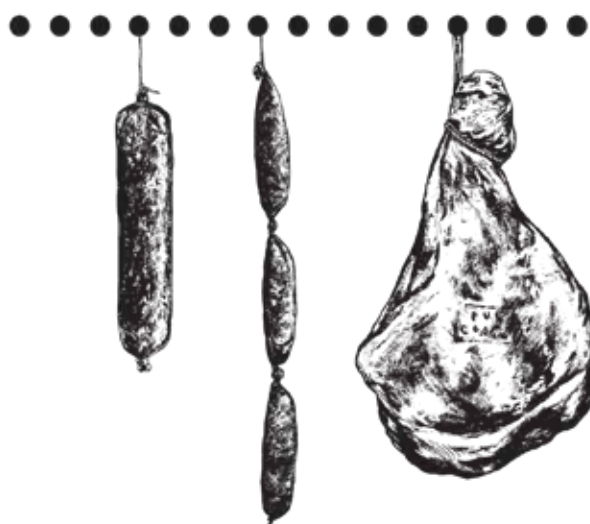




#PRESERVEPIGS



The Art of the Curesmith

Salting & Smoking Techniques/ Recipes
for Beginners and Experts

Supplementary Material Building a Curing Chamber



Gilbert H. Ferreira

“ This is part of the supplementary series that accompanies my book, #PreservePigs: The Art of The CureSmith. If you do not already have a copy of the book please visit www.preserve-pigs.com for more information. You will also be able to download additional materials if you already do have a copy of the book.

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HEALTH AND SAFETY DISCLAIMER

Working with food, especially meat, requires the strictest health and safety guidelines.

If the reader is using this book as a reference for curing meat, they are urged to follow the guidelines and recipes as provided in this book, AS WELL AS the governmental health and safety guidelines for curing meat in their own country.

The writer and/or his agents will not accept liability for ANY harm or illness caused through failure by the reader to adhere to at this disclaimer and all guidelines provided.





THE

CHASING NATURE

In Europe charcuterie was traditionally made in places like caves or subterranean basements where temperatures were cool, yet the humidity was relatively high.

Where I lived, in South Africa, we had extremely warm and dry summers and relatively cool and wet winters. In summer I had to artificially control the climate in my curing room but in winter I rarely had to fight the elements. It became apparent to me that the quality of the cured meats made in winter were superior to the meats made in summer.

If you can get away without messing with the climate you will find your meats have a better quality. But it is not always possible to have the perfect natural climate, and in an additional section to the book, I will show you how to create a curing chamber at home where you can, both, regulate the temperature and the humidity.

TEMPERATURE

12°C TO 18°C

The correct temperature band for curing meat is between 12°C and 18°C.

At temperatures above 20°C microbes start to flourish and the meat could spoil, or worse, cause severe illness. Curing below 18°C is, therefore, essential from a health and safety point of view.

The most effective temperature for curing is 16°C. I have found that when the temperature goes below 16°C it takes longer for the meat to cure. As it reaches over 18°C it starts getting closer to the temperature where microbes may grow. It is best to have a 2°C margin of error to work with.

When curing at home, a wine fridge creates the perfect temperature “chamber” as you are usually able to regulate the fridge temperatures up to 18°C.

A good example to explain this is when you have a large cut like a prosciutto/ ham (that weighs up to 13kg), you have several things to consider.

The meat is relatively thick, and there is also a bone running through the centre. Ideally, the

prosciutto will cure for at least 12 – 18 months to extract the maximum flavour, so:

- 01} If your temperature is below 16°C, it will prolong the curing. This is not necessarily a bad thing – some hams cure for 7 years!
- 02} If your temperature is above 18°C, because of the size of the meat, the chances are higher that microbes could grow and you have a lower margin for error.
- 03} By contrast, when curing relatively thin sausages, then temperatures between 18°C and 20°C are fine, but anything above that is no good. However, stick to 16°C!

Commercial charcutiers have a variety of curing areas for different cuts. For home curing, you will probably only have one, so always stick to 16°C.

There are exceptions to the rule. If you are making Biltong (cured meat from South Africa), the meat is thinly cut and dehydrated quickly by applying airflow and low heat.

REALTIVE HUMIDITY (RH)

65% TO 80%

Relative Humidity (RH) is probably more important than tempersture. The accepted range for humidity is between 65% and 85%, BUT the most effective range is between 75% and 80%.

Below 65% RH the meat starts to dry quicker on the outside. This causes a phenomenon called “case hardening”. The outside becomes hard which blocks moisture from the interior to escape. The meat could start to rot in severe cases.

It is better to have higher humidity than humidity below 65%, because at least here the excess mould can be wiped off, still allowing the meat to cure safely. If the humidity is below 65% you have no way in managing case-hardening. Using the example of a large prosciutto/ ham, again, you want to extract the moisture over a period of 12 - 18 months so:

- 01} If the humidity is below 65% you will get “case-hardening” and the meat WILL spoil. I have found that even with cured sausages (that hang for only 30 days) you will find case-hardening below 65%.
- 02} Above 85%, your proscitto will struggle. There is too much humidity, so you will have to wipe off the moisture and mould often. With cure sausages you may get away with it, although it will prolong the curing process for up to 10-15 days.

At an RH of 75% the risk of case hardening is zero, and mould is also much easier to manage.

FRIDGES AND HUMIDITY

Fridges are not great spaces for humidity. Humidity goes down quickly when there is cool dry air. When a fridge’s compressor switches on it starts to cool the air inside the fridge. This in turn decreases the humidity far below the minimum required humidity of 65%. We will need to introduce humidity to get it to our desired 75%.

FRIDGES

In order to create the perfect environment for curing we now know that we need a space with a temperature of roughly 16°C and relative humidity of 75%. If you have access to a subterranean cellar or similar then you are very fortunate. If you do not have one then you will have to create your own curing environment, and the most logical place to start is with a refrigerator.

Here I will deal with a few examples.

The standard equipment you will be needing is:



01} WINE FRIDGE

A wine fridge is a really good option because the thermostat can be set between 7°C - 21°C. This means that you do not have to play around with the thermostat as you can find the ideal temperature.

Pro's

- Temperature range is perfect

Cons

- They are usually quite small
- Larger wine fridges are very expensive
- You will need to add humidity



02} DRINKS FRIDGE

A double door drinks fridge is one of the best options to use as a curing chamber. It has a large space, and you can easily cure several cuts, including prosciutto.

It cools by blowing cold air which means that it is frost free (discussed later).

Some commercial drinks fridges also have thermostat settings that go up to 16°C - but unfortunately most of them only to 8°C or 9°C and that will mean you have to regulate the temperature.

You should be able to pick up a decent one for much less than the cost of a wine fridge.

Pro's

- Ideal curing many sizes, including prosciutto
- Frost Free so no additional humidity issues
- Relatively inexpensive for what you get
- Multiple sizes from single door to double door

Cons

- Thermostat usually goes up to 9°C, so we will have to use a temperature controller
- You will need to add humidity
- The compressors are quite noisy
- Glass door - will need to be covered to negate fat going rancid from too much light.

USED FRIDGE HYGENE

If you are going to convert a used fridge, make sure you wash it down with bleach before you fill it with meat. Cheese cultures cause havoc with meat, but there may also be other items that could have contaminated the fridge. I usually wash the inside of the fridge with soapy water, dry it and then make sure every surface is wiped down with bleach. Leave the door open for a few hours to get rid of the bleach smell.



03} DOMESTIC FRIDGE

The least expensive and probably most practical option is a stock standard domestic fridge. They are also built to fit into a domestic environment and their compressors also run pretty quietly.

Unfortunately, domestic fridges usually do not go higher than 7°C - so this means that you will need to install a temperature controller to assist (explained later).

But there are a few things you need to consider when purchasing one.

- 01} Try to get a single door "full length" refrigerator. If you get one that has a freezer box at the top or bottom then you are wasting at least ¼ of the space.
- 02} Avoid the older type fridges where the freezer box is inside the actual fridge - I will explain it a bit later.
- 03} If you have the money, I suggest buying a new one. There are several reasons for this, including that you know what it has never contained anything - so you can be 100% sure that it is good for curing meat.
- 04} Get a FROST-FREE fridge if possible. Most new fridges are frost-free. These fridges use cold air to cool down.

Fridge with evaporator plate

If you already own a fridge that works with an evaporator plate, do not worry too much, I will show you exactly how to set it up to work perfectly - it is just easier with a frost-free fridge.

Older fridges cool using an "evaporator" or freezer plate. It contains the liquid refrigerant that is compressed from gas to liquid and circulated through the evaporator plate. The liquid absorbs heat as it evaporates, resulting in the plate getting colder and thus cooling the air in the chamber.



When the compressor comes on, the freeze plate cools down to almost freezing. The problem with a curing chamber is that we will be adding humidity - ie moisture to the air. This moisture will condense as the fridge cools down and it literally freezes to the wall. When the compressor turns off the water starts to thaw and runs down the back wall, not only increasing the humidity, but also creating a water problem.

My curing chamber is made from an older fridge that has a fridge plate. Here is the back wall that has some condensation on it.



Most fridges with a freezer plate have a draining hole, which drains the excess water by letting it drip on the compressor motor. The heat of the motor ensures that the water evaporates. But when we add more humidity, the motor can no longer deal with the additional water and you will need to plan to drain the water.



I have extended the draining hose on my fridge to drain into a container. Ideally you would drill a hole through the wall and let it drain outside, but in my apartment I cannot do this, so I have to clear out the container every 2-3 weeks.

You will also have to ensure that the draining hole is kept clear.



Avoid Freezer Boxes

As stated earlier, avoid getting a fridge that contains the freezer “box” inside the actual fridge. You will typically find these in small fridges or older fridges.

You will immediately notice this when you open the fridge door. There is a secondary door at the top of the fridge for freezing.

The evaporator plate sits inside this box. Unlike other fridges where the evaporator plate is situated in the back wall, here the evaporator plate is surrounded by this freezer box. You will be hanging your meat below this box, which will mean that when the water that sticks to the evaporator plate thaws it will drip onto your meat.

If you do want to convert a fridge like this then you will have to ensure that something catches the water that drips or else it will spoil your meat.

Overall Domestic Fridge Pro's and Cons

Pro's

- Most cost effective solution
- Size designed for domestic use
- Easily converted to curing chamber

Cons

- Thermostat only goes to 7°C, so we will have to use a temperature controller
- You will need to add humidity
- If it is a fridge with evaporator plate, you will need to consider the additional humidity - but this is NOT a game changer

TEMP

As stated we need to get the temperature to at least 16°C.

If you do not have a wine fridge or a commercial fridge that can go up to at least 16°C, then you only have 2 options available to you.

01} You need to take your fridge to a refrigeration expert who can change the thermostat to one that will take the inside temperature to at least 16°C.

02} The second option is to get a temperature switch or controller.

TEMP SWITCH



A temperature switch, or controller, is a device that has a probe that goes inside your fridge. The fridge is then plugged into the controller, which is then in turn plugged into the electrical wall socket.

The controller is a computer that works by reading the temperature through the probe. You can set a low and a high temperature on the controller, which is ideal for our purposes.

In my chamber, I have the low temperature set to 12°C and the high temperature set to 14.5°C. When the temperature inside the fridge reaches 14.5°C the compressor turns on and the fridge starts to cool. When it reaches 12°C it turns the compressor off. And so it cycles. My average temperature is around 14°C.

I use an SHT2000 in my setup, but another popular option is Inkbird (ITC 308). They are readily available on websites like Amazon.

HUMIDITY

As explained earlier, we ideally require a relative humidity (RH) of 65% - 80%. My ideal humidity is 75%.

So we need to add humidity to our fridge. We will have to do this artificially. Many people say that it is as simple as adding a bowl of water to the bottom of the fridge - but in all honesty, I have tried this numerous times and it has never worked.

The best way to introduce humidity is by using a domestic humidifier as demonstrated in the picture to the left. They are usually good to humidify a 25m² room. But there are a few things you need to look out for:

- 01}** Make sure that the humidifier uses ultrasonic technology. This ensures that it releases a very fine mist, which will not make your meat wet.
- 02}** Make sure that it has a mechanical switch and not an electronic switch. The problem with an electronic switch is that you will also be using a controller to control the humidity and when the controller switches off the humidifier, it will not be able to turn it on again. Only humidifiers with analogue switches will work.
- 03}** Make sure you get one with at least a 5-litre water tank. You do not want to have to top up the water tank every other day. Although, if your chamber is set up correctly, you should only have to top up the humidifier tank every 2-3 weeks.

To ensure that you maintain optimal humidity in your chamber you will need a humidity controller.

RH SWITCH



Like with the temperature controller, you also get a humidity controller.

Again, here, I use the SHT2000. Inkbird also have humidity controllers (eg IHC 200). The great thing about the SHT2000 it is one device that controls both the the temperature and the humidity, so there are no additional cables running into your chamber.

The humidity controllers also have a high and low humidity setting.

In my chamber my low humidity setting is 72% and the high humidity setting is 72.2%. When the humidity drops to 72% the humidifier turns on and when it reaches 72.2% it turns off.

I have a very narrow band between the low and high, but it ensures my average humidity in the chamber is 75%.



OTHER EQUIPMENT



01} DEHUMIDIFIER

As I have explained earlier, fridges that contain an evaporator plate will generate additional moisture. Because we have added additional moisture with the humidifier to the fridge, this additional water will condensate against the evaporator plate. This additional moisture will increase the humidity of your chamber.

You also need to remember that when you add meat, the meat also contains moisture, and this too will add humidity. So you may find a situation where you have too much moisture/ humidity and will need a dehumidifier.

My current chamber is an older fridge with an evaporator plate, and I have managed to set it up WITHOUT a dehumidifier. Earlier I told you that on my controller my low humidity is set to 72% and my high humidity is set to 72.2%. With that very narrow band, I can use the cool air generated when the compressor is running to ensure that my humidity never goes above 79%, actually averaging out at 75%. I will show you later how I have done this.

I suggest that before you go out and buy a dehumidifier is to test your setup first. You may not need the dehumidifier - and besides, it adds additional clutter to the bottom of your chamber.

You also need to do your homework, because I have tried to assist people who have dehumidifiers that blow air as well as heat up. Excess airflow could cause your meat to dry quicker. And if the device

heats up, it will heat up the fridge quicker, meaning that your compressor will turn on and off more often.

BUT if you do have too much humidity then you will have to install a dehumidifier. The dehumidifier will also be controlled off a humidity controller. You will set it up the opposite of how you setup the humidifier. In other words, the dehumidifier will turn on when your high humidity (eg 80%) is reached, and will then turn off when the desired lower humidity (eg 72%) is reached.



02} FAN

Many people insist on a fan, saying that you require airflow.

BUT I am not a fan of the fan! Simply said, I think fans create too much airflow in a confined space. Remember, we are trying to emulate the climatic conditions in a subterranean cellar. There is hardly any airflow in a cellar!

If you have a frost-free fridge or a commercial drinks fridge, they cool by blowing cold air. You just need to make sure that the air does not blow directly on the meat. Most of them do direct the air efficiently from the product.

In my opinion, opening the fridge door once a day gets rid of any 'stale' air, and creates enough circulation. BUT again, you need to assess your conditions.



03} HEATING LAMP

Whilst you can regulate the temperature well enough with the temperature controller, if the chamber is kept in room that is not insulated in winter you may have problems with the refrigerator functioning. A heating lamp is then essential to ensure that the contents function properly. If your ambient temperature goes below the temperature set in your chamber you will need to add a heating lamp. You will need to control this with the temperature controller, setting it up inversely to the fridge (refer to TEMP SWITCH).

04} DATA LOGGER

I always ensure that I have a backup analogue hygrometer in my curing chamber. Digital hygrometers (as provided by your humidity switch) tend to lose accuracy over time and do need to be calibrate

As a rule of thumb, I calibrate my hygrometer every 6 months. But the analogue hygrometer gives me something to compare my digital hygrometer with.



But there is an easier way - and it is called a data logger.

I have never used a datalogger, but have one on order. I think it makes absolute sense to have one. Basically what it is is a sensor that you install on the inside of your fridge. It logs the temperature and humidity of the chamber 24/7. This way you can ensure that your chamber is set up 100% all the time. It collects the data and then through Bluetooth or WiFi pushes that data directly to an application on your phone.

From reading the reviews, the SensorPush is the best option, but Inkbird also makes one.

LIGHT

RANCIDIFICATION

Rancidification is the process of complete or incomplete oxidation or hydrolysis of fats and oils when exposed to air, light, or moisture or by bacterial action, resulting in unpleasant taste and odor.



So you have set up your new curing chamber made from a display fridge. People will be able to check out your cool meats curing!

NO! NO! NO!

This is a very bad idea. You see, light causes fat in the meat to go rancid.

So if you have any kind of display fridge you will have to blackout the glass. Some display fridges also come with an internal light that is on permanently, so you will have to disconnect that. The normal light that comes on when opening the door is not a problem, because it is only on for as long as the door is open (you are allowing in light anyway!)

But I will caution you from opening and closing your door too often. I only open my chamber door once a day, and I try and do that for less than a minute at a time. So I prepare what I want to do there. Sure, sometimes it will need to stay open for longer - but you need to minimise it as much as possible.

My fridge has a glass door, and I have blacked it out by using chalkboard wallpaper. This is ideal because now I can make my curing notes right on the door!

FINAL WORDS

Now you have all the equipment that you may need to create your curing chamber. I would like to reiterate that try to keep it as simple as possible. Only install what you need. If you add any additional pieces of equipment it will only end up cluttering your curing chamber. BUT be alive to your chamber's climate and install what you need to make it run optimally.

I have made a video on YouTube of how my curing chamber is set up. I advise you to watch that video once you have read this manual. There will be a lot of duplication but it also does take you through how I installed all the equipment.

Follow the QR-Code or click on the link to view the video:



<https://www.youtube.com/watch?v=E51A4oxdkmM>

If you have any questions, I am more than happy to try and assist you. Please reach out to me through the www.preservepigs.com website or email at gilfer@purplechef.eu.

“**Meat has been one of the constants
in my life**

{ GILBERT H. FERREIRA }

Gilbert, or Gil as he is known to his friends, started his meat journey in 1978 when he was just five years old. The first piece of “furniture” he bought with his own money when he moved out of his mother’s home in 1994 was a WEBER Kettle BBQ.

For the past 15 years, Gil has been curing meats to artisan or “CureSmith” level. He explains: “My surname is Ferreira, Portuguese for Smith, so it is apt that I am a CureSmith”.

In 2019 he moved with his family to Poland and has come full circle to curing in his home kitchen again.

“#PreservePigs: The Art of the Curesmith” is a book documenting Gil’s journey with charcuterie. The book is written to assist newcomers (AND experts) in this art form. It is accompanied by mixed media, including instructional videos and additional information and material on the website.

www.preservepigs.com

