

SAUSAGE

HISTORY OF SAUSAGE

The manufacture of sausages began over two thousand years ago, and it is still a growing industry. While some of its basic practices are almost as old as civilisation, the industry is constantly adopting new developments in processing in the light of later scientific and technical knowledge.

Sausage has been an important item in man's diet for twenty centuries. The first recognisable mention of this meat food is found in a Greek play called "The Orya," or "The Sausage," written about 500 B.C. Thereafter the word for sausage occurs with frequency in Greek writings. It's also a favourite food of the Romans, at one time becoming so popular for festive occasions that it was placed under the ban of the early church.

The modern word "sausage" is derived from the Latin ~salsus~, meaning salted. The term was probably originally applied to cured or salted meat generally. In the days of old people did not have refrigeration to preserve their meat and so making sausage was a way of overcoming this problem.

Dry sausage was born as a result of the discovery of new spices, which helped to enhance, flavour and preserve the meat. Different countries and different cities within those countries started producing their own distinctive types of sausage, both fresh and dry. These different types of sausage were mostly influenced by the availability of ingredients as well as the climate.

Some parts of the world with periods of cold climate, such as northern Europe were able to keep their fresh sausage without refrigeration, during the cold months. They also developed a process of smoking the sausage to help preserve the meat during the warmer months. The hotter climates in the south of Europe developed dry sausage, which did not need refrigeration at all.

Basically people living in particular areas developed their own types of sausage and that sausage became associated with the area. For example Bologna originated in the town of Bologna in Northern Italy, Lyons sausage from Lyons in France and Berliner sausage from Berlin in Germany, in England they became associated with the county's, Berkshire, Wiltshire, Lincolnshire, Cumberland Etc.

TYPES OF SAUSAGE

Cooked Sausage

Made with fresh meats and then fully cooked. The sausage is either eaten immediately after cooking or must be refrigerated and is usually reheated before eating. Examples include Braunschweiger, Veal sausage and Liver sausage.

Cooked Smoked Sausage

Much the same as cooked sausage, but it is cooked and then smoked, or smoke-cooked. It can be eaten hot or cold, but is stored in the refrigerator. Examples include Wieners, Kielbasa and Bologna.

Fresh Sausage

Made from meats that have not been previously cured. This sausage must be refrigerated and thoroughly cooked before eating. Examples include Boerewors, Italian Pork sausage, Fresh Beef sausage and the British Banger.

Fresh Smoked Sausage

This is fresh sausage that is smoked. After smoking, the sausage can then be refrigerated and cooked thoroughly before eating. Examples include Mettwurst and Roumanian sausage.

Dry Sausage

Made from a selection of meats. These are the most complicated of all sausages to make, as the drying process has to be carefully controlled. Once produced this type of sausage can be readily eaten, and will keep for very long periods under refrigeration. Examples include Salami's and Summer sausage.

BRITISH SAUSAGES

This is also commonly known as "Bangers" they are a fresh pork sausage and all have a certain amount of bread crumb in them, the predominant flavour is derived from sage, Irish sausages are very similar. They are traditionally stuffed into Hog casings.

ITALIAN SAUSAGE

This is the sausage of pizza and can be frozen in bulk or stuffed into hog casings for sandwiches. The predominant flavour is derived from fennel and the meat is pork.

BRATWURST

This is the sausage of Octoberfest. It is made from pork and veal and a long list of spices. In this country it is stuffed into hog casings but in parts of Germany and my favourite is the sheep casing size.

SUMMER SAUSAGE, SALAMI & BEER STICKS

These are fermented sausages made from pork and beef. Summer is cooked, Salami is dried and beer sticks can be either. Smoking is optional. The Summer can be stuffed into fibrous casings or beef middles for the traditional size. They can also be stuffed into sheep casings for beer sticks. As there is a great deal of shrinking in Salami, they can not be stuffed in fibrous casings.

LIVER SAUSAGE & BRAUNSCHWEIGER

These are cured sausages made from pork liver, pork hearts and pork. Braunschweiger is smoked after cooking hence the "braun" in the name. They are best stuffed into beef middles as fibrous casings do not shrink with the sausage.

MAKING SAUSAGES AT HOME

Making sausage at home is a rewarding and interesting craft. In complexity it is somewhere between making bread and making beer or wine. The reward comes in the flavours that can't be matched by the industrial sausage found in the supermarket and the knowledge of being in control of every ingredient that goes into the sausage.

DEFINITIONS :- For discussion purposes, Sausages can be divided into two basic categories, Fresh and Cured.

FRESH SAUSAGE

Fresh sausage is cooked just prior to serving. It will only keep a few days in the refrigerator but can be frozen for future use. Examples are: Polish, bratwurst, Italian breakfast sausage and English sausages. It is traditionally stuffed into casings but can be formed into patties and fried like hamburgers. It is made up of minced (ground) meat and spices. As the user controls both, the variations are endless.

CURED SAUSAGE

REMEMBER BOTULISM KILLS:-

Botulism is the most deadly form of food poisoning. It can occur in food products before the first hint of a foul odour or other form of food spoilage occurs. It is a food poisoning caused by the bacterium Clostridium Botulism. These bacteria are easily destroyed by boiling, but their toxin producing spores are not so easily destroyed at 100C (boiling point of water). And they thrive in a low acid, moist environment that is lacking of oxygen. When the sausage is between the temperatures of 4C to 60C, you get a problem. Since smoked or dry/semi-dry (cured) sausages fall into this category, you need to take extra precautions to make sure you do not produce something that will kill.

Implicit in the word cured is the use of an agent or process that provides long term keeping properties to the sausage. The use of salt, drying and fermentation are examples of curing that have been used for millennia. Modern public health practices demand the use of chemical agents in the form of nitrites and/or nitrates to assure the destruction of pathogenic organisms such as that which causes botulism.

Cured sausages can further be divided into semidry and dried sausages. Semidry sausages, such as summer sausage and hot dogs are cooked, either in hot water or a smokehouse and will keep under refrigeration for months. Dry sausages are not cooked but are dried to about 75% of their stuffed weight over a period of several months and will keep for years at room temperature. Both types can be fermented by the addition of a lactic acid producing bacteria culture that provides a wonderful tang to the sausage in addition to the enhancement of long keeping qualities.

PROCEDURES AND EQUIPMENT

CLEANLINESS:-

Cleanliness is next to godliness, and it will prevent you from killing yourself or anyone that you give/sell your product to. We have to be very much fanatical about cleanliness. I use a bleach/water mixture to clean counter surfaces before and after I use them. I use hot soapy water to clean all my "tools, before I put them in the dishwasher to clean again and sterilise. I rinse all of my tools before using them to make sure that there is no dust or hair or whatever on them.

We should wash my hands frequently, sometimes between loads but definitely before changing steps. We should use surgical gloves. We should keep everything that is not in use in plastic zip lock type bags. We should vacuum seal my spices, cures and additives to make sure they stay as fresh as we can keep them.

The average household or even the average kitchen has enough bacteria and germs to make the normal person sick. When you are playing with foods that are basically cooked in the middle of the Botulism "zone", you need to take as many extra precautions as you can.

This is something that should be in the front of your mind the WHOLE time you are making sausage or smoked products.

SAUSAGES

Sausages are made from minced (ground) meat. This can be purchased from a butcher already minced (ground) but the true sausage buff will sooner or later want his own meat mincer (grinder). These can be inexpensive hand cranked affairs found in most kitchen junk drawers or motor driven mincers (grinders) running a wide range of prices.

All mincers (grinders) operate on the same principal. An auger pushes the meat into a rotating blade that chops the meat as it forces it through the stationary output plate. The size of the holes in the plate determine the coarseness of the minced (ground) meat. They range from 4mm to 13mm and the meat can be run through several times for a very fine mince (grind).

Real sausages are stuffed into casings and this requires a stuffer. Fortunately, this can be done with the same meat mincer (grinder) by adding a stuffing tube.

CASINGS:-

Best are sheep casings for English sausage and brats, pig casings for Polish, fibrous casings for summer sausage and beef middles for salami. The choices are endless and only with experience can one decide what works best for you.

You can group all casings into 2 general classes, Natural and Man made. Natural casings are the intestines of animals, more specifically those of Cows, Hogs, and lamb or sheep. Man made are those that are pretty much made from anything else, cellulose, collagen, fibrous, muslin and the catch all synthetic.

Man made casings need little or no preparation. Fibrous need to be soaked before use, but that is the extent of the preparation.

Natural casings are another story. They can come in a package of brine or in a heavily salted brine/water paste, or even in a cake of salt. These need to be pre-treated before use. The first reason is to dilute the salt to a palatable level, and to prevent them from getting so tough that you need a chainsaw to cut through them.

Take the natural casings from the package, and place them in a large bowl. They sometimes have a plastic ring they are tied around. Spread them out, and examine the way they are bound. Separate the amount that you will need (be excessive) for your sausage project (don't worry, any leftovers can be added back to the package). Place the casings to be used in a second bowl, and fill with as much water as you can. Let them soak for a few minutes then drain and refill. Then place a few inches of water in the sink (drain plug needed here). Drain the casings again, place in the sink. Take a casing, open one end and fill the entire casing with water from the tap. Do it for one whole length, then drop it and move to the next one, basically flush the inside. Be careful, because they will knot up on you. Leave them in the sink of water, and then withdraw what you need as you are ready to stuff it.

After they are stuffed, you need to remove all the air pockets. If you do not, you will end up with pockets of grease, that will make the whole thing will not look uniform and may even make for a lumpy looking sausage. What you use to poke the casings with is your business, a knitting needle is to large, but the tip of a knife, a sewing needle or pin, an ice pick or a sausage pricker does the trick.

MAN MADE:-

Obviously, man made means anything that doesn't come around in nature and man has had a hand in it somehow. Collagen. I call this a man made casing, but it is of natural ingredients. Cattle hide has two layers, the hair side and the flesh side. The hide is split, giving you the leather for your shoes, purses and wallets, and the flesh side is dried, ground and dissolved and reformed into casings. It is a natural product, but you can't just cut it out of a cow, thereby my definition it is man made.

These things are formed into tubes, with a definite diameter, and are extremely uniform. IF exactly uniform sausage, cut to exactly the same lengths are essential for your sausage use these. The only variation in your sausages will be your packing them to uniform tightness, which is not an easy thing to do by hand. Occasionally you can find a place that will sell you a sleeve or two, but generally you have to buy a whole box. You can get these in clear and mahogany coloured, and they come in a range of size for a particular type of sausage. Sizes range from 18 to 32 mm. The 21 mm ones are useful to make pepperoni sticks. The sticks work great and are a whole lot easier than using sheep casings, on a negative note, if you over stuff one, it splits a long way and is a pain to recover from. Oh, did I mention that they ARE edible?

Fibrous. Are used to make dry and semi dry sausages, and have fibbers running the breadth and length of them. They allow for a much tighter packing of the meat on the inside, and generally have a protein inner lining, that makes removing them easy along with allowing them to shrink to fit as the sausage dries. They come in sizes ranging from 37mm to 150mm in diameter and varying lengths. They usually need some sort of soak time to make them usable. They are usually factory tied at one end, and need a special knot when you tie the other end, so that the knot won't unravel and cause the interior to drop to the floor.

Synthetic, Plastic, or something so close it doesn't matter. Advantages are that it need no special care before use, can be cut uniform, so that all packages are the same size and weight and can be packed super tight. And you can find them in just about any size, shape or colour you desire. Disadvantages? Don't plan on smoking anything in them, the smoke will stain the plastic, but the flavour will also stay on the plastic and not get to the meat.

NATURAL CASINGS:-

How people came up with using the guts of animals I will never really know, but it sort of follows that if you intend to use the whole animal, that these parts need to be used for something. The internals that are used for sausage casings are obtained commercially, and are thoroughly cleaned and packed in salt or salt brine that allows for refrigerated storage for an almost indefinite period of time.

SORTING, RINSING, APPLYING

Natural casings come in a wide variety of sizes and are usually sold by the bundle or hank or half hank. The bundle or hank is about 80 metres, and will hold about 20 Kg of meat (sheep/lamb casing) or about 50 Kg of meat in the medium sized hog casing. There is no way to determine, except through trial and error how much casing is needed for a batch of meat. So take what you think you need plus about 50% and place the rest back in the fridge, then clean a strand as you go, clean it, stuff it and go to the next. Any leftovers go back into the original bag with maybe a teaspoon more salt, and then vacuum seal the bag if you can to help make the odour in the fridge stay at a level that is appealing to the nose.

Specific sausages call for specific casings, the recipes usually tell you what to use, but in general the following will help you determine what casing to use for what sausage.

These casings are usually heavily salted and require some preparation prior to use. Soaking, rinsing are a few items to consider, not to mention the unravelling of them. My first batch took me almost 2 hours to unravel and frustrated the dickens out of me, but then I just took them out and started pulling. I HIGHLY recommend laying them out, and figuring out how they were bundled before trying to remove one, it'll save you a whole lot of time.

Beef Casings are used for sausages that require thicker than normal casings, and usually are not eaten with the product.

Beef Bungs come in sizes from 85mm to over 125mm, and are used for Capocollo, Veal Sausage, Large Bologna, Lebanon and

cooked Salami's.

Beef Bladders range in size from 135mm inches to over 250mm and are used for Mortadella or for minced (ground) speciality sausages.

Beef Middles range in size from 43mm to over 110mm and come as natural whole product or can be sewn to increase the size. They are used for all other types of bologna Leona style sausage, dry and semi-dry Cervelats, dry and cooked salami and also for veal sausage.

Beef Rounds or Beef Rings from 28 mm to over 44 mm and are used for Ring Bologna, Ring Liver Sausage, Mettwurst, Polish Sausage, Blood Sausage, Kishka and Holsteiner Sausages.

Hog. Are probably the most widely used and are the most common ones found when you go to buy "casings". They are usually by the bundle and are strung through a plastic ring as a group. If care is not taken upon opening the package, you can spend HOURS trying to untangle these things.

Casings range in size from just under 32mm and go to just over 44 mm, and are used for Country Style Sausage, Linked Hot sausage, Large Frankfurters, Kishka, Kielbasa and Pepperoni.

Bungs come in 2 varieties "Regular" and "Sewn". The Regular bungs are about 1 inch in diameter, give or take a quarter inch or so. The Sewn range in size of 2.5 to 4 inches. Bungs are used in making Liver Sausage, Braunschweiger, Genoa and Thuringer sausages.

Middles are the part of the pig that is referred to as Chitterlings (Chitlin's). I don't have any size but they are used for Liver Sausage and Italian Salami.

Lamb. or sheep casings are usually a nice white colour, relatively strong for how flimsy they look and are the most tender of natural casings when it comes to eating them. They range in size from 16 to just over 26 mm and are used for most pork sausages, hot dogs and for sausage sticks.

CURES

The subject that seems to cause the most confusion to beginners is that of cures. They come in various forms and with various names but the bottom line is that one type contains sodium nitrite and the other contains sodium nitrite and sodium nitrate. The generic name for the former is Prague Powder No 1 and the latter is No 2. These go under various trade names but are always recognised by the Prague nomenclature.

Prague No 1 is used for cured sausages that fall into the semidry category in addition to other cooked products such as "boiled" ham. Prague No 2 is used for dried sausages and country cured hams and bacon. Both of these powders are combined with enough salt so that they can be measured out by the teaspoon for recipes. They are also coloured pink to distinguish them from common salt

In addition to the anti-bactericidal effects of cures, the most obvious effect of cures is the pink colour of the finished product.

These cures are inexpensive and readily available from the many sources of sausage making supplies.

FERMENTATION

Fermentation is another subject that has been much maligned in the amateur literature. It is either ignored completely, declared too complicated for amateurs or quack substitutes such as "Fermento" are recommended. As mentioned above, fermentation adds a taste element that simply can not be duplicated any other way. Furthermore, the lactic acid produced by the fermentation provides the sausage with an additional weapon against spoilage. Cured sausage without this step is about analogous to beer without alcohol.

Prior to modern times, sausages were hung up to cure and with luck, the appropriate lactic acid producing bacteria would happen along and colonise the sausage and produce the needed fermentation. Unfortunately, as in winemaking, trusting to luck often produces unpleasant surprises.

Contrary to the popular literature, the fermentation step is no more complicated than adding yeast to bread. In fact the culture is sold in foil packages just like yeast and stored in a freezer. It is inexpensive to begin with and only 1/8 tsp. is required for a 5-pound batch. Because of all the misinformation, and the biggest problem was finding a source for the culture you can experimenting with cheese cultures. They work fine but if you can find a source for the proper sausage culture it would be better.

In use, the culture is mixed with a little water and sugar and then mixed in (along with the spices) with the meat mixture. After stuffing, the sausage is held at around 32C overnight for the fermentation to take place. This can be done in a smoker, oven with the light on or just take a little longer at room temperature. The sausage is then smoked, cooked or dried according to the recipe. There simply is no excuse for not fermenting if the type of sausage calls for it and that is just about all sausage except fresh.

SMOKING

Long ago, while meat was drying on the racks in the sun, someone came up with the idea of lighting a small fire under the racks to keep the flies and other bugs away from the drying meat. At first the fires were small and used any green woods available to create just a light smoke that would do the job. Well they sure were surprised at the added flavour, so they continued the process, trying different woods to find the ones with the best flavour.

Eventually, they determined that the fires also sped up the drying time of the meats they were smoking to preserve all winter long. Then applying a little salt or other spices made for an even better taste and then along came the other spices and then brining was created.

Although the spices and brine add the majority of the flavours when making sausage and smoked foods, the smoke is what makes it stand out from the rest of the stuff you can consume.

So What is smoke? It used to be part of the preservation effort, before refrigeration. Now it is used primarily as a flavour enhancement WHEN it is in fact smoked. Commercial entities add preservatives of a chemical nature to the meat, usually add some liquid smoke, steam cook it and sell it to you as a "Smoked product".

In the cloud of smoke there are minuscule droplets of chemicals (natural chemicals that is) such as carbolic acids, ketoses, phenols and others that condense out on the meat surface. Some of these will be absorbed into the meat the same way salt works its way into the meat

when brined, others just stay on the surface and add that smoky flavour we all love. The chemicals also prevent the formation of bacteria and other micro organisms that cause the food decay. They also work with the salt and the cure to prevent the fat from turning rancid. I just mentioned the prevention of the formation of bacteria, and that is a fact, it will not kill the critters already in a piece of meat that has already started to turn bad.

Most sausages (fresh and dry) are smoked to add flavour, not to dry out the meat. Ensure that the surface is dry (this applies to meat, fish and sausages) before placing in the smoker or the smoke will not condense out evenly on the surface of the product. Smoke fresh sausages to a deep dark mahogany colour then be sure to refrigerate, remember this is for flavour only. For dry sausages, smoke to get the flavour you want, not to exceed about 90 degrees or so, then continue the DRYING process with cool air just like the recipes call for.

To Soak or not to Soak? Chips, chunks or logs? I use a mixture of Sawdust, chips and chunks. I do soak mine, in water for about an hour before use. Why? Because, I have found that if dampened the airflow is restricted, I get a much more mellow flavour. With too much air, or not pre-soaked, I get a much stronger, bitter flavour. Soaking and style of wood used should be left to personal preference, and I suggest you try all ways and decide what is best for you.

Smokers come in all shapes and sizes and are not difficult to make. There are many sources on the web for information on them. You should get one that's capable of fermenting at 32C, smoking at 71C and cook at 142C which are the basic numbers needed for most sausage and ham.

BASIC SAUSAGE MAKING PROCESS

This can be broken down into 4 main steps:

Mincing (grinding) the meat

Adding of spices and flavourings

Stuffing the casings

Storing

One thing we advocate is that you must keep your meat as cold as possible throughout the sausage making process. Before and after each step of the process refrigerate the meat and keep it as stiff as possible without actually freezing it. When mincing (grinding) the meat, if you use warm or soft meat, it tends to be mashed through the mincing (grinding) plates, turn mushy and lose all of the juice in the meat. You will also notice that once meat has been minced (ground) there is far more surface area for bacteria to develop, which is another good reason to keep it cold.

Mincing the Meat

Make sure that you cut your meat to fit the size of your mincer (grinder) 'funnel'. Then refrigerate the cubed meat. Get the mincer (grinder) and dishes for the minced (ground) meat set-up on your work surface. Take the meat out of the refrigerator and mince (grind), working as quickly as possible. Cover the minced (ground) meat and return to the refrigerator or freezer, to chill down again.

Adding of Spices and Flavourings

We use two different methods of adding spices to the sausage:

Adding the spices to the cubed meat before mincing (grinding). This way when you mince (grind) the meat the spices are evenly distributed throughout the meat. If using this method we like to add the spices to the cubed meat the night before your mince (grind). This allows more of the flavours to work their way into the meat.

Adding the spices to the minced (ground) meat. You must be careful when using this method that you mix the spices thoroughly into the minced (ground) meat. The trick is not to compact the meat together too tightly when you do this. Again, keeping the minced (ground) meat very cold prior to adding the spices makes a big difference.

Put the meat back into the refrigerator once you have finished adding the spices.

Stuffing the Casings

Follow the instructions for Preparing Casings for Stuffing depending on which casings you are using.

After flushing the casings we like to keep them in a bowl of warm water next to the sausage stuffer. The warm water keeps the casing lubricated when you feed it onto the stuffing horn. Select the stuffing horn that is best suited to the thickness of the casing you are using. Find the end of a casing and slip this over the end of the stuffing horn. Push the casing over the stuffing horn towards the sausage stuffer, so that it forms an accordion-like pleat. Keep the casing wet throughout this process or it will not slide back on the stuffing horn very easily.

Leave some of the casing hanging over the horn. Start stuffing the sausage meat into the casing. You will need to regulate the flow of sausage into the casing, which will determine how tightly packed the sausage is. If you try and pack the sausage too tightly the casing will burst. If the casing does burst, tie it off at that point and start again. To regulate the flow of sausage hold the casing on the stuffing horn with your thumb and forefinger. Increasing or decreasing finger pressure on the casing will determine how tightly and consistently the sausage is packed.

As the sausage comes out of the stuffing horn, you can tie the ends at regular intervals or make links by twisting the sausage. Sausage like Boerewors is made in one continuous piece, which is coiled for storage.

Storing

After stuffing the sausage into the casings, we like to hang the sausage. This allows the casings to dry properly as well as gives the flavours in the sausage time to develop. We turn the central air conditioning up full until the house gets really cold. Cover a broom handle with aluminium foil and straddle between two chairs. Hang the fresh sausage over the broom handle until the casings are dry. Make sure that the sausage stays cool, or bacteria will develop. If the sausage has a lot of liquid it will drip from the casings as they dry, so you may want to put something down on the floor to catch the drippings.

When freezing sausage, you should place the sausage in zip-up type plastic bags. Use a straw to suck out as much of the air as possible. Seal the bag and freeze the sausage quickly to lock in the flavour. We use a vacuum sealer for this purpose which works very well, and makes for an attractive presentation if you are dishing out sausage to your friends as gifts.