

Sizzling Sausage



**Make Delicious Mouth
Watering Sausage in
Your Home Kitchen!**

Steve Gaskin

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Written & Published by Steve Gaskin, Warrnambool, Victoria, Australia.

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Introduction

Thank you for purchasing my book. I trust that it will live up to your expectations, give you value for money and reward you with years of home sausage making satisfaction!

Years ago in Australia, vendors would visit local hotels; carrying tubs of different kinds of sausage for sale, each with its own wonderful aroma. These were true "home-made" sausages and the makers often of European descent. But - no longer!

Today's environment has been altered because of new legislation implemented after a serious food poisoning scare in Australia involving Mettwurst, which claimed the life of a child, and made several other people seriously ill (Garibaldi 1995), and similar situations that have occurred worldwide.

It is no longer legal (in Australia at least) to manufacture smallgoods in the home for resale. While I appreciate the need for such actions, it does not mean that I do not miss the opportunity to purchase and sample the various types of homemade sausage that these vendors used to offer.

Later on in life the smell of smoked food or sausage would often trigger wonder? Was it possible for me to make these foods at home? If so - would they be cheaper than the items that I saw in supermarkets or delicatessens? So, in my early 40s I began to explore the possibility of the manufacture of sausage, smoked meats, salami, pepperoni, etc in the home.

The inspiration to write this book came as a result of my own difficulties in obtaining good, up to date information about home sausage making in Australia. Initial inquiries were sometimes frustrating; and one or two people in the meat industry even tried to dissuade me from attempting home manufacture! They would usually refer to the incident with Garibaldi as a reason, or else use examples of complexity of the process etc, to put me off!

When I think back to that time, it surprises me that people would try to dissuade you from trying to make home-made sausage! After all, here is a skill that has been practised for thousands of years in homes all over the world - long before modern processes existed, and has given us the vast number of wonderful recipes and styles of sausage that we have today! As someone in an online forum I'm involved with once stated - it's not rocket science!

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When I tried to locate good books on the subject here in Australia, I found that somewhat difficult also. The only local source that had materials was the College at which I was enrolled. But even their books were older, and mostly written by Americans, meaning that some of the ingredients listed were hard to find here and in Imperial measures! A search of Amazon.com today will show that our friends across the Pacific still dominate this area!

It seems that the Americans have not lost touch with their roots and desires to have access to good quality home made sausage! In fact I believe that Americans generally, excel in the area of home meat manufacture and BBQ cooking.

But I now know that it IS possible for you to safely make all kinds of sausage in the comfort of your own home - whether you live in Australia as I do, or any other part of the world. In most cases your sausage will taste better, be less expensive and better for you, than many commercially manufactured sausages made today.

Please read on - I hope that this book helps you with hours of rewarding work and gourmet sausage experiences for yourself, friends and family.



Steve Gaskin
Certificate IV -
Food Technology

For further information on Sausage-making, or Building a Smokehouse – visit: www.buildabbq.com

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Sausages with Style!

Mention the word sausage to an Aussie and what generally springs to mind is a pink, pasty looking thing, which when cooked oozes copious quantities of fat - having so little flavour that it must be drowned in tomato sauce and cooked onion!

While there may be a place for this type of sausage as a quick, cheap and traditional barbecue snack, there is little doubt many Australians are still discovering the myriad sausage flavours created by people from cultures the world over!

But the Australian diet HAS gradually changed over the past 30 - 40 years! We have experimented with and adopted foods from the cultures of people that have immigrated to this country. As in the USA, the United Kingdom, Canada etc, Australia's immigrants have brought with them their traditional foods, and in so doing have enriched and expanded our dietary horizons! We have been rescued from the bland English based diet that our parents, and grandparents grew up with (though they too make great sausages), and can now draw upon a wider range of taste sensations! I hope that this book in some small way helps Aussies broaden their culinary sausage horizons.

There are literally thousands of sausage recipes in existence throughout the world; I have included a range in this book, as well as links to hundreds more.

To help you handle the measurement of ingredients, temperatures etc, of the recipes you will gather and conversion from Imperial to Metric or vice versa, I highly recommend a piece of free software available here:

<http://www.joshmadison.com/software/convert/>

Categories

Because the range of sausages is so broad and the manner of manufacture varied - it can be tricky to group all sausages into precise categories. However, the following three types best sums it up.

Fresh Sausage

Produced from selected cuts of fresh meat (including a ratio of fat), along with salt, seasonings and water (or other liquid). These sausages are fresh and should be treated like fresh meat, requiring refrigeration prior to prompt cooking. Recipes and styles include favourites such as; Breakfast Sausage, Pork Sausage, Beef Sausage, and exotics such as Chorizo, Bockwurst and Bratwurst.

Book 1 is written to enable you to safely start at home with this type of sausage and familiarise yourself with the processes involved, allowing you to perfect them - BEFORE moving on to more complicated styles.

Cooked Sausage

Made from fresh meat (including a ratio of fat) and then fully cooked or heat treated, prior to being stored in the refrigerator for later use (either cold or hot). Curing agents used in their manufacture (along with salt, seasonings and water or other liquid) extend shelf life and impart unique flavours. Many are smoked, or have added smoke flavour. Styles include Polish Sausage, Kransky, Weiners, Mortadella, Cervelat, Ring Bologna, Thuringer, Summer Sausage, etc.

Dried & Semi- Dried Sausage

As the name suggests, the raw meat used in this sausage (including a ratio of fat), along with salt, seasonings etc, is slowly dried, rather than cooked. In the case of semi-dried sausage, some heating or smoking may be used to remove some of the moisture, after which the sausage may be eaten. Sausages in this category include: Salami, Pepperoni, Mettwurst, Dried Chorizo, Landjager, Sopressata, Capicola etc.

These types of sausage are a little more complicated to make at home, but it's only a matter of training and good food practices to ensure your safety. They are covered in Sizzling Sausage - Book 2 available on my website now.

Sausage Making 101

Your Own Fresh Sausages in Under 30 Minutes!

It's possible to make delicious sausage without any equipment at all! Just use minced meat (see page 25 for quality tip) of whatever type or mix of types you prefer, add and blend the desired salt, spices etc, then shape it by hand into sausage or patty shapes.

Many expert sausage makers do this prior to stuffing sausage, to test and adjust seasonings where necessary. If you desire the taste of home-made sausage, without the extra work or equipment required to encase your delicacy or just wish to test your fervour at this wonderful hobby, then I suggest you start this way too!

Step 1

Choose a Fresh Sausage recipe.

Step 2

Purchase the appropriate minced meat (and other ingredients as required), according to the recipe.

Step 3

Measure out all ingredients (salt, spices etc) and mix thoroughly together in a small bowl.

Step 4

Wash hands thoroughly, wear disposable latex gloves (recommended). Add meat to a large bowl and sprinkle half of the ingredients evenly across the surface of the meat. Mix thoroughly by hand. Add remaining half of ingredients and mix thoroughly again.

Step 5

Once all ingredients have been thoroughly mixed - portion out the sausage mix (using a measuring cup or by hand) and form either sausage shaped links or patties, until all mix is used. Roll in bread or cereal crumbs if desired.

Step 6

Batch up whatever quantity yourself or your family will use and place into the appropriate sized freezer bags. Remove as much air from the bag as possible, seal the bag and label.

Congratulations! You've made your first sausages!

Place into refrigerator overnight (or for at least several hours) to allow development of flavour, then freeze or use within 2 - 3 days. Frozen sausages keep for approximately 2 - 3 months at normal freezer temperatures.

Step 7

Defrost frozen sausages or patties overnight in the refrigerator, finish by gentle frying in a little oil until golden brown. Alternatively heat gently, but thoroughly under the griller. Enjoy!

Sausage - Boots n All!

OK so, you've decided that you want to explore the wonderful world of sausage more fully? Before starting more serious home sausage manufacture then - there are some essential items you will need to obtain.

Basic equipment requirements

- 1) **Mincers** - (referred to as a grinder, in the USA etc).

Needless to say, this is the item that will mince your raw meat, converting the chunks to whatever grade you choose.

Basically there are two options, either hand or electric powered, the latter being the more expensive. Depending on your finances and whether you want to commit a larger amount of capital at this stage - a hand mincer can be a wise starting point. Expect to pay from \$60 new for a hand mincer, whereas an electric mincer of reasonable capacity will set you back approximately \$200 - \$400 (more for larger mincers).



Porkert # 22 Hand Mincer in action

Both hand and electric mincers do the same job; they mince meat and can also fill casings - with the right attachments. Naturally though electric mincers do greater volumes with far less effort!

Tip - Hand mincers can also be modified, by adding an electric motor.
Check out the process at: <http://www.sausagemania.com/grinder.html>



Kenwood PG 520 Professional Mincer

If you are planning on only a few kilos now and then, a hand mincer or attachments for a kitchen appliance, represent good value. The attachments for the Kitchen Aide or Kenwood Chef Mixers; will handle small amounts of meat quite well, but should only be considered entry level.

For Aussies, another electric option is either of the 2 units found under **Kitchen Appliances, Food Mincers** here:

<http://www.kenwood-australia.com>

They are available through most large electrical stores - the base model retails for approximately \$200, the other (pictured above) - around \$300.

They are good at mincing, but not great at stuffing casings, due to the small throat and auger size. They come with only 3 plates as standard. The plates determine final chunk size; and in my opinion the largest plate offered (8mm) is too small, while the smallest is so small as to be unusable for sausage.

The unit also comes with 2 sausage nozzles, but the smaller diameter one restricts flow too much, slowing the unit even more. If you decide to buy this machine and use it for stuffing, you will be limited to hog casings (discussed later) since collagen won't fit the larger nozzle and the small nozzle will drive you nuts!

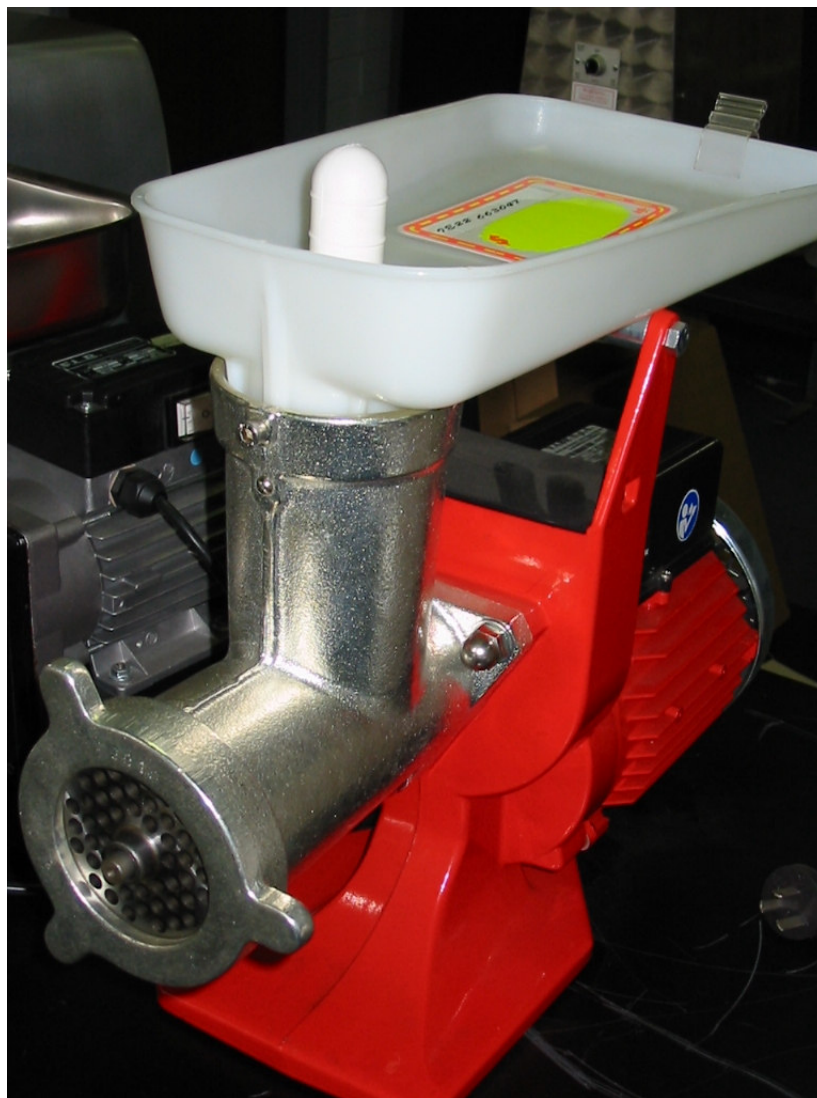
If the simplicity of this unit appeals to you, my advice would be to buy the base model and try and locate at least one larger plate, and then use the machine for mincing only. For stuffing I'd recommend the Dakotah (see later) for filling your casings. But I leave the final decision to you

For more serious mincers, I'd suggest you look at the range available in Butcher supply stores across Australia, like:

<http://www.mps-australia.com/index.htm>

<http://www.lesnies.com.au>

Also (in Australia) there are many Continental Delis and Wholesalers that carry good models imported from Italy.



Heavy Duty Electric Mincer

Readers in the USA, have an excellent range of suppliers. There's an exceptionally good choice of mincers at:

<http://www.texastastes.com>

<http://www.sausagesource.com>

In the UK try:

<http://www.sausagemaking.org/index.html>

http://www.kitchenandgarden.co.uk/cat241_1.htm

2) **Casings** - the sausage skins.

There are basically 2 types of casing for fresh sausage for home use; natural animal casings (made from the intestines of pigs, sheep etc.) or collagen casings (man made from natural proteins in animal skins). There are advantages and disadvantages with either choice.

a) Natural casings - probably the best looking and most durable (minimal splitting), but because they are natural, vary in size, shape and quality. They are available in a range of sizes and types to suit most styles of sausage (check with your supplier). Most popular is the hog casing, its larger sizes make it suitable for fresh and some cooked styles.

They are the casing of choice for most home sausage makers!

The biggest drawback with natural casings is in the unpacking! They are usually packed in salt and tied in bundles! To use them you need to carefully unravel the bundle and separate each individual casing. While this sounds easy - they are several metres in length and tangle very easily! The task it is best done on a long (clean) bench top or similar.

Next - it is necessary to wash and flush the casing to remove any remaining salt. For best results the end of the casing is carefully slid over the kitchen tap fitting, and a small amount of water is introduced. By moving the casing, it is possible to move the water along and flush out any residues. Care needs to be taken, while this is being done - not to tangle the casing. Poorer quality casings may also have little fibres bristling over the exterior, these can also become tangled together, either during flushing or later while stuffing them!

That said, once filled - natural casings have a perfect sausage shape, stay twisted in links, and are far better to cook than alternatives. In the USA, (and Australia in some outlets) they ARE available in a more convenient, ready to use form, packed in a liquid filled bag.

Once the natural casing has been flushed it is ready to be used. The next step is to fit it to the filling nozzle, best accomplished by smearing the nozzle with a little vegetable oil. Open the end of the casing, slide it over the nozzle and continue until the nozzle holds as much casing as possible. Extrude a small quantity of meat from the end of the nozzle, tie a knot in the end of the casing and you're ready to make sausage!

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b) Collagen casings - offer simplicity and convenience, but they too come with drawbacks (see below). They come compressed in a tube shape, ready to slide onto a nozzle. This is their biggest advantage and represents considerable time savings over natural casings.

My supplier provides two types (for thick and thin sausages); in pack sizes suitable for approximately 25 - 30 kg and also in bulk. The thicker type casing (shown below), will hold approx 6 kg (13 lb). To use, simply apply some olive or vegetable oil to the filling nozzle; and slide onto the appropriately sized nozzle. After this, it is simply a matter of extruding some meat from the end of the nozzle, tying a good knot and filling!



Compressed Collagen Casings

The disadvantages with collagen are that they can and do split (when stuffing and particularly when frying); they do not look as attractive and tend to unravel, after being twisted into links.

On the subject of forming links, many makers just extrude the sausage first (like a large snake) packed slightly looser and then twist them off later into the desired length. With practice you can develop a twist that starts off holding each sausage at the length you desire and spinning much like a skipping rope! But casings can and do burst while filling, in this event tie off each loose end and either form a patty to taste later, or feed the meat back into the mincer.

When stuffing (using any method) is finished, there is usually an amount of meat paste remaining in the auger and nozzle. You can just remove it by hand and make patties - OR it can be removed by slowly adding a small quantity of breadcrumbs to push out the remaining paste. Be careful with electric mincers though - they can jam up and overload if you overdo it.



Stuffed Collagen Casings

Other types of Casing

Casings are nearly subjects in themselves. As you progress in sausage making and move on to cured and dried sausage, cooked sausage and other specialty preserved sausages you will need other types of casing.

There are a large range of casings available for all types of sausage; but as I mentioned at the outset - we are a bit behind Downunder - at the time of writing - none are readily available online in Australia. I suggest a visit to your local butcher supply store and examine them yourself.

In the USA, you can check these stores online now:

<http://northamericanhogcasing.emerchantpro.com/>

<http://www.texastastes.com>

<http://www.sausagesource.com>

In the UK try:

<http://www.sausagemaking.org/acatalog/Casings.html>

http://www.kitchenandgarden.co.uk/cat241_1.htm

3) **Sausage Stuffer**

If you make very large volumes of sausage, you will soon decide that you want to fill casings more quickly than your mincer allows. Many sausage makers use a specialist device called a Sausage Stuffer to achieve this.

These machines are simply large hollow cylinders, into which you place the sausage mix. A piston (either hand cranked or hydraulically driven) forces the meat paste out of a nozzle, into the sausage casing. The advantages of this type of device are higher speed filling, less smearing of fat particles and in the case of the hydraulically (water) activated type - one person operation is possible (through a simple foot pedal water valve).

They are fairly expensive items however and would probably be considered only if quite large volumes of sausage were being made on a regular basis. For the average home sausage maker, a hand or electric mincer with stuffing nozzle should be sufficient.

Here is an excellent example of a water powered stuffer available online in the USA:
<http://www.dakotahsausagestuffer.com>

4) **Knives**

If you are planning to cut whole portion meats, bone out shoulders, leg meat etc, it is essential to have at least one good quality knife to help you with the task. It is possible to spend a small fortune on a good quality knife, however it should last a lifetime!

That said - I choose to buy knives from my butcher supplier, the type used by butchers. They ended up being less than \$20, are easily sharpened using a stone or steel and have become a handy tool in the kitchen for all sorts of cutting. I will leave the decision-making for knife purchase in your hands!

Visit your butcher supply shop for advice, and you will find all sorts of other things that you "need". Items range from chain-mail gloves to help prevent knife cuts, through to sharpeners, butchers twine, disposable gloves etc.

One essential item though (for portion meats), is a suitable large surface for cutting. Your choices range from large wooden butcher blocks, popular again in kitchens today - through to high-tech glass surfaces, and the more common nylon cutting boards. Personally, I find the nylon cutting boards easy to clean, cheap and gentle on knife blades.

5) **Thermometers**

Essential - for food safety; particularly if you plan to make Cooked or Dried Sausage later. I have several, an older type stainless with the red spirit based rising column, a digital probe type thermometer that comes with a cover that clips into your pocket; handy for checking anything, even the temperature in your fridge!

But by far my most versatile probe thermometer has been the Polder probe, available here;

<http://www.comforthouse.com/comfort/polkittherwi.html>

Aussies can order from this site also - but if you prefer, Barbecues Galore (and some other stores) now stock a similar type. These thermometers have a remote probe that can be inserted anything (even inside your barbecue) while the sensor unit sits safely away from the heat source.

They also carry a wireless model that is brilliant - you insert the probe into the meat outside and bring the receiver inside so you can always tell how the cooking is going

6) **Scales**

You will need a reasonably accurate set of kitchen scales for weighing out the meat. The set I use has a maximum weight of 5 kg or 10 lb, manufactured by Krups. To date they have been sufficient for my needs, though I have had to weigh in batches during times when I've made larger quantities.

For simplicity of measurement in this book, I have included volume measures for ingredients (i.e. salt, spices etc) - though I do have a set of digital scales that claim to be accurate to +/- 1 gram that I use myself where recipes give a specific weight

7) **Plastic Tubs**

You will need a couple of reasonably large, food grade tubs in which to mix your meat and spices etc, prior to stuffing the sausage. Stainless steel or food grade plastic is ideal. Bear in mind that these will need to be of a size compatible with your refrigerator shelving, because in some cases you will mix your ingredients and allow them to sit overnight, prior to stuffing. You may need to alter or even remove shelving to facilitate your tubs of sausage mix. In my case, I have a second refrigerator, specifically for my "foodie" projects, so have little problem accommodating the large containers.

8) Salt

Despite a trend towards lower salt foods today - it is one of the most important ingredients in sausage making! It can be considered a flavour enhancer, since it lifts the flavour of both the meat and herbs and spices added to it. But depending on the level added, acts as a preservative, binding up the available water and making it less available to micro-organisms.

Please Note: It is generally OK to make minor reductions to salt levels in fresh sausage because you freeze this style or eat it immediately, so you are not relying as much on the preservative action of the salt.

Later however, should you make the move to dry cured or cooked sausage; you are advised to follow recipes precisely! In these styles you rely much more on the preservative, functional actions of salt (and other ingredients) to protect you from the growth of pathogenic (disease causing) organisms and help provide certain other characteristics.

Besides acting as a preservative - salt is also functional in other ways. In certain styles of sausage, it acts on the meat proteins in conjunction with water and fat to form an emulsion and change meat structure. This is why the consistency of cooked and semi cooked sausage is so different to that of ordinary cooked meat.

However, this is where the subject of sausage manufacture begins to become food science; for simplicity - it is not my intention to delve more deeply at this point. Suffice to say, salt is important in sausage manufacture!

It is available in several forms, from rock, flake, granulated and iodised. Generally, it is not advisable to use iodised salt in sausage making. You may however, use any high quality form of cooking salt or flake or kosher salt (available in the USA). Personally I find coarse or cooking salt, the type with granules the size of white sugar crystals, ideal!

9) Herbs and Spices

Used for thousands of years to enhance the flavour of meat, and sausage is no exception! Without them sausages would be bland and boring!

Recipes for sausage may focus on using the flavour of one or two particular ingredients, or use combinations of many different herbs and spices. Certain sausage styles have become popular because of the flavour created by the particular ingredients, and if you are trying to recreate that style, it is suggested that you adhere to the recipe. But if you do find yourself in a situation where a recipe calls for an herb or spice that you do not have, either leave it out or replace it with something with a similar flavour.

Depending on your intentions with sausage making, you may need to locate a good supplier of bulk herbs and spices. They are easily located through the telephone directory or by visiting Asian grocers, markets or wholesalers. However, if you are only intending to make small quantities, most supermarkets stock a good range at reasonable prices.

If intend to purchase herbs and spices in larger quantities, keeping them fresh can be an issue. Buy only what you will use within 6 months, and store them in a cool, dark place. Look for and purchase suitably sized, airtight plastic containers for freshest storage. Where possible buy whole spices and grind them in a blender or purpose bought coffee grinder as needed, for maximum flavour!

The most commonly used flavour ingredients are:

- Black and white pepper
- Onion powder
- Garlic powder
- Ground coriander
- Ground cumin
- Ground mustard and mustard seed
- Ground ginger
- Ground cloves
- Ground chilli
- Cayenne pepper
- Ground mace
- Ground bay leaves
- Rubbed thyme
- Ground oregano
- Rosemary
- Allspice
- Marjoram
- Paprika
- Rubbed sage
- Chopped parsley
- Basil
- Cinnamon
- Nutmeg

10) **Meat**

Types

Sausage can be made from any type of meat including beef, chicken, lamb, veal, deer, even kangaroo, camel and emu (here in Australia). Fellow sausage makers in other countries also have access to their local species, but it is more commonly made from pork or combinations of pork, beef, lamb, chicken etc. Pork has a flavour and fat content that makes it ideal for all kinds of sausage, either by itself or in combination!

Important Food Safety Notes

Hygiene

It cannot be stressed highly enough, that you must always think hygiene whilst you are preparing homemade sausage. You will be manufacturing food that will be consumed by yourself, your family and friends. Proper care will protect the health of everyone who eats your handiwork, whilst also saving you a high degree of embarrassment!

Care should be taken at all stages to ensure that equipment, hands, work surfaces and containers are clean. It is a good idea to use a small spray bottle, containing a mild bleach solution (follow directions on pack), spray on bench tops, cutting boards and other work surfaces. Leave for a period (10 -15 mins), rinse off with hot water, dry with paper towel.

Wash your hands prior to handling meat, after touching your nose or mouth and especially after using the toilet. Ideally, wear disposable latex gloves while handling meat and sausage mix! Never throw back meat chunks that fall on the floor! Ensure all equipment is washed and dried thoroughly again after use, and spray mincer internal parts with a little vegetable oil or a longer lasting specialty food lube to prevent rust!

Meat Temperature

This is extremely important! There is a range of temperatures, appropriately called the Danger Zone - where micro-organisms multiply!

The range is 5 - 60 degrees Celsius (40 - 140 Fahrenheit). For safety you are advised to keep raw meat below the lower limit (i.e. at refrigerator temperature), and ensure that it is not allowed to enter into the Danger Zone for extended periods. Return meat to the refrigerator as soon as possible after all stages of trimming, mincing, etc. Work in small batches where possible, to keep temperature increase to a minimum.

Safe practice is to ensure that the meat is kept chilled during transport, at home prior to preparation, after mixing ingredients and after stuffing into casings. Follow the simple temperature guidelines (and other info to come) and you will enjoy your sausage in safety!

NOTE: Australian sausage makers disregard the next health warning - this parasite does not yet exist in Australia!

Trichinae Parasite Warning!

Trichinosis

A disease caused by an intestinal roundworm whose larvae (trichinae) migrate to and become encapsulated in the muscles. Clinical illness in humans is highly variable and can range from inapparent infection to a fulminating, fatal disease, depending on the number of larvae ingested. Sudden appearance of muscle soreness and pain together with edema of the upper eyelids and fever are early characteristic signs. These are sometimes followed by subconjunctival, subungual and retinal hemorrhages, pain and photophobia. Thirst, profuse sweating, chills, weakness, prostration and rapidly increasing eosinophilia may follow shortly after the ocular signs.

Gastrointestinal symptoms, such as diarrhoea, due to the intractant activity of the adult worms, may precede the ocular manifestations. Remittent fever is usual, sometimes as high as 40°C (104°F); the fever terminates after 1-6 weeks, depending on intensity of infection. Cardiac and neurologic complications may appear in the 3rd to 6th week; in the most severe cases, death due to myocardial failure may occur in either the 1st to 2nd week or between the 4th and 8th weeks.

Infectious Agent

*Trichinella spiralis, an intestinal nematode. Separate taxonomic designations have been accepted for isolates found in the Arctic (*T. nativa*), Palaearctic (*T. britovi*), in Africa (*T. nelsoni*) and in several regions of the world (*T. pseudospiralis*).*

Occurrence

Worldwide, but variable in incidence, depending in part on practices of eating and preparing pork or wild animal meat and the extent to which the disease is recognized and reported. Cases usually are sporadic and outbreaks localized, often resulting from eating sausage and other meat products using pork or shared meat from Arctic mammals. Several outbreaks in France and Italy due to infected horse meat have been reported.

Reservoir

Swine, dogs, cats, horses, rats and many wild animals, including fox, wolf, bear, polar bear, wild boar and marine mammals in the Arctic, and hyena, jackal, lion and leopard in the tropics.

Modes of Transmission

By eating raw or insufficiently cooked flesh of animals containing viable encysted larvae, chiefly pork and pork products, and beef products, such as hamburger adulterated either intentionally or inadvertently with raw pork. In the epithelium of the small intestine, larvae develop into adults. Gravid female worms then produce larvae, which penetrate the lymphatics or venules and are disseminated via the bloodstream throughout the body. The larvae become encapsulated in skeletal muscle.

Incubation Period

Systemic symptoms usually appear about 8-15 days after ingestion of infected meat; varies between 5 and 45 days depending on the number of parasites involved. Gastro-intestinal symptoms may appear within a few days.

Period of Communicability

Not transmitted directly from person to person. Animal hosts remain infective for months, and meat from such animals stays infective for appreciable periods unless cooked, frozen or irradiated to kill the larvae (see B1, below).

Susceptibility and Resistance

Susceptibility is universal. Infection results in partial immunity.

Preventive Measures

Cook all fresh pork and pork products and meat from wild animals at a temperature and for a time sufficient to allow all parts to reach at least 71°C (160°F), or until meat changes from pink to grey, which allows a sufficient margin of safety. This should be done unless it has been established that these meat products have been processed either by heating, curing, freezing or irradiation adequate to kill trichinae.

Grind pork in a separate grinder or clean the grinder thoroughly before and after processing other meats.

Hunters should thoroughly cook the meat of walrus, seal, wild boar, bear and other wild animals.

Freezing temperatures maintained throughout the mass of the infected meat are effective in inactivating trichinae i.e., holding pieces of pork up to 15 cm thick at a temperature of -15°C (5°F) for 30 days or -25°C (-13°F) or lower for 10 days will effectively destroy all common types of trichinae cysts. Hold thicker pieces at the lower temperature for at least 20 days. These temperatures will not inactivate the cold-resistant Arctic strains (*T. nativa*) found in walrus and bear meat and rarely in swine.

Exposure of pork cuts or carcasses to low-level gamma irradiation effectively sterilizes and, at higher doses, kills trichinae encysted larvae.¹

To summarise - if you only ever intend to make FRESH SAUSAGE, provided you ensure that you follow the recommendation to COOK THE MEAT TO AN INTERNAL TEMP OF 71C - you will have killed any parasites present.

FURTHER WARNING - if you do live in a Trichinae parasite affected country, and you decide to progress to styles of sausage that are not cooked or partly cooked, to protect your health, you MUST pay particular attention to the freezing times and temperatures mentioned above.

¹ Washington State Department of Health, Notifiable Conditions, Surveillance and Reporting Guidelines for Trichinosis, <http://www.doh.wa.gov/Notify/guidelines/trichinosis.htm> Online, 25 January 2005

Meat supply

There are two ways to go about making sausage at home:

Pre-minced

As mentioned, the easiest way to start making sausage is to purchase the meat pre-minced, add the various spices and herbs, wine or beer, water, salt, etc, mix together and stuff into casings! Though this is a simpler method, in my opinion it can be somewhat less satisfying.

It also comes with a slight risk, because you rely on your supplier for the freshness of the mince! Once meat has been minced, far greater surface area is available to bacteria to multiply. If the original source meat was contaminated to any degree, the contamination will then be distributed throughout. In these circumstances, combined with poor temperature control, it will only be a matter of time before the meat deteriorates!

I once had to throw away an entire batch of finished sausage, because a horrible sour taste was introduced by contaminated mince! Mince that is of poor quality can only produce poor quality sausage, if using store bought mince, ask questions, ensure that it is of the highest quality that you can find - otherwise buy portion or diced meat and mince it yourself!

Portion or Diced Meat

Whole cuts or a combination of portions and mince are probably the method of choice for the serious home sausage maker! This method offers far more control over the quality of the final product, through selection of meat to fat ratios, quality and type of cut, as well as the grade of mince (referring to final particle size). As a bonus, it is usually substantially cheaper to purchase! The disadvantage is that you will need to spend some time trimming meat from bone and undesirable trim from the meat.

Diced meat offers similar advantages to portion meats, while removing much of the labour required in trimming. A disadvantage is that it is usually more expensive than portion meat.

Most of my sausage is made from portions, which I mince to my requirements. Pork shoulder (called Boston Butt in the USA) is ideal and gives such a good ratio of meat to fat, that I do not feel it necessary to add extra fat. I have also had good successes with pork hind leg, though this is somewhat leaner and does require the addition of extra fat. In Australia and the USA at least, these cuts are frequently available on special at supermarkets.

Depending on the type of sausage being made, choose a cutting plate for your mincer that will vary the final chunk size accordingly or in line with your personal preference.

11) **Hot Smoking**

In years past, a farmer or butcher would have a purpose-built room, called a smokehouse in which to smoke these delicacies. Usually this consisted of a wooden or stone outhouse with rails suspended from the roof, upon which hams, bacon, fish or various types of sausage would be hung. Smoke was generated by one or more fires in the room kept at a low smoulder with sawdust or dampened wood placed on the fire, to flavour the meat. Today however, few of us have the room to allow us to build such a structure.

However if you are serious about your sausage making hobby, sooner or later you will desire to smoke your own sausage. The type of smoking done with Fresh Sausage is the simplest type; called Hot Smoking. Cold Smoking is reserved for Book Two; because there are some food safety considerations and you need to treat the sausages with “cure” first.

Probably the best way to improvise for hot smoking is to use a kettle or hood style barbecue as your smoker and either sawdust or wood chunks to provide the smoke.

Wood chunks are readily available in BBQ outlets, purchase some or if you know someone who is removing an old fruit or nut tree, keep some of the timber (minus the bark if possible). Fruit and nut woods are ideal for smoking. For Aussies - Red Gum chip or sawdust is great too. But do NOT use pine - the resins can add undesirable aftertastes to the food!

To smoke, dampen the wood by soaking in water for an hour or so, then place the wood on a section of the preheated BBQ hotplate, or if using sawdust dampen slightly with water, then wrap in a couple of layers of aluminium foil and pierce the pouch to allow smoke to escape. Wait for the wood to begin smoking - before placing your meat, and closing the lid. Cook as normal and enjoy!

You also can achieve reasonable results using an old steel saucepan (second-hand store) with a large number of holes punched or drilled in it for ventilation. Fill the pan with pile of sawdust and carefully sprinkle a couple of tablespoons of methylated spirits (or other alcohol - could be brandy or whisky) on top, being careful not to spill any.

Remove the container of alcohol from the area and carefully light using an igniter. Allow the fuel to completely burn away and the sawdust to begin to smoulder, (20-30 mins), before placing inside your barbecue. Open sufficient ventilation holes to allow air in and smoke out. Monitor temperature using a probe type thermometer. When the correct temperature is reached place sausage into barbecue for required period. It may be helpful at this time to have a second probe type thermometer inserted into the sausage to monitor internal temperature.

Fresh Sausage Technique

Fresh sausage is one of the easiest and safest for the novice home sausage maker to begin with. Techniques learned here will help you later as you progress to the more advanced (and more complicated) styles of sausage.

Technique

Your approach will vary, depending on the type of meat that you start with. For simplicity, I will start from the beginning, assuming you have purchased whole shoulder pork or similar.

If you decided to purchase minced meat - go straight to step 3, then straight to the Add Herbs & Spices - step 5.

1) Choose Recipe

Purchase meat, check recipe and purchase any required ingredients.

2) Trim

Remove any skin from the pork shoulder; carefully remove meat from bone with a sharp knife, initially cutting into large chunks. Next dice meat into smaller chunks - approximately 25-50mm or 1-2 inch. While dicing remove any excess gristle, clots, membrane or other undesirable bits!

Mincing Tip - place meat chunks into suitably sized freezer bag lay flat in freezer if possible, until meat is almost frozen. This step helps prevent mashing of the meat and smearing of fat during mincing, and assists in the cutting.

3) Measure/weigh

- salt, spices and herbs in accordance with recipe. Adjust ratios of ingredients to suit final trimmed meat weight - in fresh sausage, this is important for both flavour and quality, later for cured dried and semi dried sausage it is vital for food safety!

If the final trimmed weight of the meat is 1.5 times what the recipe calls for, then multiply all ingredients by 1.5 to arrive at ingredient weights. Example: recipe = 4 kg meat, actual = 6 kg or 1.5 times recipe weight. Recipe salt = 30 g per 4 kg, actual salt $30 \times 1.5 = 45$ g per 6kg = 1.5 times 4kg recipe. If the recipe gives tablespoon or teaspoon measures, then calculate to the nearest quarter spoon. If this appears difficult now, relax - it will come to you later & you will do it automatically!

4) Mince

Set up your mincer. Remove (almost frozen) meat from freezer and mince (grind) meat chunks to whatever grade the recipe or your preference calls for. Generally for fresh sausage I use the coarsest (largest holed) plate on the mincer first, and finish with the desired size last. This will depend on your mincer and your preferences - some sausage makers add the salt and spices at the initial meat chunk stage and then mince and fill straight into the casing.

They claim that this better helps incorporate the additives and makes the process easier by eliminating the second mince. There are no hard and fast rules in this area, feel free to try this method if you like? You will find a single mince easier with an electric mincer, but I'd suggest it is easier to do two minces with a hand mincer!

5) Add Herbs, Spices etc.

In between mincing, I usually add salt and other ingredients and mix well by hand or with large s/steel spoon, then complete the final mince, using this mince to assist in mixing ingredients.

Many sausage recipes have a liquid component, sometimes water, but often wine or beer etc. I prefer to incorporate all of my dry ingredients with the liquid first, and then add this spicy liquid to the minced meat. My reasoning is that this method enables me to first thoroughly mix all ingredients into the liquid, distributing it better throughout the meat.

6) Stuffing

Once the meat paste has been thoroughly mixed, you may either - proceed to the next step and stuff the sausages and refrigerate overnight - alternatively refrigerate the meat paste overnight, and stuff the sausages next day. Either way, the purpose of the delay is to allow some time for salt and spices to properly incorporate and interact with the meat.

a) If using natural casings, estimate how many you will require, separate them from the bundle, flush casings, and soak casings (30 minutes minimum). Lubricate the filler nozzle with olive or vegetable oil/spray and load casings onto nozzle. Operate filler to push meat paste until it protrudes from end of nozzle. Tie a secure knot in casing end and operate grinder until all meat paste is extruded into casings. Twist off sausage sized lengths, twisting each link in the opposite direction of the previous one to form sausages.

b) If using collagen casings, estimate how much you will require, (a slug of thin casings accepts around 5 kg (11 lb), thick casings approx 6 kg (13 lb). I soak in warm water approximately 5 - 10 minutes for flexibility, but they can be used dry. Lubricate the filler nozzle with olive or vegetable oil/spray and load casings onto nozzle. Operate filler to push meat paste until it protrudes from end of nozzle. Tie a secure knot in surplus casing end and operate grinder until all meat paste is extruded into casings. Twist off sausage sized lengths, twisting each link in the opposite direction of the previous one to form sausages.

Stuffing Tip - purge remaining meat paste from your mincer or stuffer, by adding ½ - 1 cup of breadcrumbs to push out remainder - or else remove it by hand and shape into patties and cook!

Once finished treat the sausages as you would fresh meat, consume within a day or two, otherwise store in the freezer for 2 - 3 months.

Fresh Sausage Recipes

Simple Breakfast Sausage Recipe

2.25 kg (5lb) pork shoulder
2 1/2 tsp coarse salt
1 1/2 tsp ground white pepper
1 1/2 tsp rubbed sage
1/2 tsp ginger
1 1/2 tsp nutmeg
1 tsp thyme
1 1/2 tsp cayenne pepper
1/2 cup ice water or chilled white wine

Follow fresh sausage directions outlined above, using a fine disk for final mince. Mix all dry ingredients together, add liquid and mix thoroughly through meat. Use your choice of casing.

English Bangers

2.25 kg (5lb) pork shoulder
1 TBS coarse salt
1 1/2 tsp ground white pepper
3/4 tsp ground mace
1/2 tsp ground ginger
1/2 tsp rubbed sage
Pinch nutmeg
2 cups stale or dried breadcrumbs
1 3/4 cups chicken stock

Follow fresh sausage directions outlined above, using a fine disk for final mince. Mix all dry ingredients together, add stock and mix thoroughly through meat. Use your choice of casing, hog or larger collagen is ideal.

Traditional Pork Sausage

2.25 kg (5lb) pork shoulder
2 1/2 tsp coarse salt
1 1/2 tsp ground white pepper
1 1/2 tsp rubbed sage
1/2 tsp ginger
1 1/2 tsp nutmeg
1 tsp thyme
1 1/2 tsp cayenne pepper
1/2 cup ice water or chilled white wine

Follow fresh sausage directions outlined above, using a fine disk for final mince. Mix all dry ingredients together, add liquid and mix thoroughly through meat. Use your choice of casing.

Bockwurst

1.25 kg (2.75lb) pork shoulder
500g (1lb) chicken breast
500g (1lb) veal trims
1 TBS coarse salt
1 tsp ground white pepper
1 1/2 tsp mace
1/2 tsp ginger
1 1/2 cups whole milk
2 TBS butter
1/2 cup chopped parsley
2/3 cup chopped onion
2/3 cup chopped leek
2 beaten eggs

Sauté leeks in butter until soft, allow to cool slightly.

Grind pork chicken and veal through coarse disk, add salt and spices and run through fine disk. Add cooled leeks, parsley, egg, milk,- then mix well with s/steel spoon, chill for one hour. Stuff into your choice of casing.

Poach in salted water at around 75C (170F) for 20 mins or until firm. Drain well, and chill. Use with 2 or 3 days or freeze.

Bratwurst

1.25 kg (2.75lb) pork shoulder
1 kg (2.2lb) beef rump or blade steak
1 TBS coarse salt
1 tsp ground white pepper
1 tsp ground celery seed
2 tsp ground caraway seed
1/2 tsp nutmeg
2 TBS chopped parsley
1/2 tsp cayenne pepper
1 cup finely chopped onion
1/2 tsp lemon zest
1/2 cup ice water or chilled white wine

Follow fresh sausage directions outlined above, using a fine disk for final mince. Mix all dry ingredients together, add liquid and mix thoroughly through meat. Use your choice of casing.

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Pork and Pepper Sausage

- 2.25 kg (5lb) pork shoulder
- 2 tsp coarse salt
- 1 tsp garlic powder (or 3 cloves fresh)
- 1 cup finely chopped celery
- 1 cup finely chopped spring onion
- 2 TBS Szechwan peppercorns (ground)
- 1/4 cup light soy sauce
- 1/2 cup sweet sherry

Follow fresh sausage directions outlined above, using a medium disk for final mince. Mix all dry ingredients together, add liquid and mix thoroughly through meat. Use your choice of casing

Italian style sausage

- 2.25 kg (5lb) pork shoulder
- 350g (3/4lb) finely diced mozzarella
- 175g (6 oz) chopped semi dried tomatoes in oil
- 1 TBS coarse salt
- 2 TBS balsamic vinegar
- 3 TBS dried parsley flakes or bunch fresh, finely chopped
- 2 tsp ground black pepper
- 1 TBS ground fennel seed
- 2 tsp dried basil
- 2 tsp ground coriander
- 3/4 cup red or white wine (chilled)

Follow fresh sausage directions outlined above, using a medium or coarse disk for final mince. Mix all dry ingredients (except cheese & dried tomato) together, add wine and mix thoroughly through meat. Mix cheese & tomato through meat mix by hand just prior to stuffing. Use your choice of casing, hog or larger collagen is ideal.

Hot Italian style sausage

- 2.25 kg (5lb) pork shoulder
- 2 1/2 tsp coarse salt
- 2 TBS ground dried chilli (adjust according to pref.)
- 5 cloves garlic, minced or 2 tsp powder
- 2 tsp ground black pepper
- 3 tsp ground coriander
- 1/4 cup ground paprika
- 3/4 cup red or white wine (chilled)

Follow fresh sausage directions outlined above, using a medium or coarse disk for final mince. Mix all dry ingredients together, add wine and mix thoroughly through meat. Use your choice of casing, hog or larger collagen is ideal.

Beef Breakfast Sausage

- 2 kg (4 1/3lb) beef chuck, blade or rump steak
- 1/2 kg (1 lb) hard beef fat or pork back fat
- 1 TBS coarse salt
- 2 tsp dried thyme
- 1 TBS rubbed sage
- 1 TBS ground black pepper
- 2 tsp cayenne or chilli pepper (optional)
- 1/2 cup beer or beef stock

Follow fresh sausage directions outlined above, using a fine disk for final mince. Cut fat into 12 mm (1/2 inch) cubes and freeze solid before mincing, separately. Mix minced fat through minced meat prior to stuffing. Mix all dry ingredients together, add liquid and mix thoroughly through meat. Use your choice of casing.

Aussie Lamb Sausage

- 2.25 kg (5lb) lamb shoulder, leg or loin (with fat)
- 1 TBS coarse salt
- 1/4 cup olive oil
- 5 cloves garlic, minced or 2 tsp powder
- 2 tsp ground black pepper
- 1/4 cup fresh chopped rosemary leaves or 1 TBS dried
- 1/2 cup red wine (chilled)

Follow fresh sausage directions outlined above, using a medium or coarse disk for final mince. Mix all dry ingredients together, add wine and oil & mix thoroughly through meat. Use your choice of casing: lamb, small hog or collagen is ideal.

Lamb and Apricot Sausage

- 2.25 kg (5lb) lamb shoulder, leg or loin (with fat)
- 1 TBS coarse salt
- 375g dried apricots (soak in warm water 30 mins & finely chop)
- 1/3 cup Mango Chutney
- 5 cloves garlic, minced or 2 tsp powder
- 2 tsp ground black pepper
- 1/2 cup finely chopped red or white onion or 1 TBS dried
- 1/4 cup lemon juice - plus zest of 3 lemons

Follow fresh sausage directions outlined above, using a medium disk for final mince. Mix all dry ingredients together, add juice & mix thoroughly through meat. Use your choice of casing: lamb, small hog or collagen is ideal.

Honey Sesame Sausage

- 2.25 kg (5lb) pork shoulder
- 2 tsp coarse salt
- 1 tsp garlic powder
- 3 TBS honey
- 1/2 cup toasted sesame seeds
- 2 1/2 tsp Chinese 5 Spice powder
- 1/4 cup light soy sauce
- 1/4 cup rice wine or white wine (chilled)

Follow fresh sausage directions outlined above, using a medium disk for final mince. Toast fresh sesame seeds in a dry frypan gently, till golden. Mix all dry ingredients together, blend wine, soy & honey together and mix thoroughly through meat. Use your choice of casing.

Pork, Apple & Sage Sausage

- 2.25 kg (5lb) pork shoulder
- 1 TBS coarse salt
- 2 TBS rubbed sage
- 1 cup apple sauce (commercial or homemade)
- 2 tsp ground black pepper
- 1/4 cup chilled white wine (optional)

Follow fresh sausage directions outlined above, using a medium or coarse disk for final mince. Mix all dry ingredients together, blend wine & apple sauce together and mix thoroughly through meat. Use your choice of casing, hog or larger collagen is ideal.

Spanish style Hot Chorizo

- 2.25 kg (5lb) pork shoulder
- 1 TBS coarse salt
- 3 TBS Chilli flakes (adjust according to pref.)
- 3 TBS ground paprika
- 4 tsp whole fennel seeds
- 1/2 tsp ground allspice
- 1/2 cup sherry

Follow fresh sausage directions outlined above, using a medium or coarse disk for final mince. Mix all dry ingredients together, add sherry and mix thoroughly through meat. Use your choice of casing, hog or larger collagen is ideal.

Bush Kangaroo Sausage

- 2 kg (4 1/3lb) diced kangaroo leg meat
- 1/2 kg (1 lb) pork back fat
- 1 TBS coarse salt
- 1 TBS ground coriander
- 2 tsp ground black pepper
- 3/4 tsp ground allspice
- 3 cloves garlic, minced or 1 tsp powder
- 2 tsp cayenne or chilli pepper (optional)
- 1/2 cup beer, red wine or beef stock

Follow fresh sausage directions outlined above, using a medium or coarse disk for final mince. Cut fat into 12 mm (1/2 inch) cubes and freeze solid before mincing, separately. Mix minced fat through minced meat prior to stuffing. Mix all dry ingredients together, add liquid and mix thoroughly through meat. Use your choice of casing, hog or larger collagen is ideal.

Indian style Coriander Chicken Sausage

- 2.25 kg (5lb) chicken thigh fillets
- 4 tsp coarse salt
- 3 TBS ground coriander
- 1 tsp ground black pepper
- 1 tsp ground turmeric
- 2 tsp ground mixed spice
- 5 cloves garlic, minced or 2 tsp powder
- 1 tsp cayenne or chilli pepper (optional)
- 1/4 cup peanut or vegetable oil (skip if using sour cream)
- 1 cup sour cream or natural yoghurt

Follow fresh sausage directions outlined above, using a medium disk for final mince. Mix all dry ingredients together, add cream or yoghurt and mix thoroughly through meat. Use your choice of casing. Best consumed within 1 or 2 days; loss of quality if frozen.

Honey Soy Chicken Sausage

- 2.25 kg (5lb) chicken thigh fillets
- 4 tsp coarse salt
- 1 tsp ground black pepper
- 2 tsp Chinese 5 Spice powder
- 3 cloves garlic, minced or 1 tsp powder
- 3 tsp ground ginger or large knob fresh
- 1/8 cup lime juice - plus zest
- 1/2 bottle Teriyaki Honey Soy marinade

Follow fresh sausage directions outlined above, using a medium disk for final mince. Mix all dry ingredients together, add bottle marinade and mix thoroughly through meat. Use your choice of casing.

Chicken, Cheese & Jalapeno Sausage

- 2.25 kg (5lb) chicken thigh fillets
- 4 tsp coarse salt
- 1 1/2 cups shredded tasty cheddar or mozzarella cheese
- 2 cloves garlic, minced or 1/2 tsp powder
- 1 tsp ground black pepper
- 1 1/2 cups frozen corn kernels
- 1/2 cup water or chicken stock
- 3 pickled Jalapeno chillies finely chopped

Follow fresh sausage directions outlined above, using a medium disk for final mince. Mix all dry ingredients together and mix thoroughly through meat. Use your choice of casing.

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For access to hundreds more fresh sausage recipes I highly recommend the following sites:

<http://www.sausagemania.com/>

<http://www.culinary-yours.com/sausage3.html>

<http://www.geocities.com/BourbonStreet/9802/recipes1.htm>

<http://www.wwf5.com/stuffers.com/content/recipes/sausrecp.pdf>

Contact Me

If you have further questions regarding sausage making - email me at:

enquiries@buildabbq.com

Steve Gaskin