is a little thinner than the Midwest fed cattle hides. Most of the cattle located in this Eastern region are Holstein cows and beef cows with a small percentage of beef skins.



## THE SOUTHEASTERN REGION

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Southeastern states would include North and South Carolina, Georgia, Florida, Tennessee, Kentucky and Alabama. Almost all the meat packers in this region are 100% cow and bull slaughter plants, with only a few steers processed. Generally, packers in this area have relatively small slaughter numbers which range from 200 to 1100 animals a day. Most of the hides produced in this region are lighter weight and slightly smaller than other regions. Also, there are a small percentage of branded hides in the production that can range from 10% to 20%. The grains of the hides from the southeastern region vary from state to state, and generally are considered less desirable than the northern or Midwestern productions.



## THE NORTHERN REGION

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Most in the industry would consider the Northern region to include the states of Minnesota, Wisconsin, Illinois, Michigan, and Ohio. The packing plants in this region generally slaughter both steers and heifers. A good percentage of Holstein steers and cows are included in the mix as well, due to the large number of dairies in the region. Very few, if any, brands can be found in the Northern region's hides; however, the more west a packer goes to procure cattle, such as into North and South Dakota, the more branded hides they will find. Grains of these hides are considered some of the best in the United States.



## THE MIDWEST REGION

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For the most part, the hides produced in the Midwest region are from the top quality fed cattle slaughter plants located in Iowa, Nebraska, Missouri, and Kansas. Hides from the Midwest provide the most consistent quality year round. Again, as meat packers move further west and south in this region to obtain cattle, the more brands are encountered. The majority of the cattle produced in the Midwest region consist of fed steers and heifers.



## THE SOUTHWEST REGION

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The states of Texas, Oklahoma, New Mexico, and Colorado comprise the Southwest region. While most of the hides produced from slaughter plants in these states are branded, there is a small number (20% to 30%) that are Native unbranded hides. The Southwest region, along with the Midwest region, have the largest supplies of cattle on feed and the largest slaughter numbers in the U.S. Some of the larger packing plants have a slaughter capacity of 6,000 head per day! Cattle in the Southwest region are primarily located in feedlots and are fed steers and heifers.



## THE WESTERN REGION

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The states in the Western region include Arizona, California, Oregon, Idaho, and Washington. Some of these states produce excellent hides, such as fed Holstein steer hides, that have some of the best quality grains in the United States. For the most part, the western hides have a brand percentage of about 30% to 50%. Even with the brand content, the Western region hides command premiums due to the better grains (more A and B graded leathers) that tanners prefer. Cattle from the Western region consist of farm-raised steers and cows as well as fed steers and heifers. California remains the largest Holstein cow producer in the U.S.



# U.S. SKIN SELECTIONS



Cattle hides are the largest leather-producing animal hide or skin due to their large area of usable tanning space and large commercial harvest numbers, but there are also a significant number of smaller animal skins that play a vital role in the leather and leather products industries. The most significant in the United States are:

- **Pig Skins & Sow Skins**
- **Calf Skins**
- **Sheep Skins**
- **Horse Hides**
- **Slunk Skins**



## PIG SKINS

*Whether domesticated pigs or wild boars, pigs have been a major source of food and have been invaluable for humans since the beginning of time. These domesticated animals reproduce and grow at a very rapid rate making them good livestock animals. Like cattle, hogs are raised for their protein production, not for their skins for leather. However, using pigskin for leather can add value for the skins depending on the market and economic conditions.*

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## U.S. PORK PRODUCTION



Most of the modern US hog producers utilize specialized, environmentally controlled breeding facilities; thus, they can supply many pig processing plants in the U.S.

with excellent quality live pigs year-round. Pigs reproduce in a much shorter period than that of cattle and are very fertile. It takes about 32 weeks for a “gilt” (a female



hog that has not yet given birth) to be old enough to reproduce. Reproduction consists of mating the gilt with a desired “boar” (a male breeding pig), or the gilt can be artificially inseminated. Once the gilt is pregnant, she normally will produce about 10-15 young piglets (baby pigs) in 114 days (3 months, 3 weeks, and 3 days). A “sow” (an adult female hog that has birthed piglets at least once) nurses the piglets for about three weeks, and then piglets are weaned. The male piglets are either left alone to become a breeding boar, or, more likely, they are castrated at 2 to 3 weeks old and are then called a “barrow.” After weaning the piglets, the sow can then be bred again. The weaned piglet at this stage is about 10 lbs. and is put on a mixed protein diet that increases their weight to around 40 lbs. From that point, they may be moved into a finishing barn until they go to market.

They are now called feeder gilts or barrows, and will be raised to a total weight of about 250-280 lbs. The total time from the birth of a new gilt or barrow to time of harvest is about 22 to 26 weeks.

Although over 100 million gilts and barrows (butcher hogs) are harvested every year in the United States, the vast majority of skins destined for the leather industry is much lower, as will be explained later.

Producers are also affected by throughput efficiency. If a sow is inefficient at producing piglets, the sow is culled and sent to market. The sows and boars skins are typically hand or machine skinned. Because of the tougher connective tissue, sow and boar meat are almost always ground up and used in sausages and other similar products.

## PIGSKIN USES

***The skins of pigs have been used for centuries to make leather for various products for consumers around the world. Today, we find pig skin leather used in shoe uppers, gloves, handbags, vests, garments and other consumer products. However, the largest volume for pigskin used globally is for shoe lining.***

Pigskins are thinner and smaller than cattle hides, but larger than sheep or goat skins. The hair of the pig skin actually penetrates through the entire skin into the fat or meat of the animal. For that reason, even after pigskin is tanned into finished leather, there are still visible hair pores. This makes pigskin leather uniquely identifiable and breathable. Further, pigskin's natural cellular structure is tear resistant because the fibers are very tight and interwoven.



The global pigskin market is unique when compared to other livestock animals. Hair is considered a foreign, inedible material that must be removed prior to any meat trimming. Cattle, sheep, goats, and livestock with thicker fur must have the skin fully removed prior to any meat processing. Pigskins can be mechanically de-haired through a scalding process with the skin to be removed later in the harvesting process or sometimes left intact.

In fact, the vast majority of the butcher hogs in the US (+80% in 2018) are scalded after the animal is slaughtered. In this process, the carcass is moved through a

hot water tank or steam shower to open the pores to aid in hair removal. Mechanical action and heat are used to remove the surface hair. Some hair roots may be left behind to be trimmed during meat processing. The skin is typically removed in panels at carcass breakdown for food production or gelatin. The skin on the carcass acts as a natural barrier for foreign bacteria coming in contact with the meat directly. However, in this scenario the skin's surface is no longer ideal for grain leathers because of the mechanical action and exposure to heat. U.S. meat plants tend to favor this process because of the throughput efficiency at the plant level.



## SKINNING A HOG

Butcher pigskins harvested for leather are removed immediately after the animal is slaughtered. Typically, the hog is split through the center of the chest with the skin separated by skinning a knife around the belly and legs. A cut would go over the front legs and above the shoulders. The skin would then be pulled head to tail to remove it from the carcass. However, some plants will reverse the order and pull tail to head depending on if they have the space and capacity to allow for the carcass to be flipped. Hanging carcasses will be hooked from the hind legs and sent to the

cooler while the removed skins will be sent to fleshing and salt curing. Because of the smaller size, most skins will be drum cured as opposed to the raceways used in the cattle hide industry. As long as the salt has good penetration and remains intact, cured skins can last months before processing into leather. In the 1950s, it took an individual an hour to skin an entire hog. The introduction of various automation and mechanical processes have increased the speed of the skinning operation; however it is still a slower and more labor intensive process than scalding skins.

***U.S. sow and boar skins are almost always removed at harvest because of the varying sizes of the animals. These older animals have thicker skins, making them less desirable for consumer leather products. This trend is similar for boars and sows in most other parts of the world.***

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## HISTORY OF U.S. PIGSKINS: HORMEL FOODS AND WOLVERINE WORLDWIDE

To keep up with the increasing demand for pigskin leather, Hormel Foods and Wolverine Worldwide **MODERNIZED PIGSKIN HARVESTING**. Wolverine was originally a horse hide tanner, but started tanning pig skins in the early 1900s. Considering the throughput constraints, Hormel and Wolverine designed a system to harvest only the mid-section of the skins. The mechanical drum skinner would not remove the skin from the front or hind legs, but would pull only from the base of the tail to the start of the front leg. By focusing on the midsection, they were able to skin a pig in under 10 seconds. This joint innovation created a large commercial supply of pigskins, ideal for suede and nubuck leathers. Wolverine Worldwide was able to use these skins in their internal brands and for other shoe



leathers. These skins were a major source for machine washable pigskin suede. The product was immensely popular in the garment industry during the 1970s and 1980s in the peak of the suede trend. Major footwear brands continue to utilize pigskin nubuck as a core component in their leather supply chain.

## PIGSKINS IN FOOTBALLS

For over 100 years, the term “pig skin” has been used as a nickname for the American football. It is interesting to note that when footballs were first introduced, the ball itself was originally inflated with the bladders of animals, including the bladders of pigs. These bladders were actually inserted in a leather jacket, and stuffed with cloth, straw, and all types of

other materials. In the 1860s, the invention of vulcanized rubber by an American chemist named Charles Goodyear changed the world and changed the football as well. Blowing up pig bladders fell out of fashion as rubber became the preferred method of blowing up the footballs. The nickname “pig skin” stuck and still does to this day when referring to American footballs, although all footballs are now made with cattle hide leathers.



## CALF SKINS



Leather made from calf skins is the most exclusive leather produced in volume, and much of calf skin leather goes into making top luxury leather items such as very high quality handbags. Also, the best men's and women's shoe uppers use calf skin leather for the rich, tight-grained leather look.

***More than 90% of the calf skins produced today are from the Holstein bull (male) calf. After birth, these Holstein calves are fed special milk-sourced feeds that produce meat called veal, a special item in many restaurants around the world.***

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**CALF SKINS** are selected and sold by weight. Light calves are selected by their skin weight ranges, typically of 5 to 7 lbs., 7 to 9 lbs., 9 to 12 lbs., and 12 to 17 lbs. Each weight classification has a market value that typically goes up according to the increased weight. Very few of the lighter weight calves are being slaughtered today, as the economics of cattle production just do not make sense for farmers to raise calves for such a short period of time. Most of the calves today are called “kips” as these animals are being raised to a larger live weight for slaughter of about 235 lbs. These animals produce overweight calf skins that are known as “kip skins” in the U.S. industry. The production of “overweight” kip skins is the norm in the industry today and the weights of these skins run in a range of 17 to 25 lbs., 25 to 35 lbs. and heavy over weights are 35 to 45 lbs.



The slaughter of smaller calves is minimal today in the U.S., while the slaughter plants of kip are found mostly on the East Coast in such states as New York and Pennsylvania. Each year, kip slaughter is reduced in the U.S. with less demand due to pricing and fewer farmers willing to raise the animals. Europe, on the other hand, still has good demand for veal meat and therefore, slaughter numbers of calf and kip in Europe remain high. It should be noted that almost all the calf and kip produced in the U.S. today are of the Holstein black and white variety, as Bull calves are the result of the large Holstein milk cow industry.

## SHEEP SKINS



There are about 2.3 million head of sheep slaughtered in the United States every year, and the states of Colorado and Texas have the largest sheep slaughter production. Most sheep skins, today, are exported to tanners in Europe who make various sheep skin leathers and products. Generally, the following terms illustrate the three major raw sheep skin productions in the U.S.:

- **“SPRING LAMBS”** are those small lambs that have never had their wool shorn.
- **“SHEARLINGS”** are those lambs that have been first shorn.
- **“CLIPS”** are lambs right after being shorn.

**SHEEP SKIN LEATHER** is very popular in “double face” leather tanning where the wool remains on the skin, while the flesh side is tanned into buffed suede leather. This leather continues to be in high demand for slippers and double face jackets. In the 1990s, shearling leathers were in big demand for car seats. The shearling covers kept the driver or passenger seats cool in the warm summers and warm in the cold winters. Unshorn spring lamb leathers with the full wool on are still used for bed covers and foot rugs.





## HORSE HIDES

***Today, in the United States, there are no meat packers processing horse meat.***

The U.S. public perception of horsemeat has drastically changed in the last few decades, and this has virtually halted all commercial horse slaughter in the U.S. Currently, the U.S. Department of Agriculture is prohibited, via federal legislation, from inspecting horse slaughter plants, thus effectively banning commercial horse slaughter in the U.S. Therefore, about 130,000 American horses are shipped to Canada and Mexico for slaughter each year. The meat is primarily exported to Europe while the hides are shipped all over the world. Horse slaughter and horse meat still remain popular in Europe, particularly in France and Ireland. As a result, horse hides are typically difficult to find. Horse hide leather is somewhat different than

cow hide leather. The butts of the horse hides are produced by cutting the skin in half about 21 inches from the tail area across the whole hide. The front half is then used for making glove and some shoe leathers, while the butt side, which is quite famous in the industry, is used to make a specialized “cordovan” leather. The butts are very thick and make leather that is both non-porous and thick – ideal for shoes in very cold areas of the world, such as Siberia in Russia. Hair from the manes and hides of some horse species, such as large big Irish horse breeds, provides paint brushes that are used in certain very specific types of painting, especially in Japan and Korea.



## SLUNK SKINS

***“Slunks” are unborn calves that either die prematurely or are aborted from the fetus of the mother cow.***

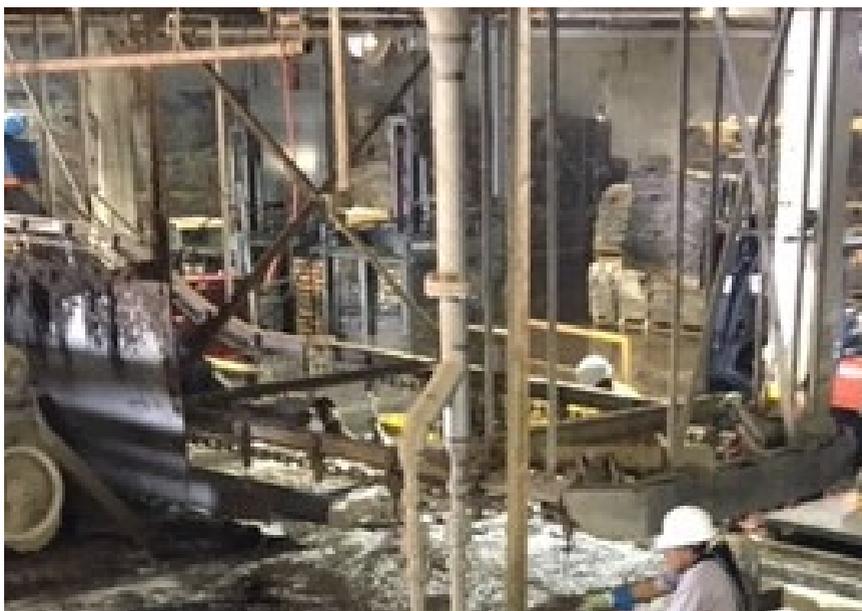
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Usually, the unborn calf dies in the slaughter plant when a pregnant cow is slaughtered. Typically, these are dairy Holstein breeds that have been culled when they are no longer useful for dairy production. When the slunk is harvested and skinned, it provides a 2 to 4 square foot skin with or without hair that makes beautiful leather. There are no natural environmental defects on the slunk skins, other than the cuts made by the skinner. In the past, slunk skin leather was used to make musical instruments, like drums, or fancy leather wallets and other high end leather goods. Today, the largest worldwide demand for slunk skins is in leathers used in making parchment and bindings for the Jewish Torah and other religious documents.



## HIDE & SKIN PROCESSING IN THE U.S.

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Cattle hides in the United States, and most smaller skins, are processed in a uniform manner prior to sale to the leather tanner. The hides are generally cured, fleshed, trimmed and graded before being loaded and shipped. The following chapter details each step of the process.



## CURING

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**UP UNTIL THE 1800s**, almost all hides were cured either by being dried in the sun or by using some form of urine and excrement – from animals as well as humans. Once salting became widely adopted as a preservative for meat in the 1800s, salting in one form or another became the normal curing method for hides as well. Today, salt or salt brine is used as the primary curing agent in nearly every packing plant or processing plant for skins and hides worldwide.

For the meat packer, the hide is the most valuable by-product, so it is essential that the hides removed at the packing plant are cured as soon as possible to lock in quality and reduce waste. The tanning of the hides usually takes place in another facility, so, again, it is extremely important that the hide is clean and bacteria is removed as soon as possible to prevent the hides from decomposing. Timing is important, especially in the summer



months when temperatures are high. Hides can show signs of decomposition as early as 4 hours after slaughter and removal from the carcass. Green (uncured) hides removed at the packing plant still have lots of bad contaminants such as manure and other organic materials that foster decomposition and bacterial growth. The natural heat from the animal, along with the extensive moisture on the hide and the excess fat on the inner side of the hide, cause decomposition to begin almost immediately after slaughter.

## SALT CURING METHODS

There are two basic salt curing techniques for hides: **CONVENTIONAL ROCK SALT CURING** and **BRINE CURING**. Brine curing has become the preferred method today in the U.S., though a few small meat packers who have no available hide processing plants close by will still salt pack hides, as it is the only viable curing method. The preferred method of curing hides in Europe is still the salt pack. In either curing method, hides will shrink a total of about 15% from their “green” weight just after removal from the carcass as moisture is removed.

### SALT CURING OF HIDES CAN BE DONE IN THREE PRIMARY WAYS.



**THE FIRST WAY** is to place hides in a standard barrel and cover the hides with rock salt. **The second method** involves stacking hides on pallets and throwing rock salt on the hides and folding them. In both of these methods, the hides cure in the barrel or on the pallet. **The third method** is salt packing. Salt packing hides used to be the predominant method for hundreds of years. Meat packers had cellars where they stacked and salted hides for a minimum of 30 days to ensure a proper cure, which is the full penetration of salt into the whole hide. Chemically speaking, salting hides actually creates a brine that penetrates the hide, as salt itself cannot be absorbed by the hide. Only after salt crystals have been dissolved



by the water coming out of the hides can the hide begin the curing process. In the case of salt packing, hides are left in the packs for 30 days or more, and then the hides are pulled off the pack one by one. The hides are shaken to remove some of the loose salt, and then they are folded and placed

on pallets for storing and shipping.

**FOR SALT PACKING HIDES PROPERLY**, the first hide should be laid out on the floor flesh side up with salt spread over the entire hide. Then, another hide is stacked flesh side down and salt is spread over that entire hide. Edges are turned in with ample salt placed in the folds. Hide packs are normally 4 feet to 5 feet high. Fresh, clean rock salt must be used rather than reused salt to avoid “salt stain” or damage to the resulting leather.

Another salt curing operation involves the use of a hide processors know as “**CONCRETE MIXERS.**” In this method of curing, hides are loaded into the mixer with fresh salt and some form of bactericide. Hides are churned in the mixer with constant agitation for about 14 to 15 hours.

## BRINE CURING METHODS

Today, most U.S. cattle hides are brine cured. Brine curing started in the 1950s when Swift & Company developed the first brine curing raceway. That process is still the most widespread method used today for curing hides in the U.S.

The most important economic consideration of brine curing is the savings to the packing or processing plant for the time it takes to get a monetary return on the hides



being produced. Hides are able to be sold and shipped within two days after brine curing, rather than 30 days after salt packing. This reduces hide inventories and releases capital tied up in hides in salt packs. Also, as a result of the brine curing process, 20 to 30 lbs. of moisture per hide is removed during agitation, making storage and shipping costs more economical as well.

**BRINE CURING RACEWAYS** are constructed at packing plants and hide processing plants and appear to do the most efficient and thorough job of curing a hide. Brine curing at the meat packing plant or at a closely-located processing plant ensures that the hides do not have improper cure defects later in the tanning process. Essentially, the purpose of the brine curing raceway is to remove the remaining fat on the hide and chemically remove any chance for bacteria to grow on the hides.



The typical raceway is oval shaped and about 50 feet long and 30 feet wide with a depth of about 13 feet. Paddle wheels, which constantly agitate the hides in the brine water, are installed on both sides of the raceway to push the hides through the raceway. The brine liquid itself is made up of water with a minimum of 90% salt

(sodium chloride) solution. Raceways are constantly monitored to ensure the salt saturation remains at the 90% to 100% level. Other chemicals are put into the raceways to inhibit bacteria growth, including bactericidal products that are made up of acetic acid, peracetic acid, hydrogen peroxide and phosphoric acid.

***A hide, when removed from the carcass, is made up of about 60% water.***

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Salting or brine curing a hide removes the excess water from the hide, as both processes allow salt to penetrate the hide and replace water with salt. Therefore, every hide that is placed in a brine curing raceway will create about 4 lbs. of excess water due to this removal process. This excess water not only must be pumped out of the raceway, but the excess water will invariably reduce the brine saturation in the raceway as well. Therefore, the importance of the salometer readings cannot be overstated; the salt ratios must remain constant in the raceway.

One test that hide processing plants use to check on their brine saturation in the hide is the **STEHLING TEST**, which involves chemically testing “plugs” or small pieces in the middle of hides from each raceway batch. A small plug is taken out of each batch of hides and is sent to a laboratory for testing to provide feedback to the plant regarding salt penetration in the tissue of the hide. The plug samples are tested for moisture, ash, and, more importantly, salt penetration. Such testing ensures that hides are cured not only in a timely manner, but also in a quality way to guarantee that they are of the highest quality when they are sold and shipped to a tanner.

Brine curing fleshed cattle hides requires a **MINIMUM OF 16** hours of paddle-induced agitation in a raceway to guarantee a proper cure. Curing unfleshed conventional hides takes a longer period of time, as the salt has to penetrate the excess fat and meat as well as the hide tissue.

As mentioned earlier, brine curing hides creates more water than originally was in the raceway prior to putting hides into the brine. Removing this excess water sometimes is a dilemma for hide processors if their local water treatment plant has trouble accepting brine water. Proper effluent treatment is therefore necessary in order to ensure environmental regulation compliance.

## FLESHING

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**TODAY**, practically all big-packer and a lot of small-packer and renderer hides in the U.S. are fleshed. Fleshing hides is simply a matter of removing excess fat and meat from the underside of the grain (or hair-side) of the hide. Removing this excess fat and meat tissue is essential to not only the tannery in the next phase of production but also to reduce the opportunity for bacterial growth and decomposition in the hides before tanning. Since the beginning of leather tanning, some form of fleshing has taken place on hides and skins. Historically, the hides were draped over a barrel and a knife was used to manually scrape the meat and fat off the hide or skin.



**THE HAND FLESHING PROCESS** never really changed for hundreds of years until a man named Merle A. Delph of Indianapolis, Indiana, along with Swift & Company, had the foresight to invent and introduce the mechanical fleshing machine to the hide and tanning industry in the 1950s. His co-inventor was Charles Stehling of Milwaukee, Wisconsin. To this day, the Stehling fleshing machine is the machine of choice in most U.S. packing plants, hide processing plants, and tanneries around the world. What makes this machine so widely adopted is the inclusion of a de-manuring roll on the machine that removes manure and dirt from the hair side of the hide during the fleshing process.

***In short, the fleshing machine is a heavy-duty yet simple machine that functions in the following manner:***

- Hides are hooked on a conveyor belt either directly from the kill floor or are pulled out of a brine curing raceway.
- The chain/hook conveyor system pulls the hides up to the fleshing machine platform.
- The hide is dropped into the opened fleshing machine with the flesh (non-hair) side facing up. About half the hide is inserted into the machine.
- The machine is closed and the de-manuring cylinder comes into contact with the hair side of the hide and spreads the hide out, allowing manure, tissue and other foreign substances imbedded in hair to be removed.
- As the hide comes back up a few inches, the flesh side of the hide is put in contact



with fleshing cylinder blades, and as the hide rolls back up, the fleshing blades remove all excess fat and meat on the non-hair side of the hides.

- The machine opens hydraulically and the hide is flipped over. The unfleshed part of the hide is then dropped in and de-manured and fleshed in the same manner.



**THE FLESHING MACHINE** can flesh both light or heavy hides without adjustment, as the hydraulics of the machine adjust to the thickness of the hide. The machine itself is relatively safe to operate and, with proper chain and pulley systems, even heavy hides can be operated by one or two workers. Many of the meat packers and processing operations today use a two-machine system, making the process both faster and more efficient for the employees. This system, known as back-to-back fleshing, incorporates two machines set up in a back-to-back system. The hide is dropped into the machine and half the hide is fleshed and de-manured on one side; then the hide drops onto a conveyer and is fed into the second machine, where the other half of the hide is fleshed and de-manured. This process is quite efficient and allows the production facility to process approximately 300 cattle hides an hour.

It is important that a properly fleshed hide should not be fleshed too closely or too loosely. The litmus test for proper fleshing is the appearance of the veins in the tissue of the hide being broken but not removed.



***The fleshing should be close enough to break the veins, but not so close that they are removed. Constant monitoring of the fleshing machine is essential to produce a quality fleshed hide.***

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Generally, hides that have been fleshed **LOSE ABOUT 22%** of their cured weight with the removal of fat, meat, and manure. Therefore, the general rule of weight before fleshing to after fleshing works out as follows: the weight of the hide of a 1300 lb. steer is about 6% to 7% of the total live weight, which equates to a hide weight of about 80 lbs. After fleshing and curing, the hide will lose about 22% of its cured weight, which then gives a fleshed and cured hide of about 62 lbs.

Many meat packing plants that flesh and cure their own hides have, in the past 20

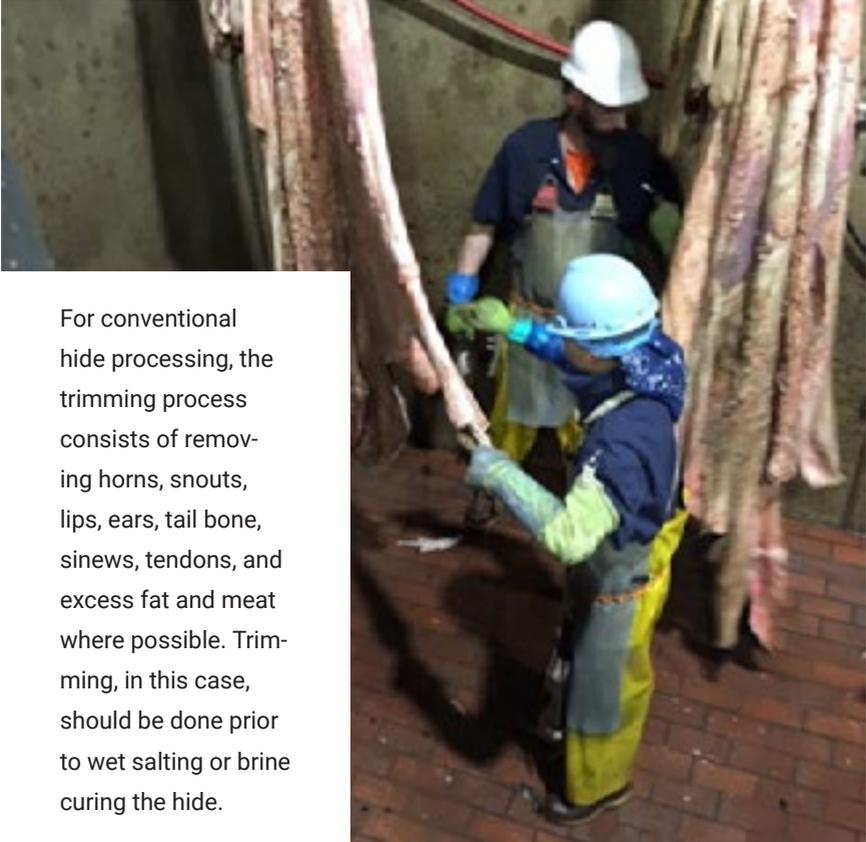
years, installed fresh water tanks or serpentine raceways to pre-wash or clean hides of blood and other foreign substances prior to fleshing. This pre-washing not only cleans the hides, but it also serves to soften up manure on the hides, which primes the hides for a better fleshing job. Chilled water is best, when available, as it gets a lot of the heat out of the hide as well as firms up the tissue fibers prior to fleshing. The mechanical action of fleshing a hide actually increases the heat of the hide, so some hide processors strongly believe that pre-washing is very important in overall hide processing.

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## REMOVAL OF EXCESS WATER

Once hides are fleshed and cured, they are put through a wringer to remove as much moisture as possible. Excess moisture in the hides creates many problems for the processing plant. To start, excess water makes the hides heavier and more difficult for handling in the grading process. Overly wet hides are also difficult to store and stack on pallets. Furthermore, transporting wet hides creates another set of problems for the shippers and the receiving tanners. Shipping unnecessary water weight is expensive, especially when shipping overseas in containers. Tanners also receive heavier hides than they expect, altering their hide weight to finished leather yield ratios.





For conventional hide processing, the trimming process consists of removing horns, snouts, lips, ears, tail bone, sinews, tendons, and excess fat and meat where possible. Trimming, in this case, should be done prior to wet salting or brine curing the hide.

## TRIMMING

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For fleshed hides, **A CERTAIN AMOUNT OF TRIMMING** is done prior to placing the hides in the fleshing machine. Shanks have to be opened, heads trimmed, tails opened, and loose tissue strings (useless pieces of hides) are removed before the hide is fleshed. Typically, this trimming is done as soon as the hide is delivered from the kill floor to the hide processing plant.

In a hide plant where hides are cured after fleshing, grading is done either on a table or on a conveyer. In either case, the hide is fully trimmed according to "Hide Trim Pattern for Domestic Cattle Hides," as outlined in the booklet *Standards Governing the Sale of North American Cattle Hides*.

## PROPER TRIMMING OF A HIDE CONSISTS OF THE FOLLOWING:

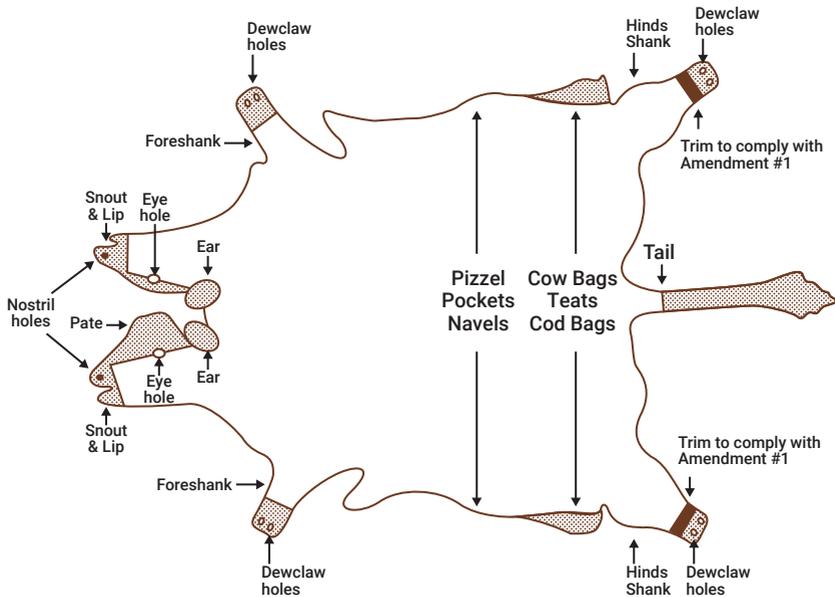
- **Foreshanks** should be trimmed straight across and through the center of the knee.
- **Hindshanks** should be trimmed straight across one-third distance from the dewclaw holes and the wide flare of the shank. Any hindshank, having a cut or a hole below the knee or hock 1 inch or more in length, should be corrected by trimming straight across at the top of the cut or hole. If the cut of the hole is small, such a shank is acceptable with trimming, provided it is a proper pattern.
- **Heads** – regular modern trim requires that all ears, ear butts, snouts, and lips from the pate side of the head be removed,

cutting through the eye hole. The narrow side of the head should be trimmed through the eye in a similar manner and all ragged edges should be removed. In the case of a Kosher head, the head should be totally removed by cutting across the kosher cut.

- **Cow bags, teats, cow navels, and cod bags** should be removed straight through the belly line, keeping the correct pattern.

- **Pizzle pocket** should be split through the center but left on the left side to allow for steer identification.

- **Tails** should be trimmed to be no more than 4 inches long as measured from the root.



## GRADING

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Typically, each grading table has one or two employees known as “graders” who will observe and identify defects and will classify the hides for selection of Natives or Brands. Proper grading is extremely important. Graders not only determine the selection and grading of the hides, but they also oversee the hide take-off quality aspects of the kill floor that provides the hides. This is the first line of quality assurance for the tanner, where instant feedback can be provided to the kill floor personnel to point out any problems with the take-off of the hides, such as puller damage or knife cuts. The grader will not only grade each hide, he will also direct the table workers where to stack each hide and on which pallet according to the grade and selection he determines.



***Grades of hides fall into three categories (as detailed in the Standards Governing the Sale of North American Cattle Hides):***

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- **NUMBER ONE HIDE** – This is a prime grade hide. It has a correct pattern and is free of holes or cuts, slips, warts, broken grains or deep scores. Any hides with cuts or holes less than 3 inches from the edge of the hide can be trimmed out and be delivered as a #1 hide.
- **NUMBER TWO HIDE** – This is any hide that is slightly off-pattern and/or contains a hole or a cut that is less than 5 inches long. Generally, a proper shipment of hides to a tanner does not include more than 15% #2 hides in the shipment.
- **NUMBER THREE HIDE** – This is any hide that shows signs of hair slip damage and/or has 5 or more holes and/or deep scores. Also, it can be any hide with a hole of more than 5 inches long. Additionally, this includes severely off-pattern hides, where, for instance, the whole foreshank has been cut out. Also, diseased hides are considered #3 hides. It is important to note that any #3 hide must be tannable. Un-tannable hides should not be included in a shipment of #3 hides.

***Other hide damages that can be detected at the grading table include the following:***

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- **CHATTER DAMAGE.** This occurs when hides go through a fleshing machine that needs to be adjusted. Graders can readily see a series of gouge marks in the hide running parallel, which are caused by the fleshing machine.
- **GRAIN BREAK.** This is another form of damage to the hide that is caused, normally, by the side or down pullers used to remove the hide from the carcass of the animal. A grain break hide is any hide that has a defect in which the grain is broken one inch or more in length or diameter. This is another form of mechanical damage that should be discovered by the grader and immediately relayed back to the kill floor so the problem can be remedied.
- **GRUBS.** Hide damages also include grub damage, which are insect damages on the hides. A “grubby hide” is considered to be a hide with 5 or more grub holes. Any hide where grub damage covers an area of 1 square foot or more is considered “pepper box” and should be graded as a #3 hide.
- **HAIR SLIP.** Any hide that has not been cured within a proper time can show decomposition in the hide tissue to the point where the epidermis is loosened and hair can easily be removed. Epidural tissue can usually be found attached to the end of the tufts of hair removed.
- **OFF-PATTERN HIDES.** These are hides that do not conform to either the standard or modern trim on hides. Off-pattern hides can be classified as either #2 or #3 hides, depending on the extent of the pattern deformity.
- **SCORES AND GOUGES.** These are caused by knife cuts by the take-off personnel on the kill floor. A score is a cut or scooped out area of tissue that goes at least half way through the hide.

At the grading table, the grader will assess each hide and allocate each hide to a separate pallet, according to the weight and type selection. Selections and fleshed weights generally are as follows (from the Standards Governing the Sale of North American Cattle Hides):

Guide to Packer Hide Selections Estimated Weights			Net Weight Range	
			pounds (LBS.) CARC	
Selection	Type	Description	Trimmed & Fleshed	
Extra Heavy Native	Steers & Heifers	Free of Strands	64 up	
Heavy Native			47 up	
Extra Heavy Butt-branded	Steers & Heifers	Stranded one or more times back of break in flank	64 up	
Butt branded			47 up	
Extra Heavy Colorado (Side Branded)	Steers & Heifers	Stranded one or more times forward of break in flank	64 up	
Colorado branded			47 up	
Extra Heavy Branded	Steers & Heifers	Branded one or more times	64 up	
Branded			47 up	
Extra Heavy Texas	Steers & Heifers	Texas Panhandle Area Origin	64 up	
Heavy Texas			47 up	
Native - Light	Steers & Heifers	Free of Strands	55 down	
Texas - Light	Steers & Heifers	Mix of Texas	55 down	
Branded - Light	Steers & Heifers	Stranded one or more times	55 down	
Heavy Native Cows (Dairy)	Milk breed cows	Free of Strands	45 up	
Native Cows (Dairy) Light			45 down	
Heavy Native Cows (Beef)	Beef breed cows	Free of Strands	45 up	
Native Cows (Beef) Light			45 down	
Heavy Branded Cows (Beef)	Beef breed cows	Branded one or more times	45 up	
Branded Cows Light (Beef)			45 down	
Selection	Type	Description	Carcass Conventional	
Native Bull	Males	Free of Strands	85-up	
Branded Bull	Males	Stranded one or more times	85-up	

***(Note: Bulls are typically processed and sold on a conventional weight basis, rather than fleshed)***

It should be noted that the weights described above are for general purposes only. Each meat packer and hide processor has its own weight specifications. In addition to the above selections, packers and hide processing plants are now making “jumbo” selections. Starting around the year 2000, beef packers started to slaughter much heavier live cattle. Naturally, the hide was bigger and weighed more than the packers had processed in prior years. Because of this, a “jumbo” steer hide selection was incorporated in the hide plant. While weights vary according to the producer in the U.S., a “jumbo” steer hide generally is a minimum of 70 lbs. and up.

## PRESSING AND STORAGE OF HIDES

Once a pallet of processed hides is completed, with anywhere from 40 to 50 hides stacked per pallet (except for bull hides), the pallets are transported by forklift to a hide press machine. The entire pallet is put in the press and a heavy weight on top of the machine compresses the hides to eliminate more excess water.

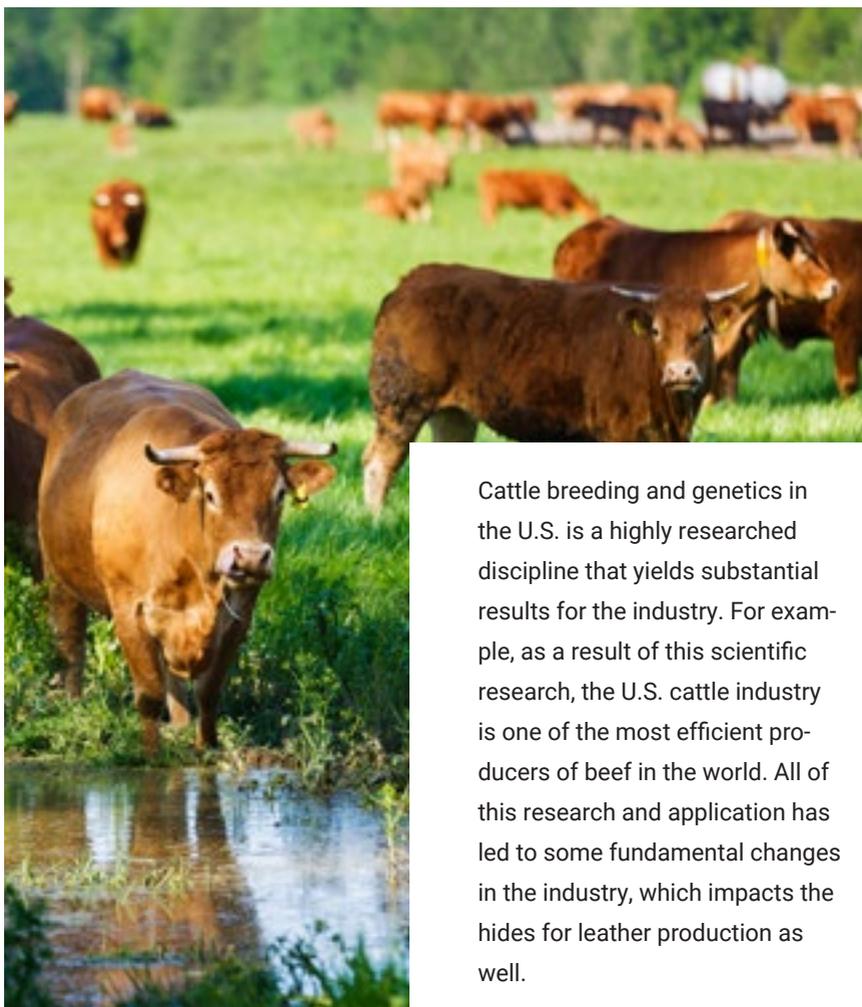
Once that process is completed, the entire pallet of hides is moved into a storage area. Every hide processing facility has to have some form of storage area in the plant. Storage of hides is essential for draining the hides properly before shipment. Pallets of hides are also double stacked, which improves drainage of the bottom pallets by simple gravity.

Hides can be stored in this manner anywhere from 3 to 30 days, depending on sales and other shipping factors.



# CATTLE BREEDS & LEATHER PRODUCTION

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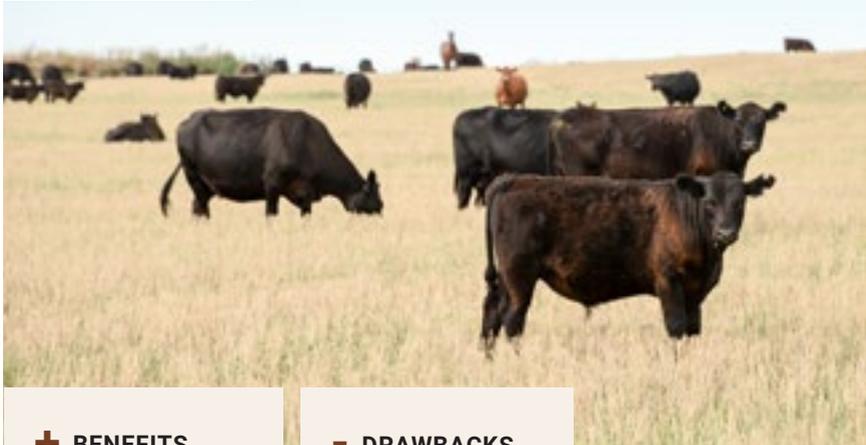


Cattle breeding and genetics in the U.S. is a highly researched discipline that yields substantial results for the industry. For example, as a result of this scientific research, the U.S. cattle industry is one of the most efficient producers of beef in the world. All of this research and application has led to some fundamental changes in the industry, which impacts the hides for leather production as well.

***As an example, 50 years ago the preferred beef breed in the U.S. was the white-faced Hereford cow. Today, the U.S. beef breed of choice is the black haired Angus-type breed. All of these changes impact the hide and must be taken into account when producing leather from U.S. products.***

While there are hundreds of cattle breeds and cross breeds in the U.S. today, the major commercial breeds, along with the characteristics of the hide and the best usage for making leather, are outlined below:

## ANGUS STEERS



### + BENEFITS

Good substance providing tanners the ability to make heavier weight leathers. Also, Angus hides typically provide leather with good grain, uniform yields and size.

### - DRAWBACKS

Darker hair roots, which can create problems for tanners making light colored leathers if any hair stubble remains after the de-hairing process.

### PRIMARY LEATHER USAGES

Heavier weight shoe upper, automobile upholstery, furniture upholstery, belts, saddles, and baseball gloves.

HEREFORD STEERS



**+ BENEFITS**

Good Substance, good grain, lighter color hair roots.

**- DRAWBACKS**

Size and weight are not as uniform as other breeds.

**! PRIMARY LEATHER USAGES**

Heavier weight shoe upper, automobile upholstery, furniture upholstery, belts, saddles, baseball gloves, footballs and soccer balls.



ANGUS, HEREFORD & OTHER BEEF COWS

**+ BENEFITS**

Strong, light weight substance.

**- DRAWBACKS**

Lighter weight substance, normally older animals so more grain damages.

**! PRIMARY LEATHER USAGES**

Lighter weight shoe upper, handbag, furniture upholstery, gloves.

## HOLSTEIN STEERS



### + BENEFITS

Medium substance, excellent grain, higher grading yields.

### - DRAWBACKS

Not typically suitable for heavier shoe leathers.

### PRIMARY LEATHER USAGES

Light and medium weight shoe upper, automobile upholstery, furniture upholstery, handbags.

## HOLSTEIN COWS



### + BENEFITS

Strong lighter weight substance, normally not branded, larger usable footage area.

### - DRAWBACKS

Lighter weight substance, older animals, more grain damage.

### PRIMARY LEATHER USAGES

Furniture upholstery, light weight shoe upper, glove, garment and baseball-lacing.

**BULLS**



**+ BENEFITS**

Large usable leather area, most substance of any hides available.

**- DRAWBACKS**

Older animals with more grain damages as well as heavy weight causes problems in the tannery with chemical penetration as well as difficulty handling heavy hide weights.

**! PRIMARY LEATHER USAGES**

Furniture upholstery, automobile upholstery, sole leathers, belts, saddles and harnesses.

# WET BLUE PRODUCTION IN THE U.S.

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## BRIEF HISTORY OF WET BLUE PRODUCTION IN THE U.S.

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Tanning hides is arguably one of the oldest profession known to man. There is historical evidence to prove that the taking of animal skins and treating them with some kind of tanning agent dates back thousands of years. For most of history, tanners used urine, bark from of trees, and other chemicals to tan hides.



**IT WAS NOT UNTIL THE LATE 1800s OR EARLY 1900s** when metal chrome salts were discovered to be a good tanning agent for converting hides into leather. This discovery of chrome tanning dramatically changed the industry from small family businesses to major industrial enterprises. Tanneries were built in every country with large capacities and greater ability to produce a variety of leathers in a quicker and more efficient manner. These tanneries were built to begin the process with raw hides or skins and end with finished leather to be shipped to shoe factories, glove makers, etc.

**HOWEVER, IT WAS NOT UNTIL THE 1970s**

in the U.S. that a tannery was built strictly to take raw hides and process them from the de-hairing stage through chrome tanning to the end result of wet blue leather, which is the half-way point to the finished leather product. This plant, established primarily for contract



tanning purposes, was built by the Blueside Manufacturing Company. The term “*wet blue*” is used to describe the semi-tanned product due to the blue tinged color the chrome salts leave on the hide after it has been tanned.

**BLUESIDE WAS BUILT IN 1971 IN ST. JOSEPH, MISSOURI, a small town just north of Kansas City, Missouri, which then was considered the center of the cattle raising area of the Midwest. St. Joseph is known best for the starting point of the Pony Express service and the Stetson hat company. The idea for a contract wet blue plant came from a hide processor Mr. Lee Lyon of Kansas City, Missouri. He got two other companies to join him as investors, A.J. Hollander and Dietrich Hide Company, both New York hide trading organizations at the time.**

**LEE LYON** is an interesting story on his own. Mr. Lyon was one of the real innovators of the hide industry. He was one of the first to realize the importance of machine fleshed hides and had worked with the **Stehling Company** in building a heavy duty whole hide fleshing machine. In addition, Lyon had developed the LYCOL system of taking green or salted hide fleshings and putting them through a centrifugal force apparatus so that the grease could be removed from the fleshings and sold to a renderer for grease processing.



The other partner in the deal was **A.J. HOLLANDER & CO.** This company, at the time, was one of the three major hide trading companies with offices in New York and Europe. The three companies, *Hollander, Chilewich, and Kaufman* together were the most formidable group to ever control an industry, and they had been the major movers in the hide market for many years. By 1970, their power was so substantial that they could, together, make the market move up or down. Based in Europe with power and money, Hollander was an important partner for the Blueside operation.

Lee Lyon had the idea of *contract wet bluing* in order to help tanners both in the U.S. and abroad eliminate beam house effluent and thereby reduce many of their pollution problems. Also, tanners could enjoy freight savings in that they would only be transporting fully usable leather production material rather than water, mud, hair, manure, etc. Another factor that Lyon thought would be an advantage to tanners was the technological advancements that a contract tannery could implement that established tanners could not afford.



**BLUESIDE STARTED IN 1971** with a maximum capacity to process 10,000 hides per week and the *Prime Tanning Company of Berwick, Maine* was the major customer for the product. At the time, Prime Tanning was being run by Mr. Dick Goldberg, making large volume commodity type black and brown leathers for the shoe industry. With Prime's business growing, Goldberg ended up buying the Blueside Company in 1974 to make the wet blue operation an integral part of the Prime Tanning Company.

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Prime's leather business grew and in 1980 the Blueside plant expanded and paddles were installed to replace Challenge–Cook mixers. Those changes raised the capacity of the plant to about 40,000 hides a week.

Prime used this wet blue to supply their finished leather tannery in Maine, and the balance of their wet blue production was sold to other tanners world-wide. The 1970s seemed to be the watershed for wet blue tanning in the U.S. as more tanneries in addition to Blueside were built to make wet blue on a contract basis.



**JOE BRASHER OF THE MBPEXCEL COMPANY** (now Cargil) put mixers in their packing plants to have the option of making wet blue or simply brine curing the hides, depending on what the market dictated.

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**ALSO, IN 1974** a wet blue plant was built in St. Paul, Minnesota by Bob Schumann of Hoffman-Stafford Tannery and a few other investors. The plant, called *Thru-Blue*, ran as a contract wet bluing operation for a few years without much success and finally was sold to Fred Rueping Leather in Fondulac, Wisconsin. After Rueping declared bankruptcy in the late 1980s, the Thru Blu Tannery closed. Twin City Hide Co. bought the tannery out of bankruptcy in the 1990s and has been running it since in conjunction with S.B. Foot Tanning Company.

**IN 1982**, the big meat packer *IBP* got involved with wet bluing. *IBP* teamed up with *Salz Leather*, a tanner from Santa Cruz, California who was forced by their local authorities to substantially reduce their effluent discharges. The Salz company worked with the IBP group to develop a tanning program where green hides could be tanned into wet blue at the meat packing plant. This allowed Salz to eliminate their beam house in California completely. At the time, IBP was a leader of the beef packing industry in slaughter numbers. Their first tannery, which was built with only 6 tanning drums, was built adjacent to the Finney County Garden City slaughter plant in 1984 according to Salz design and formulas, and the march to more wet blue production in the U.S. continued.

**THAT IBP TANNERY** was limited in production, but soon IBP worked a deal with another tanner, *A.C. Lawrence Leather Company* of Peabody, Massachusetts to provide it with all their hides in wet blue as well. A.C. Lawrence was a shoe leather tannery in South Paris, Maine that was also under pressure to reduce effluent due to the city's water treatment capacity. With A.C. Lawrence coming on line, the answer for IBP was to enlarge the current tannery at Finney County and convert almost their entire hide production there into wet blue prior to sale. Another customer needing to replace their beam house was the Lackawanna Leather Company in Omaha, Nebraska. At the time, Lackawanna was the largest furniture leather tanner in the world.



**IN 1988, IBP BUILT** their second wet blue tannery at their Joslin, Illinois packing plant for GST Autoleather to make wet blue for automotive seat leather, and in 1989 they built a plant for wet blue in Dakota City, Nebraska, also for GST. Their last wet blue plant was built in Amarillo in 1992. Tanners in overseas markets began building tanneries using wet blue as a starting point in the process, and IBP and others were ready to service these tanners.

**IN THE 1980s**, demand for U.S. wet blue hides increased, and the real impetus was when the Chinese government suddenly became market participants in 1979 and 1980, setting up huge purchases of over 500,000 wet blue hides at one time. Tanners such

as Blueside in St. Joseph, Missouri, A.L. Gebhart Tanning and Armira Leather from Wisconsin, and Vernon Leather Company in Los Angeles, California were suddenly augmenting their finished leather business with overseas wet blue sales.



**IT WAS AROUND 1990** that the bottom fell out of the wet blue market when A.C. Lawrence declared bankruptcy and closed. A.C. Lawrence had, at one point, been the largest tanner in the world and was owned by Swift & Company, a major meat packer from Chicago.



***During this time, some major changes in the U.S. hide and wet blue industry occurred including:***

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- **Monfort/Swift & Company** built a large wet blue tannery adjacent to their Dumas, Texas meat packing plant. Their capacity was sufficient to cover most of their slaughter – about 4,500 hides per day.
- **Dan Diedrich** bought the Gebhart tannery out of bankruptcy in 2000 and started a contract wet bluing company he called the D.R. Diedrich Tanning Company.
- **Cargill** exited the wet blue business.
- **Prime Tanning** built a large tannery in Guangdong, China in a joint venture with Pau Chen Shoe Company, the world's largest shoe manufacturer. This tannery, with capacity of 50,000 hides per week, was built specifically to use only wet blue.

## U.S. WET BLUE PRODUCTION TODAY

As it stands today, there are **ten wet blue tanning facilities functioning in the U.S.** The production capacity is about 185,000 hides. The U.S. produces roughly 600,000 hides per week and about 185,000 of that production currently is being converted into wet blue which equates to about 30% of the fed steer and heifer slaughter in the U.S. Many of the remaining U.S. leather tanners begin their process using wet blue stock. However, the majority of American tanned wet blue is exported. Italy, China, Thailand and Vietnam are the major buyers today of American wet blue.

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Meat packers in the United States continue to search for ways to be more competitive and one of their key ways is to add value to their products in order to enhance their bottom line. One example includes **cutting meat into primal cuts** and selling the meat on a case-ready and ready-to-eat basis.

Similarly, the green hide converted from raw hide to wet blue is seen by most meat packers as adding value to that hide.

***There are advantages to the tanner for starting their process at wet blue, too, including the following:***

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**REDUCED LABOR COSTS:** The cost of labor in tanneries around the world has risen tremendously in the past decade. Buying wet blue can save tanneries from the labor costs associated with the bluing process.



**BUILDING COSTS:** In the U.S. all the existing wet bluing plants were built years ago, so there is no need to factor in any additional building costs of beam houses for tanners. The cost of obtaining operating permits will limit the building of any new wet bluing operations in many countries as well.



**ENERGY:** There is a great need for abundant energy to run a wet blue plant. In most cases, the U.S. has an advantage of ample cheap energy that foreign tanners can capitalize on by purchasing wet blue.



**WATER:** Tanneries, of all major industries, consume large amounts of water, particularly in the beam house. Many countries have severe problems relating to water, which are largely mitigated in the U.S. due to the location of wet blue plants in regions with abundant water.



**EFFLUENT TREATMENT:** There is ever increasing pressure and costs associated with effluent treatment in many tanneries around the world as governments crack down on pollution and environmental contamination. U.S. wet blue plants also must comply with high regulatory and environmental standards, but they have already made those investments in the past decades and are better prepared to meet the higher standards as they are implemented.

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## THE WET BLUE TANNING PROCESS

The process of transforming raw hides into wet blue is the **same it has been for 100 years** or more. New techniques and chemicals have changed the way wet blue is made, but basic steps remain the same. Essentially, the tanning process removes moisture in the skin



and fills it with chrome. Chrome is the permanent preservative that converts raw hides into leather. More information about the tanning processing can be found in outside resources such as the Leather Research Laboratory training courses at the University of Cincinnati.

# SPLITS & OTHER PRODUCTS

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## SPLIT LEATHERS

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Splits are the by-product of the tanning process. Tanners typically want the “grain” part of the hide for processing (the hair side of the hide), and they need those “grains” to be of a certain thickness or substance. Splits are what is leftover when the grain (or hair) side has been “split” or removed.

Generally, an **UN-SPLIT U.S. WET BLUE CATTLE HIDE** will have a thickness ranging from 5 MM to 10 MM and be an average of about 6 MM. Tanners making shoe upper leather may want a grain substance, after shaving, to be about 2.0/2.0 MM, and so they would likely split to 2.4/2.6 MM in the blue. The resulting or leftover split, sometimes known as drop splits, would be about 2 MM or about 20 lbs. from a fleshed steer hide summer weight of 62 lbs. In the case of automotive seat leathers, tanners typically want a grain with substance of about 1.4/1.6 MM. Therefore, after splitting to that substance of grains, the resulting wet blue split would be as much as 4 MM and would weigh over 30 lbs. It must be remembered that hides are not uniform in substance. In the butt area of an un-split wet blue hide, it may be 7 MM, but in the belly area the substance there could be as little as 5 MM or less.



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**IN THE TANNERY**, a machine known as the “*splitting machine*” will be utilized to perform this function. The splitting machine has to be adjusted for the substance required, but the tanner must also take into account the fact that wet blue or wet white hides are a lot heavier than dry leather. In fact, the water content of a wet hide is typically three times heavier than dried leather. In some cases, the splits are thick enough that tanners can take another split off the split, and that is called the “middle split” or “bottom split.”

In most cases, tanned hides are put through

a splitting machine while in the wet blue stage. However, tanneries are increasingly splitting in the lime stage, prior to tanning. Lime splitting offers tanners a wider range of uses for the hides. Lime split grains and splits can be further chrome tanned into blue and sold that way. Many tanners prefer to lime split as the leather lays out better, better yields are produced, and a lot of neck wrinkles are removed. In addition, tanners have more options other than just producing chrome tanned leathers with lime-splits. With lime-split grains, tanners can make “wet white” or vegetable tanned leathers that they cannot make from chrome stock.

**Split leathers** can be used in many finished articles ranging from automotive steering wheel covers, to shoes, and even made into shoe linings. One of the most popular split uses is processing splits into Polyurethane or “PU” product. PU coated leather was first developed in the United States in the 1970s. Coating by PU simply means taking a piece of tanned and dried split and covering it with a waterproofing polyurethane applied to the split by flow-coating or covering the split with a laminate. Some of this PU coated leather is embossed with a leather grain giving the split leather an appearance of grain leather. This is popular in making leather shoes and even used in some automobile car interiors that are not directly sat on or touched, such as in the



doors or on the sides or backs of the seats. Furniture leather manufacturers also use a lot of PU coated split leathers under the seat cushions in the sofa or chair parts that are not directly touched often.

Split leathers typically do not have the tensile strength nor the feel of the traditional grain leathers, but manufacturers of all leather products looking for lower priced alternatives to genuine grain leathers are seeking to use it in their products.



## COLLAGEN PRODUCTION

**Collagen** is a natural protein that is found as a connective tissue in all mammalian bodies. It is an essential part of the skin, hair, nails, muscles, tendons, ligaments, etc. and bovine (cattle) and porcine (pigs) have the same collagen structures as humans. Collagen is safely absorbed by the human body, so we find bovine and porcine collagen used in many ways for human consumption ranging from beauty products to sausage casings.

**Bovine and porcine collagen** can be produced from cattle hide splits. After splitting the hide in the lime, the limed splits are chilled and shipped in tubs to the collagen manufacturer. Through a complex process, the splits are reconstituted into a gel and then manufactured into many products, such as casings that are used for hot dogs and sausage production.

**Bovine collagen sales** have grown tremendously in the last several decades as a result of greater growth in sausage production as populations grow and disposable incomes increase around the world. In the case of sausage casings, more producers of these casings are finding it easier and more economical to be using bovine collagen rather than natural casings, which were typically pig intestine linings.

## PET FOOD PRODUCTION

Another usage of *hides and skins splits is in the pet food industry*. Lime splits are processed and dried into dog bone chews that are quite popular today. The expansion of the pet food industry and the number of dogs in families both in the U.S. and abroad have created large demand for these “doggy bone” products.

Hide and skin splits can either be used to produce leather or further processed as collagen, and often times the two different markets are in competition for the available raw material. Sometimes it makes more economic sense for a hide or skin company to sell their splits into the collagen market rather than traditional leather channels, depending on market prices.



# U.S. HIDES & SKINS SALES TRANSACTIONS: THE BASICS

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The transaction of selling, shipping, invoicing, and paying for U.S. hides and skins breaks down into the following main steps:

- The Sale
- The Shipment
- The Documentation
- The Payment





## THE SALE

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To begin a hide sales transaction, there of course has to be communication between buyer and seller. For an international sale, communication takes the form of either a phone call or more likely an email or text with the seller offering a particular selection of hide at a certain price for a specific shipping period. The buyer has the option of accepting the offer as stated, or counter bid with some variation of the specifications, such as changing the price, the product selection, or the shipping period.

Once an agreement between buyer and seller is established, a contract is generated that outlines the specifics of the transaction. Hide supplier contracts generally are prepared by each individual company according to their own formats. In some cases, suppliers prefer to use the “**INTERNATIONAL CONTRACT #6**” which is promulgated by the International Council of Hides, Skins and Leather Traders Association (ICHSLTA) and the International Council of Tanners (ICT) as their standard contract form. The contract is available on either groups’ websites.

For many years **INTERNATIONAL CONTRACT #6** has been the standard for all international hide transactions. It provides not only the specifics of a contract, but a place for arbitration as well, if that is needed to settle a dispute. It should be noted, however, that the International Contract #6 is considered a guidance document and the parties are free to deviate from its terms, in writing, as they wish.

**As per the sample contract below, the general provisions of all hide sales contracts include the following:**

- The name of the seller
- The name of the buyer
- Date of sale
- Quantity of hides identified
- Selection of hides identified
- Curing process utilized for the hides, either salt cured or brine cured
- Fleshed or unfleshed hides
- Weight range of hides, either estimated or specific
- Location of hides sold, either Free on Board (FOB) plant, Cost and Freight to a port or tannery (C&F), or Cost, Insurance, and Freight (CIF) to a port or tannery (relevant international INCOTERMS should be used)
- Price, normally in U.S. dollars on a per hide basis
- Remarks, which include any miscellaneous information relating to the transaction. Also in the remarks section can be found the reference to International Contract #6, Standards Governing the Sale of North American Cattle Hides, or any other reference documents that are incorporated in the contract.



## THE SHIPMENT

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Once the contract is agreed upon by both buyer and seller, the shipment is arranged. In the case of a domestic U.S. sale, the seller has to contract with a trucking company to pick up the hides and transport them to the receiving tannery.

For an U.S. export shipment to **Mexico**, a truck is generally arranged to load and ship the hides to a freight forwarding warehouse on the U.S. - Mexico border for further transportation arrangements to the tannery in Mexico.



In the case of an export shipment to an **overseas** tanner from the U.S., the logistics can be more complicated and require more attention to detail. When the shipment is ready to load, the seller or a freight forwarder representative has to arrange to make a booking with a steamship company for the shipment. This is sometimes a complicated process that requires the seller/shipper to have a shipping rate established or a long-term shipping contract with the steamship company to get the hides from the processing plant to the overseas buyer. Once the rate is finalized, a booking can be made and the shipment arranged. For hides or skins sold to a buyer in China, for example, the seller has to arrange with a steamship company to deliver an empty 20 or 40 foot container on a chassis to their packing or processing plant. In some cases, the seller will arrange and pay for the trucking of the empty container from the port to the plant, and then to be transported back to the port loaded with product.

*Liners* are generally placed in the containers prior to loading the hides or skins. This helps to prevent excess moisture from leaking out of the container during the voyage. The liner is sometimes supplied by the steamship company, or the hide plant may be required to insert a plastic liner in the container themselves. Hide suppliers generally charge the buyer for this lining.



Once the container is lined, pallets of hides are loaded by forklift into the container. Prior to the loading, hide plants weigh each pallet and maintain the pallets, pieces, and weights on a ledger or computer. Typically, suppliers will load 14 or 16 pallets in each container, depending on pallet size and weight of the hides. Generally speaking, a 20 foot container has a maximum weight capacity of about 40,000 lbs., whereas a 40 foot container has a capacity of about 46,000 lbs.

***The hide plant then generates a Bill of Lading outlining the specifics of the shipment to include:***

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- The selection
- The total pallets
- The total pieces
- The gross and net weights
- The vessel that the container is to be loaded on
- The date and time loaded

The trucker receives the container and signs the bill of lading, and at that point, the hide container is controlled by the steamship company. The loaded container is trucked or shipped by train to the port dock where the container is offloaded from the chassis onto a shipping vessel via a large crane system. The vessel sails to its destination, is unloaded and trucked to the foreign buyer tannery.

There are many *steamship companies* throughout the world that accept hides and skins for freight in their container ships, and the rates can vary substantially. It behooves the shipper to shop, when possible, to secure the best rate available.



**Heat treated pallets** are required for all export shipments. In the past, foreign countries received pallets of hides and other products made of wood. In some cases, insects had been attached to the pallets ended up being released into the environment in unnatural areas, creating problems with local plants and animals. In order to avoid these infestations of foreign invasive species, pallets are heat treated under international standards and programs to kill all insects on the pallets, so that no insects could be included in the shipments. Today, virtually every country requires imported products to be loaded on heat treated pallets. As with the lining, the suppliers typically charge the buyer for the heat treated pallets.





In the case of a shipment to *international buyers*, the requirements on the documentation are more extensive and complicated. Both exporters and importers should work closely to identify what documents will be needed in order to clear the shipment through customs. Typically, the minimum document requirements in an international sale will most likely include the following documents:

- Invoice
- Packing list
- Health Certificate
- Certificate of Origin
- Ocean Bill of Lading



The most important document of the above is the **HEALTH CERTIFICATE**, for sales of fresh, salted or otherwise cured hides and skins. Health Certificates are documents signed by the U.S. Department of Agriculture (USDA) certifying to the foreign government that the hides or skins in a shipment do not include harmful animal diseases. The rules and model certificates are constantly changing as new diseases emerge and governments cooperate with each other to continue trade in animal products. Significant attention and care should be taken to ensure the health certificates are error-free. Foreign governments will hold or reject containers of hides or skins if there are errors in the certificate. It is important to note, however, that most governments do not require health certificates for wet blue product shipments, as the tanning process removes any threat of carrying animal diseases in the hide or skin.

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## THE PAYMENT

***There are various payment methods when a hide or skin sale is made. Some of the most obvious methods of payment include:***

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### PREPAYMENT

A seller may require a buyer to prepay the entire cost of the shipment before being loaded. In this case, the seller presents a PRO-FORMA invoice to the buyer that estimates the number of hides to be shipped with an estimated invoice value. The buyer would be required to either wire transfer or send a check to the seller before the container is loaded. Once the shipment is effected, the seller sends the documents to the buyer.

### CASH AGAINST DOCUMENTS

In this case, directly after the shipment has been effected, the seller produces a set of documents and releases the documents to the buyer only after receiving the full invoice value.

### 30/70 CASH AGAINST DOCUMENTS

In this transaction, the buyer remits to the seller 30% of the invoice value prior to shipment or loading at the plant. After the hides have shipped, the seller produces a set of documents including the bill of lading. The bills of lading are now the proof of ownership of the hides.

When the 70% remaining balance of the invoice is remitted, the seller sends the original documents for the shipment. It should be noted that once the shipped hides arrive at an overseas port, the buyer has to get the container released as soon as possible in order to avoid very expensive detention charges at the port. Therefore, prompt execution of the payment and the documents is crucial for the buyer.

## **LETTER OF CREDIT**

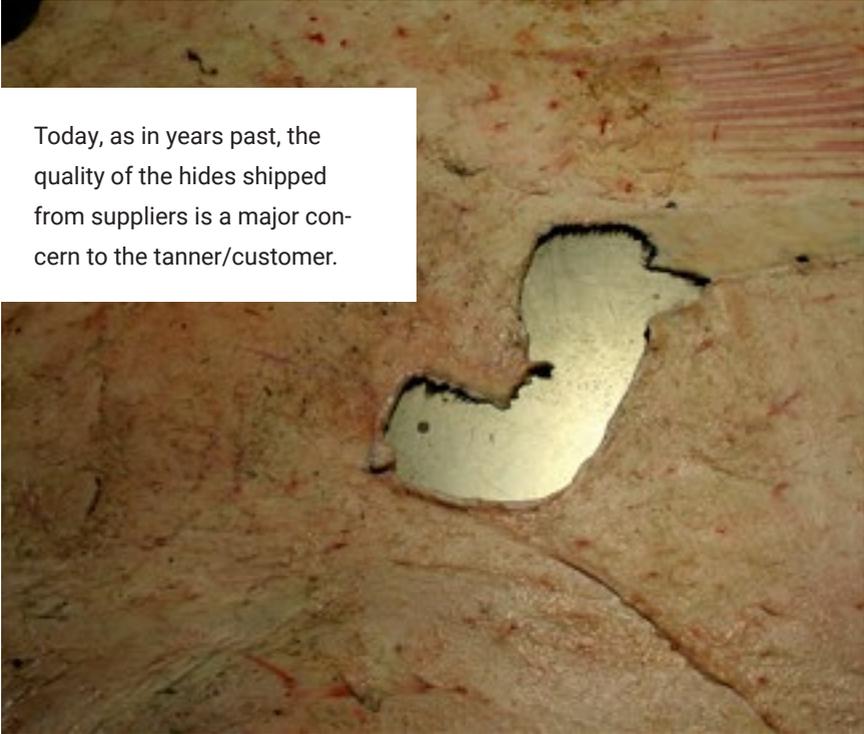
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Historically, this has been the safest and more reliable method of handing the payment of a hide transaction internationally. A letter of credit is a document created by a bank in a buyer's country that guarantees that if all the shipping documentation submitted to the seller's bank is correct according to the terms stipulated in the letter of credit, then the originating bank will pay the negotiating seller's bank the full amount of the invoice. Letters of credit require precise and accurate information on all related documents, as the negotiating bank can be held responsible for any payment for documents proven to be inaccurate. It must be noted that banks typically charge the seller a negotiating fee of 0.5% to 1% of the invoice in addition to the advising fee for the service. For the buyer, their bank also charges the buyer a fee for opening a letter of credit.



# TRANSACTIONS: CLAIMS & DISPUTES

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Today, as in years past, the quality of the hides shipped from suppliers is a major concern to the tanner/customer.

Tanners who create competitive high-quality leathers require quality hides to make those leathers. If the hides a tanner receives do not meet the specifications the tanner requires, then that tanner cannot make and sell the leather his or her customer needs. The tanner is soon out of business. This is more important today than ever before since tanners face severe competition from companies manufacturing shoes and other goods with synthetics. What's more, consumer demands are ever changing.



**LEATHER TANNING** is a science with exacting specifications of chemicals and processes, but tanners have an added disadvantage of starting with hides that are not perfect. Hides all have natural imperfections that constantly challenge tanners as they make leathers. Thus, proper cattle hide shipments from meat packers and hide processors are essential, not only for the tanner to make a product that his customer will accept but also for the tanner to make a profit.

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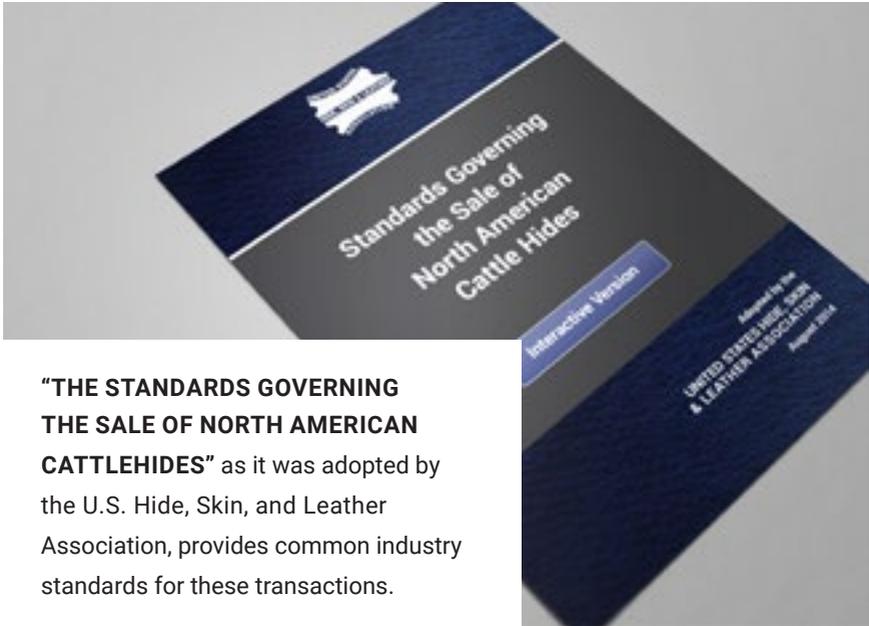
**IN YEARS PAST**, the hide business was largely unregulated; it was also an industry that was constantly at war with its tanner customers over quality and contract obligations. Today, the modern U.S. hides and skins industry is largely self-regulated. Hide suppliers are dealing with a much-reduced tanner/customer base and communications are instant. A hide supplier who would intentionally or unintentionally ship poor quality hides would receive immediate feedback from the tanner. In the case of an overseas tanner, that feedback may take 30 to 60 days after shipment in containers, but that is still relatively a short period of time compared to 30 years ago. Also, with the advent of the internet and the proliferation of cell phone usage world-wide, any problems can be reported and settled very quickly. Although at times an antagonistic relationship between tanner and hide supplier may exist, most participants, both buyers and sellers of hides, feel an obligation to have a mutually advantageous relationship with each other. In a sense, that obligation stems from the fact that, ultimately, the tanner needs the hide supplier and the hide supplier needs the tanner. With the consolidation in both the hide and leather industries over the last 30 years, fewer tanners and fewer hide suppliers have resulted in most relationships feeling more like partnerships than adversaries.

***While hide producers work hard to supply quality hides to the leather industry, quality production still comes down to individuals taking off, processing, counting, and shipping the hides correctly. Mistakes do occur. If such a situation arises, then certain rules must be in place that both the tanner and hide supplier will follow for both to feel that a hide transaction works well for both parties.***

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***Suppliers*** have to work to the best of their ability to deliver the quality hide that the tanner purchased. They must adhere to the contract specifications on delivery time and meet hide specifications. ***Buyers*** also have an obligation to adhere to the contract specifications and pay for the hides they purchase. Besides making payment, though, buyers have an obligation to inspect hides that are shipped to them in a timely manner and immediately report any discrepancies. In the past, cases have arisen where either buyer or seller refuses to perform his or her end of a contract. This usually happens in times of sharp fluctuations in market prices, and the result of such behavior severely damages the profitability of the abused partner and the trust that must be realized between buyer and seller. Today, hide suppliers cannot afford to alienate tanners, nor can tanners afford to alienate hide suppliers. Once trust is broken, it takes years to re-establish that trust, and sometimes it never is resurrected.



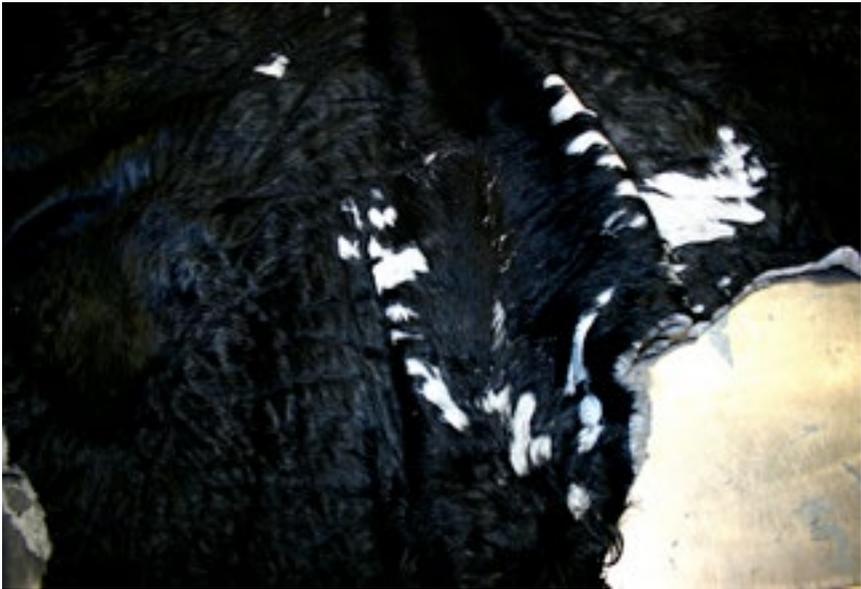


**“THE STANDARDS GOVERNING THE SALE OF NORTH AMERICAN CATTLEHIDES”** as it was adopted by the U.S. Hide, Skin, and Leather Association, provides common industry standards for these transactions.

As a general rule, the **“STANDARDS”** covers most everything involved in a transaction, from variances on weights and pieces to inherent grain damages. It is a guide that both tanners and hide suppliers have adopted and agreed to use in order to help settle anything that is “out of the ordinary” in a hide shipment. While the guide does cover most areas of potential claims from tanners, it is not all-inclusive with regard to how claims are settled. As a general rule, claims and disputes between hide suppliers and tanners are settled in a variety of ways. It is always important to note that no party, neither buyer nor seller, wins in a disputed

shipment of hides. For the tanner, he can never recoup the loss he has suffered by not having the correct hides at the proper time to make the leathers he has sold or the financial loss of “settling” for less than his actual loss. For the hide supplier, the loss on a settlement not only affects his profitability, but it also can severely damage his reputation. With the close communications today amongst tanners, any ugly report has an immediate ripple effect throughout the industry on that supplier. Ultimately, negative reports and rumors can affect that supplier’s future prices and sales of his hides.

**GENERALLY, A CLAIM BY A TANNER** has to be submitted in a timely manner and should include pictures and any other pertinent evidentiary information for the hide supplier to analyze. This must be done as soon as the hides arrive at the tannery. Hide suppliers must be given an opportunity to inspect the hides or have an inspection done to verify the tanner's claim. Once the claim has been verified and a settlement has been agreed upon by both tanner and hide supplier, then the form of restitution has to be settled. In some cases, a check or wire transfer of funds is agreed upon, while in other cases, a discount on future shipments is agreed upon. In either case, it is important to get the dispute settled as soon as possible, as an open claim or dispute acts like a sore on the skin that constantly hurts and only gets worse.



HAIR SLIPPED #3 HIDE

# MARKETING OF U.S. HIDES & SKINS

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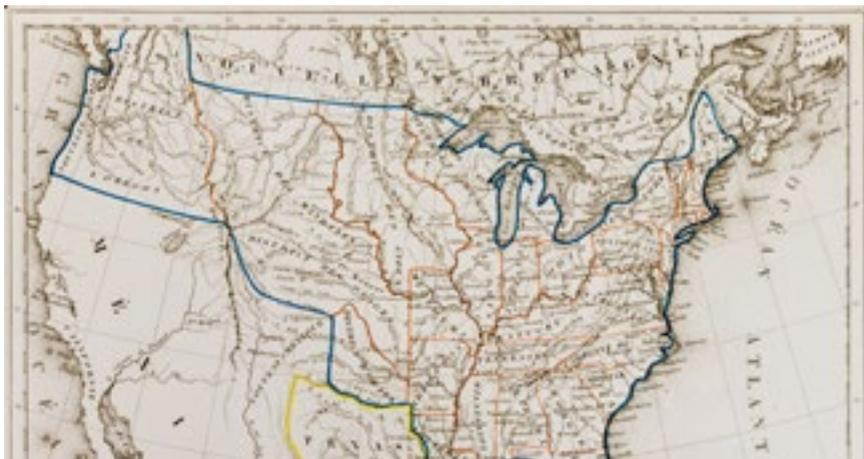


The marketing of U.S. cattle hides and skins focuses on two major questions – **WHERE** and **HOW**? The where part is an always moving target, since destinations for where hides are sold, shipped, and tanned change constantly. The how focuses on the actual sales channels for selling American hides.



## HISTORY OF THE EXPORT OF U.S. HIDES & SKINS

The **“WHERE”** basically is a list of what countries are the major players in buying hides. A short look into the past breaks down the major buyers for American hides. From the 1800s through the early 1900s, almost all U.S. hides were tanned by domestic U.S. tanners, with a few hides being sold into Europe and Japan. The tanning business in the United States flourished back then, New England serving as the major tanning center. Richard Henry Dana wrote a book in the 1800s titled: **“TWO YEARS BEFORE THE MAST.”** This book explained how a young man worked on



a hide ship sailing out of Boston and traveling down the entire East Coast to the tip of South America and back up to the California coast. The vessel carried guns, tools, clothing, trinkets, and other household goods which were traded to the various Catholic missions near the coast for their hides. Large tracts of Spanish endowed land grants covered all of California, and cattle were the major business for all these ranchers. Missions sprung up and down the coast of California, exactly a one day's horse ride between each. These missions slaughtered the cattle, boiled the tallow to make candles and soap, and sundried the hides. Each hide was worth about \$1.00, and all the hides ended up in boats going back to Boston for tanning. In the 1900s with the large influx of immigrants from Europe with tanning backgrounds, many tanneries were built in the Chicago and Milwaukee area.

After being devastated in World War II, **JAPAN EMERGED IN THE 1950s AS A FORMIDABLE ECONOMIC POWER**, including manufacturing shoes and building tanneries. There was a time in the 1960s when Japan was the largest foreign consumer of American hides. Still, at that time, the American tanning industry remained strong and viable.

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**IN THE 1970'S**, the U.S. Government established a program to help some countries build up their shoe and tanning industries. The **"HANDS ACROSS THE SEA"** program established by the U.S. Department of Agriculture was established to provide American hides for free to tanneries in Korea under the **USAID (United States Agency for International Development)** program. Thousands and thousands of American hides were paid for by the U.S. government and "donated" to Korea to distribute to tanners there. Cheap labor and free hides, along with new demand for the REEBOK white leather athletic shoes and cheap leather jackets and handbags created a gigantic leather industry. Although this phenomenon did wonders for Korea, the American tanner suddenly had a major competitor, and for the first time, more hides were exported overseas than were processed in the United States.

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**IN THE 1990s**, China, the new low labor cost country, emerged as a major player in the shoe and tanning business, and for the next twenty years they dominated that industry. For shoe companies and tanning companies with factory workers making US\$30.00 a month working 6 ½ days a week, tanners and shoe factories throughout the world in the U.S., South America, Japan, and Korea could no longer compete with the Chinese. Many tanneries and shoe companies closed and entire leather and leather products industries disappeared.



## MAJOR MARKETS FOR U.S. HIDES AND SKINS TODAY

*Markets will always seek new and cheaper production opportunities.*

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**VIETNAM, INDIA, THAILAND AND OTHER ASIAN COUNTRIES** will become more important destinations for American hides going forward due to these reasons. However, there will always remain some semblance of a tanning industry in the United States, Korea, and China. The only question will be what quantity and percentages of American hides will these tanning industries take.



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## HOW TO MARKET U.S. HIDES AND SKINS

With the “**WHERE**” addressed, we now look at how American hides are marketed. At the time when most hides were consumed in the U.S., marketing by the meat packers and hide processors consisted of the packer offering a list of hides every week to a group of traders or hide brokers. Hide brokers performed the middleman function of representing both the meat packer and the buyer, and for that function, the tanner would pay the broker a commission. In some cases, the broker would finance the transaction for which he would add a finance charge to the commission.

**BEFORE AND AFTER WORLD WAR II**, some European hide traders came to the United States to establish trading firms dealing in American hides. These companies grew very large and were well financed. These trading groups became the major purchasers of American hides. They would speculate with buying now and selling later or they would sell short and buy later large quantities of hides, depending on how they felt about the hide market on any single day. The traders were warmly greeted by the meat packers as they performed the function of getting rid of their hide production with the assurances of getting shipment when they needed it and getting paid promptly for their hides.

***As time progressed and tanners in the United States disappeared or scaled back, packers began selling to domestic tanners directly which essentially eliminated the need for a broker.***

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In addition, many of the **OVERSEAS TANNERS/BUYERS** started to deal directly with the meat packers. This was facilitated by the advent of *the internet*, where a buyer could contact a meat packer and get an immediate reply to an inquiry for hides. While many of the larger tanners would deal directly to some of the major meat packers, there were still a good number of smaller tanners who needed financing and logistical support to buy hides. Some traders still have a strong business offering these services.

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**ANOTHER MARKETING TOOL** used for many years has been the leather and leather related product conventions found in various areas of the world. Conventions gave both tanners and hide suppliers an opportunity to convene together a few times a year. What started as the *New York Leather Show* in the 1960s and 1970s morphed into shows in Leon, Mexico; Bologna, Italy; Paris, France; and Miami, Florida. Later, hide and leather conventions started in Hong Kong, Beijing, Shanghai and Guangzhou, China. All of these events were held annually and provided opportunities



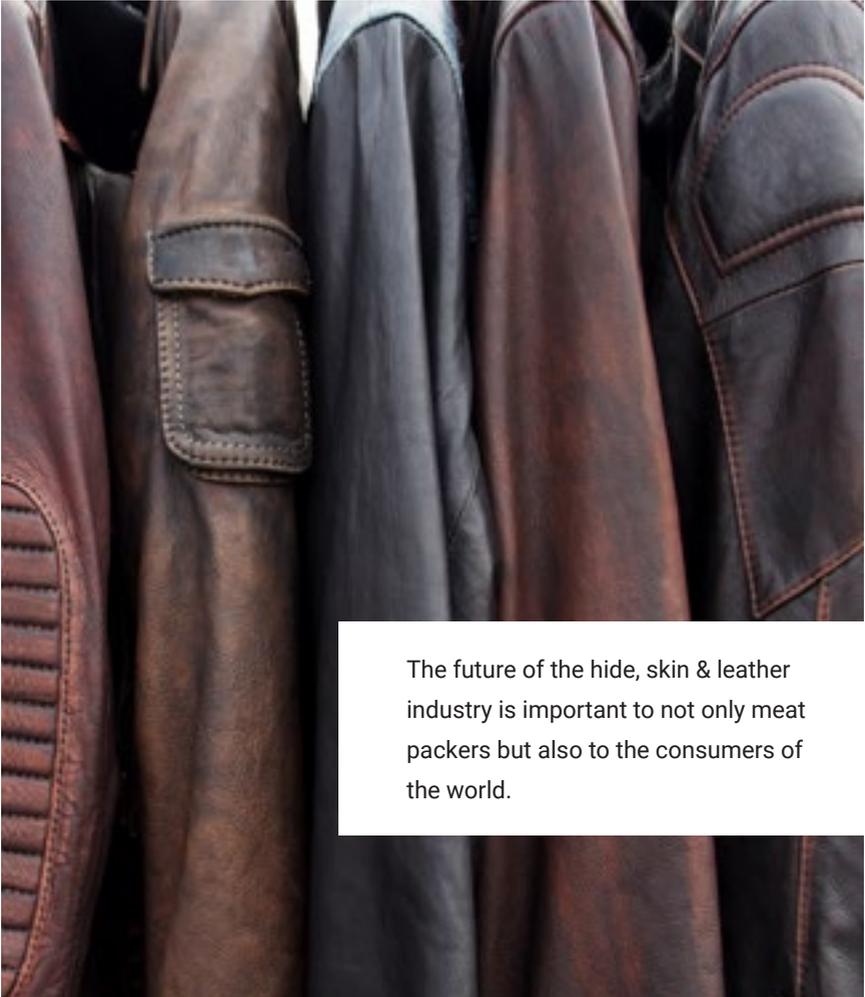
for all segments of the hide and leather industry to get together to share views and trade information as well as hides.

**THE U.S. HIDE, SKIN, AND LEATHER ASSOCIATION (USHSLA)**, founded in 1979, was established to promote American hides and skins. U.S. meat packers, hide processors, brokers, traders, and associated industries have all benefited from the work done by USHSLA. From standards of hide quality to facilitating hide transactions overseas to promoting American hides, USHSLA has performed a valuable marketing function for the American hide industry. In addition, the U.S. Department of Agriculture has provided funds every year to assist the USHSLA in promoting American hides and wet blue products at overseas conventions and helping American meat packers, hide processors, and traders to market their hides to foreign buyers.



# HIDES, SKINS & LEATHER – THE FUTURE

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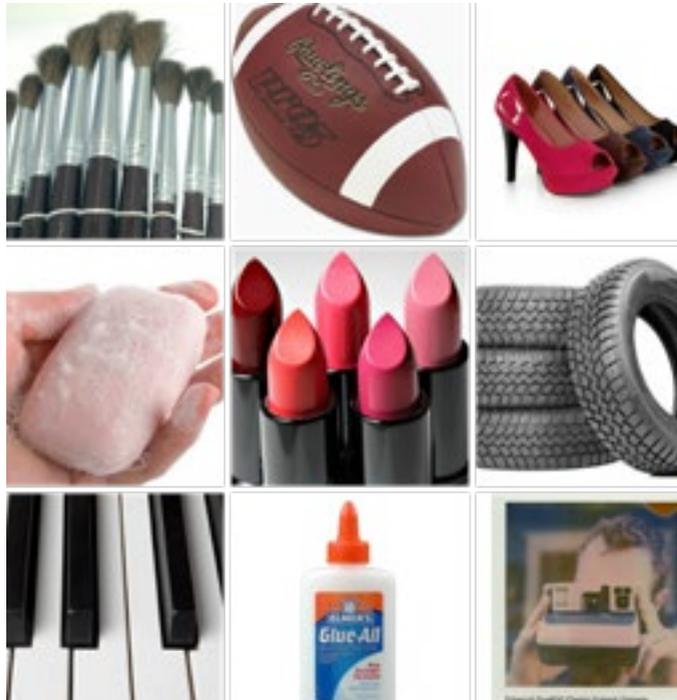
The future of the hide, skin & leather industry is important to not only meat packers but also to the consumers of the world.

**FOR THE MEAT PACKER, the hide is an important part of the profit equation, as it constitutes the largest revenue for the by-products. However, it is not just the positive financial credit that the hide creates, it is also the environmental costs associated with dumping the hides if leather were to go out of fashion, and packers could not sell their hides.**

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There have been times in history when some hides could not be sold, for one reason or another. Packers at those times were forced to send their hides to landfill sites, at considerable costs in both monetary and environmental considerations. An example of this phenomenon occurred in the 1990s when the *Bovine Spongiform Encephalopathy (otherwise known as BSE or “mad cow” disease)* struck the U.S., Canada, and the U.K. In the case of the U.K., 180,000 head cattle were infected with the disease, resulting in 4.4 million cattle

slaughtered for disease eradication purposes. All of those 4.4 million hides were not allowed to be processed into leather due to biohazard restrictions; thus, all of those hides had to be dumped in landfills. It was an economic as well as an environmental nightmare.



**IT IS ESSENTIAL THAT THE WORLD RETAINS ENOUGH DEMAND** for leather goods in order to adequately use all the hides the world produces from meat and dairy production. During economic recessions, consumer demand for all items is reduced, and demand for footwear and leather car seats and furniture seems to take a harder hit than other consumer products.



**THROUGHOUT HISTORY**, from the times of the caveman to the Industrial Revolution, hides and skins were the only material available to make things such as clothing, shelter, boats, cords, and even bags to carry water and wine. As economies grew, different uses of leather and hides became more popular. At the same time, wood and metal replaced hides in boats and in housing. Glass and cans replaced skins for carrying drinking liquids. Textiles replaced hides and leather for clothing. In the past few decades, we have seen major reductions in the use of leather in soles for shoes, jackets, equestrian leathers and even industrial belting.





At the same time, **leather has increased in the production of** gloves for baseball, hockey and golf. Even more importantly has been the explosion in usage in automobile car seats, as consumers enjoy and demand more leather seats in the cars they buy.

Overall, consumer demand has largely maintained the hide supply/leather production balance with the exception being the percentage of shoes utilizing leather. This is significant in that shoes historically used roughly around **60%** of the leather produced in the world. Today, that percentage is much lower, as closer to **55%**.

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***As the amount of leather used to make shoes decreases in the coming years, and plastic synthetics are increasingly used, new forms of leather consumption must be found in order to maintain the supply/production balance.***

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## THE IMPORTANCE OF THE FOOTWEAR INDUSTRY

The major factor that affects leather sales in recent times is the use of synthetic leather substitutes, especially in shoe production. The more that shoe manufacturers use synthetic materials in shoes, the less leather is demanded and the fewer hides that are tanned for shoe leather. There are times, such



as from 2010 - 2014, when demand for hides was good and prices of hides rose accordingly. When hide prices reached over US \$100.00 per piece in 2014, leather became so expensive that shoe companies tried to find price-point materials to substitute to maintain profitability. Synthetic substitution was further exacerbated at that time when oil prices, the main raw material in synthetic materials, dropped to record low prices. Lower synthetic prices against higher leather prices took an unexpected chunk out of shoe demand for leather worldwide. Hide prices, naturally, declined as leather demand was reduced. The big problem is, however, that once a major industry, such as the shoe manufacturing industry, switches over many of their product lines of shoe production from using leather to using synthetics, it takes a long time and a few fashion seasons to switch back.

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## THE FUTURE

***So, what does the future hold for hides and leather? Clearly, leather has two major characteristics that differentiate leather from the competing synthetic fabrics. They are performance and beauty.***

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**FOR PERFORMANCE,** leather for footwear has the ability to “breathe”, which allows moisture in the foot to dissipate through the leather to keep the feet drier and more sanitary. Synthetics simply are coated fabrics that are not porous and shoes made of synthetic fabrics do not allow moisture around the feet to be released. Leather in shoes also has the ability to mold and conform to the foot, which is a major advantage in foot comfort. In addition, shoe leathers are durable with more tensile strength than found in any fabric. The chemistry of leather results in the large number of amino acids forming a collagen structure that is both strong and luxuriously soft.

**REGARDING BEAUTY**, there is no comparison between leather and synthetic fabrics. Leather has always been considered a luxury product used in the manufacture of luxury items, whether they be better quality shoes or beautiful handbags. Leather furniture and leather car seats certainly are considered luxury in the interior design and automotive industries. It is important to note that leather products, be they automobile seats, furniture, or shoes, must be price sensitive to allow people from any income status to afford to buy leather goods.



**ULTIMATELY**, the consumer will dictate the future of hides and leather in this ever-changing world.

***Populations will grow world-wide, and income will increase as well.***

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Therefore, we can anticipate that with the ever-growing population along with ever-increasing disposable income throughout the world, demand for real leather consumer products will have to grow. The only real threat to that thesis is if leather becomes so expensive that it forces manufacturers of shoes, cars, and other consumer items to push for more synthetic substitution. Consumers may be sometimes judged as fickle and ever changing, but the value to the consumer of leather with its durability, comfort, and beauty will never end. In the end, those in the hide and leather industries should feel confident that the consumer will ultimately pick leather over synthetics for their needs.



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U.S. Hide, Skin & Leather Industry

# HIDE GUIDE

