

INSCA

ALL 
Natural
Casings

The International Natural Sausage Casing Association

A BRIEF HISTORY OF NATURAL CASINGS

Sausage is known to be the oldest and most enduring form of processed meat. In some respects, it may even be considered the world's very first "convenience food"

Natural casings are made from the sub-mucosa, a layer of the intestine that consists mainly of collagen. They are edible and bear a close resemblance to the original intestine after processing.



The history of sausage production parallels the recorded history of man and civilization. In fact, for as long as man has been carnivorous, the intestinal tract of meat animals has been used for sausage casings - not to mention a variety of other uses as well. A large variety of sausage is produced world-wide using the processed intestines of pigs, sheep, goats and cattle (and sometimes horses).

It is often assumed that sausages were invented by the Sumerians in the region that is Iraq today, around 4000 BC. Reference to a cooked meat product stuffed in a goat stomach like a sausage was known in Babylon and described as a recipe in the world's oldest cook book 3750 years ago (*Yale Babylonian collection, New Haven Connecticut, USA*).

The Chinese sausage *Làcháng*, which consists of goat and lamb meat, was first mentioned in 589 BC. The Greek poet Homer mentioned a kind of blood sausage in his *Odyssey* (book 20, poem 25); Epicharmus (ca. 550 BC - ca. 460 BC) wrote a comedy entitled "The Sausage". Numerous books report that sausages were already popular among the ancient Greeks and Romans.

It's only during the last thousand years, however, that Sausage Making has come into its own as a venerable and highly developed craft. The practitioners of this trade have fostered a rich tradition - at once sophisticated and yet personal. In many cases, families handed down their particular sausage making art over several generations and across dozens of nations, with each "wurstmacher" contributing his taste and heritage to the art. Of course, the art was also influenced by the demand of the marketplace and by the

availability of the various ingredients which went into the sausage. The twentieth century brought on the Industrial Revolution - exploding onto the scene with new technology - and adding billions to the world's population. This "one-two punch" generated a need for mass production in virtually all industry segments... especially food! At first, the goals of mass production were primarily "quality" and "speed." But gradually, "quality" struggled toward the forefront of this new technology. The meat processing industry faced its own inherent challenges in slaughter, processing, and food safety. "Efficiency" and "quality" became the norm for those processors who rose to the challenge and managed to withstand the test of time.

Sausage making has now evolved into a highly specialized business, with processors ranging in size from independent "Mom & Pop" shops producing one-of-a-kind gourmet sausages, to multi-million dollar "mega-processors" producing millions of pounds of product each week.

Today there are numerous types of sausage casings including: **Natural** and artificial such as **Collagen**, **Cellulose** and **Plastic**. Collagen, Cellulose and Plastic casings are relative newcomers to the artificial field, mainly born out of market demand during the technological maelstrom of the early twentieth century. Much information and instruction about these man-made products is available through the major manufacturers of these casings and we will not delve into them here. As for Natural Sausage Casings, however, surprisingly little qualitative or quantitative information is readily available to processors about these products.



INSCA is striving to fill this information gap. The world-wide membership of INSCA generally shares the opinion that all too often, higher quality sausage which should be made using Natural Casings is passed up by processors who are planning production for the wrong reasons - namely, lack of information. Recent technology has all but eliminated the difficulties and significantly increased the profitability of producing Natural Casing sausage. The challenge then, is to make this knowledge more freely available to decision makers of meat processing enterprises.



This informational brochure (also available on-line) and all INSCA educational materials are available free to everyone. Our goal is to encourage the production of the highest quality sausage in the most practical, and profitable way.

WHAT ARE THE SPECIAL QUALITIES OF NATURAL CASINGS

We feel strongly that Natural Casings are the sausage makers` Best Choice because:

- Natural Casings readily permit deep smoke penetration;
- Natural Casings have excellent characteristics of elasticity and tensile strength, to allow for high efficiency production and expansion during filling;
- Natural Casings protect the fine flavor of sausage, without contributing any conflicting flavorings of their own;
- Natural Casing Sausages have that special "*snap*" and tender bite that`s like no other man-made product and is highly demanded by today`s knowledgeable consumers;
- Natural casing enhances and complements the natural juices and quality of the meat and spices;
- The osmotic quality of Natural Casings permits superb cooking and allows the proper drying (curing) and shaping of salami and sausages, thanks to its porosity;
- Natural casings give the best flavor and appearance to the final product.
- Natural casings are the best possible growing fields for the noble molds which properly add natural seasoning and flavor to salamis and sausages;
- The term "Natural" is, and continues to be, one of the most powerful words influencing consumers` buying decisions;

For Sausage Makers, these characteristics yield high quality products that are uniform in flavor. For Retailers, the endothermic quality of Natural Casings means that the casing draws heat from the sausage and cools it below the temperature of surrounding air, providing better shelf-life and maintaining a juicier, fresher appearance. For Consumers, the osmotic quality allows an intermingling of flavors inside and outside the sausage while sizzling in the skillet. It also allows the wonderful scent of fine sausage to enhance appetite appeal, whether cooking in a skillet, under a broiler, or over an open flame on the barbecue grill.

Other less well known characteristics of Natural casings are:

- Superior tensile strength enables maximum yields;
- Sausages in Natural Casings have a well-filled appearance;
- Natural Casing Sausages have a fine appearance at link ends;
- A variety of product shapes contributes to an inviting appearance, and gives sausages in Natural Casings strong display appeal.

Natural Casings (a definition): Natural Casings are made from the submucosa, a largely collagen layer of the intestine. The fat and the inner mucosa lining are removed. Since small intestines are collagen in nature, they have many of the same characteristics common to all types of collagen, particularly the unique characteristic of variable permeability.

Natural Casings are hardened and rendered less permeable through drying and smoking processes. Moisture and heat make casings more porous and tend to soften them, which explains why smoking, cooking and humidity must be carefully controlled.

Before studying the numerous kinds of Natural Casings, it's important to understand that casings can vary in quality. Better casing suppliers and the sausage manufacturer will determine the specifications required based on the sausage manufacturer's purposes. These variables include:

1. Equipment used for filling
2. Type of sausage being manufactured
3. Coarseness of the grind

Fresh sausage is made from chopped, ground, or even pureed uncooked meat. It usually, but not always, needs to be refrigerated until used.

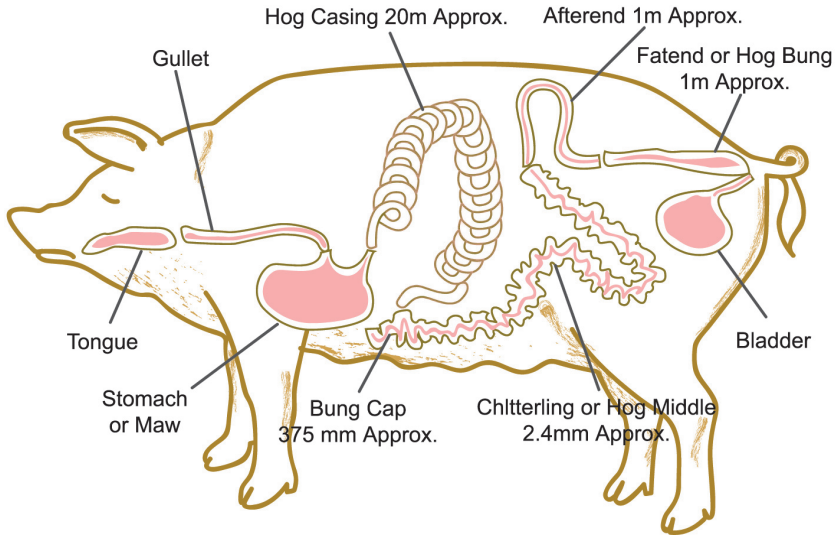
Cooked sausages (or pre-cooked) - like *hot dogs*, *frankfurters*, *bologna*, *mortadella*, and many German-style "*wursts*" - are usually made with smooth, even pureed fillings. Although these sausages are always cooked after filling, sometimes the fillings are partially cooked before being stuffed into the casing. These sausages are still heated up or cooked by the consumer to bring out the best flavor.

Smoked sausages like *andouille*, *kielbasa* and *cervelat* can be eaten as-is, heated, or cut up and used in other dishes.

Cured or dried sausages are sausages made fresh and then salted and air-dried for some time, depending on the type. For well over 2000 years, sausages have been created to preserve meat. Without the modern technologies we enjoy today such as refrigeration, meat was cured or dried, and packed in natural casings to prevent it from spoiling. This allowed it to be stored for later use. The meat is cooked by the salt and air over time. Spanish *chorizo*, *coppa*, and *Genoa salami* are just a few examples of cured sausages

Together, the casing supplier and sausage manufacturer can determine the criteria to be used when ordering, testing and inspecting the casing.

NATURAL CASINGS - HOG



Hog Casings are used for fresh, **cooked, dried or smoked sausages. Chorizo, pepperoni, fresh Italian sausages, large frankfurters, kielbasa, weisswurst and bratwurst...**to name just a few, are some of the best-selling items. Hog Casings are sold in "*bundles*" or "*hanks*." This unit of measure equals approximately 91 meters.

Hog Casings are also sold in bundles called "*shorts*." Shorts are 1 to 2 meter lengths and usually classified as 35mm and up or 35mm and down. NOTE: "*Green Weights*" refers to the weight of a stuffed casing, prior to cooking or smoking, per 91 meter lengths.

HOG BUNGS: Regular and Sewn, Hog Bungs & Hog Bung Ends

"Regular Hog Bungs" are sold as individual pieces and are used primarily for *Liver Sausage* and *Branschweiger*. **Sewn (or Sewed)** Hog Bungs are produced in double-walled and single-walled varieties. All varieties are made by sewing two or more pieces of smaller sizes of regular hog bungs together.

To obtain a larger, more uniform finished product, these casings are custom made and can be purchased in almost any shape or size suitable to the needs of the processors. Most of the products are used exclusively for *Liver Sausage*, *Braunschweiger*, *Genoa* or *Thuringer*, *Summer Sausage* and *Cervelats*.

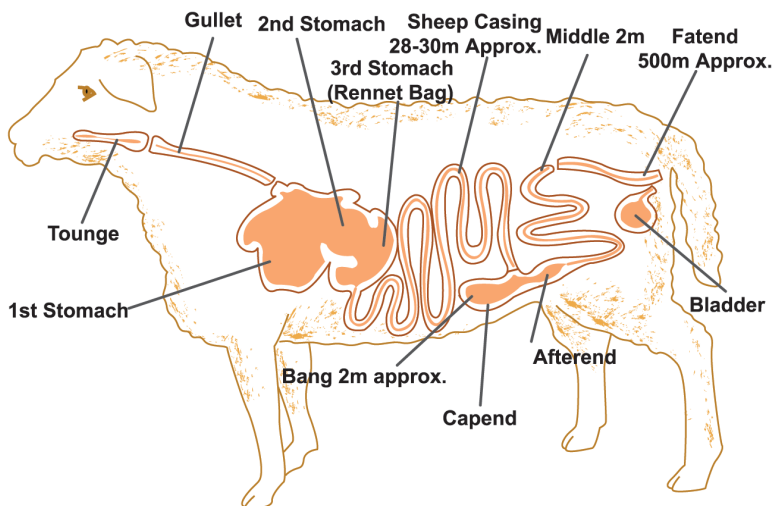
HOG MIDDLES / CHITTERLING

"**Hog Middles / Chitterlings**" are put up in three calibers: wide, medium, or narrow. The size is determined by the location of the item within the animal. There are normally 910- one-meter pieces to a bundle. Hog Middles are easily recognizable by their curly appearance. Chitterlings are also available and selected into 5mm calibers.

An example of a sausage made in hog middles is *Saucisson*, a dry French salami. They are also used to make *Blood Sausage*, *Sopressata*, and

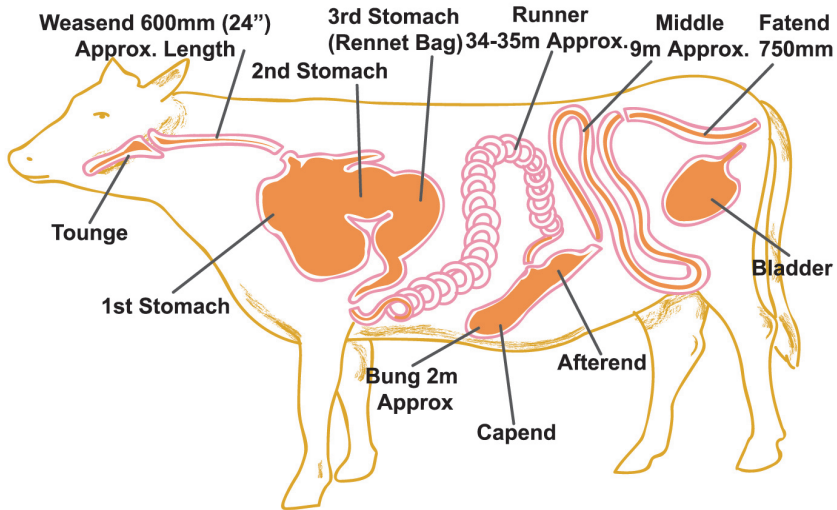
Mortadella.

NATURAL CASINGS - SHEEP



Sheep Casings are the highest quality small diameter casings used for the finest in sausages such as: *Bockwurst*, *Frankfurters*, *Longaniza (Lingüiça)*, *Nürnberg Sausage*, and *Port Sausage*. These casings combine tenderness with sufficient strength to withstand the filling, cooking and smoking operations. Color varies according to country of origin; color ranges from white to gray, but this variation does not indicate quality, strength, capability of smoke penetration, etc. Check with your casing supplier for the best casing origin that meets your requirements.

NATURAL CASINGS - BEEF



The three most used Beef Casings are: **Beef Bung Caps**, **Beef Rounds** and **Beef Middles**.

Beef Bung Caps - are used for *Capocollo (capicola)*, *Veal Sausage*, *Large Bologna*, *Lebanon* and *Cooked Salamis*.

"Beef Rounds" - these casings derive their name from their characteristic "ring" or "round" shape. Beef Rounds are used for *Ring Bologna*, *Ring Liver Sausage*, *Mettwurst*, *Polish Sausage*, *Blood Sausage* and *Holsteiner*. Stuffing capacities indicated are approximate "Green Weights." Beef Rounds are measured into sets or bundles of 9, 18 and 30 meters.

"Beef Middles" - can be used for *Leona Style Sausage*, all other types of *Bologna*, *Dry and Semi-dry Cervelats*, *Dry and Cooked Salami*, *Kishka* and *Veal Sausage*. Beef Middles are measured in sets or bundles of 9 and 18 meters (29 - 30 feet and 57 - 60 feet) each.

Beef Middles can be sewn so that they have a uniform diameter and a uniform length, with or without a hanger (stitching loop).

LAMINATED CASINGS

Laminated Casings are mainly used for **Dry or Semi-dry Sausage** and may also be used for **Cooked Deli Products**. Some Bolognas are made with laminated casings.

Pieces of hog casings or sheep casings are cut open and laminated on a form or mold. This sausage-shaped mold may be made to accommodate a variety of calibers. During the processing operation, high temperatures are used to eliminate any bacterial growth. The natural binding quality of the casing protein causes coagulation. After cooling, the casings are removed from the form or mold.

If desired, various nettings may be applied on the casings during processing. These tend to enhance appearance and serve to allow the hanging of these sausage products for easy display.

MAKING SAUSAGES

Preparing the Casings - There are four basic scenarios to preparing casings for stuffing.

SALTED:

1. Rinse salt from casings with fresh water.
2. Soften by soaking in fresh water at room temperature (approximately 21°C or 70°F) for 45 minutes to one hour. When hanks are placed in water, gently hand massage them to separate the strands and prevent dry spots which may adversely affect the stuffing process.
3. Take casings to stuffing table. Place in bath of fresh water. This water should be warmer to render a little of the natural fat in the casing. This will help to allow the casing to slide from the stuffing horn more readily.
4. Pre-flush the casings by introducing water into the casings and allow to run through the casing. This will also facilitate getting the casing onto the filling horn and moving the casing smoothly during the filling process.

PRE-FLUSHED IN SLUSH:

Requires somewhat less labor and time before stuffing, but all four steps should be followed.

PRE-FLUSHED WET PACK:

Goods are packed in a brine with lesser amounts of salt. Requires only steps 3 and 4. Pre-tubed goods (casings on plastic tubes to speed production) usually come this way. Tubed goods may require a charge of water after they are on the stuffing horn; this is done using a horn made specifically for that purpose.

PRE-FLUSHED IN SOLUTION:

Requires no soaking time. Only steps 3 and 4 need to be performed. Casings packed this way are more prone to damage in shipping and/or from temperature changes. These casings should be purchased in smaller amounts - usually a 2 to 3 month supply, although they can be kept longer. Barrels should be carefully inspected, with leaking ones used first, employing steps 3 and 4.

Tubed casings:

Tubed casings are a labor saving device for the sausage maker allowing increased speed and efficiency in his production. Because tubed casings can be prepared with multiple strands of casing, the result is faster handling and stuffing times. Whether on soft or hard tubes, they are still treated by any of the above methods, depending on the requirements of the sausage maker and the type of sausage being made.

Soaking instructions of tubed casings can vary widely depending on the condition of the casings. Many sausage makers soak the tube casings overnight since it can take a lot longer for the water to rehydrate the tubed casings compared with normal salted casing.

PREPARING TO STUFF CASINGS

In general, all casings can be handled in essentially the same manner; however, there are a few intrinsic variations. For example, Beef Casings, being more fleshy, can withstand more soaking and warmer water than Sheep Casings.

Beef Rounds:

Soak overnight in cold water. Then, thirty minutes before use, put casings in 38 °C (100 °F) water.

Hog Casings:

First, rinse with fresh water. Then, soak in 30 - 32 °C (85 - 90 °F) water for at least thirty minutes prior to use; soaking over night is also quite typical.

Sheep Casings:

First rinse with fresh water. Then, soak in 30 - 32 °C (85 - 90 °F) water for thirty minutes prior to use.



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