Making Cheese at Home

A Beginner's Guide

Make tasty cheese at home today!

Jack Monty

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Make tasty cheese at home, today!

By Jack Monty of HomemadeCheese.org

This eBook is dedicated to my wonderful, supportive family. Rachel, Niamh, Archie and Dexter – You are the motivation for everything I do and I could do none of it without you!

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Making Cheese at Home – A Beginner's Guide

Cheese making at home is so rewarding to me for many reasons.

It all started for me because I love the taste of cheese and just became curious to see if I could make it myself at home. Once I made it for the first time, a big part of the joy came from (I'll admit it) a little bit of smug satisfaction that I was eating cheese made by my own hands.

Over time, other elements of the process have come to appeal to me: the way it can take a day to make – so I just *have* to slow down and enjoy it; the different levels of precision – I can choose to make a simple, quick mozzarella, or really take my time and pay attention to every detail over a Parmesan; the joy of seeing friends and family amazed that cheese can be made at home, and hearing them ask 'how?'!

That little bug of desire can so quickly be squashed at the thought of having to buy a big book, the small flame of curiosity extinguished if we have to trawl eight different websites to figure out how to get started. So, this FREE book is my quest, along with HomemadeCheese.org to bring cheese making to the home of anyone with an interest, and to do it so quickly and simply that you can start today, quickly and cheaply, and be eating cheese for dinner tonight!

My hope is that, like me, you'll quickly be hooked, and you'll keep progressing into more and more rewarding cheese making. And, as you do, we at HomemadeCheese.org, will be with you every step of the way.

Jack Monty

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An Introduction to Cheese

For many of us, eating cheese is a passion, which is driving the surge in modern varieties.

In the UK in 2011, every person in the country ate, on average, 11kg of cheese. Australia consumed similar amounts, whilst the USA consumed 15kg – but we are all just players in the game. The heavyweights of cheese consumption (as you might guess) are the French, eating a massive 26kg per person.

A Love of Cheese

Quite obviously, throughout the western world we all love cheese. The fact you are reading this eBook suggests that you in particular have a special love for it, which is driving a most admirable desire to make it for yourself, friends and family, but have you ever stepped back and considered just how curious a little beast the humble block of cheese is?

A Myriad of Cheeses

Cheese has a long history: we've been making the stuff for maybe 10,000 years now (read more on the history of cheese) and all that practice has resulted in 500 classified types being classified by the International Dairy Federation.

Those types only tell part of the story as it's the individual cheeses and makers that we are interested in.

The heavyweights of cheese consumption are the French

Right now there is huge growth in the passion for artisan cheese, both from consumers looking for more taste, quality and originality in their cheese, and from producers who, like you, have started with a passion and turned it commercial.

This massive surge of interest resulted in 4,286 individual cheeses being entered into the 2013 International Cheese Awards held in Nantwich (of which, Long Clawson's Claxton Smooth Blue was crowned Supreme Champion).

They're All the Same.

The funny thing is that all of those 4000-plus cheeses, and all of those eaten in the world last year, *all of them*, without exception, came from just four different types of milk.

What's even stranger is that there are so few root methods of making a cheese: milk + starter + coagulant = curds + whey; treat curds + salt + mould + age = cheese.

Isn't it truly astounding that treating the milk of cows, buffalo, goats and sheep with such a simple method will create so many different cheeses that it would take us nearly

twelve years to try them all, even if we ate a different one every day?

Subtlety Creates Variety

Of course, the secret to such immense variety is finesse. It is the subtle differences at each stage of cheese making that creates so many individual cheeses – and also means there are so many more yet to be discovered, maybe even in your own kitchen!

This eBook goes some way to helping you in this quest. Over the next dozen or so pages, you'll find articles about methods of cheese making, ingredients and equipment. In each of those are insights into how it is that subtle changes in the making of cheese can result in a product that's as different as Gouda is to Camembert and mozzarella is to a good old Stinking Bishop.

Your Turn

Devour it, follow the videos and, above all, have a go – making cheese is really, really easy and should be a part of your kitchen repertoire. When you've completed the beginner stages, check back to www.HomemadeCheese.org for the practiced and experienced articles which will really help improve your techniques and have you producing Roquefort and Yarg in no time at all.

Even if we ate a different cheese from the 2013 International Cheese Awards every single day, we would not have worked our way through them all until 2025; such is the variety that can be conjured from just four different types of milk

How Cheese is Made

Milk is turned into thousands of cheese varieties with a little help from acid and rennet.

This introductory article will provide an overview of how we convert milk into cheese. It's a truly amazing process that can be done very simply or almost with as much complexity and detail as you want.

Here we'll breakdown all the major steps involved, with a little description of each. You can refer back to HomemadeCheese.org for more detail on anything covered.

Fermentation

At its most basic, turning milk into cheese is a fermentation process like brewing or bread making, but special bacteria, known as a starter culture, are used instead of yeast.

The starter culture is added to acidify the milk, and then a coagulant which splits it into curds and whey. We dispose of the whey, treat the curds for the type of cheese we want, add salt and form the cheese. Depending on what we've made, we might then leave bacteria to mature our cheese before reaching for the crackers to enjoy it; simple! Now let's look at each step in a bit more detail.

Making Cheese

Milk is the subject of the next chapter, but, briefly, we can use cows', sheep and goats' milk to make cheese. The fat content is also decisive in what type of cheese we can make with the milk, as is whether or not it is homogenised.

The milk then needs bringing to a suitable temperature for the starter to do its work, which is to multiply using milk sugar (lactose) to produce lactic acid, which aids clotting, and to produce flavour compounds in the maturing cheese.

Temperature control and stringent sanitary conditions are really important in cheese making because we are working with bacteria and moulds that have optimal working temperatures. We also don't want competition from foreign bodies, which will ruin our efforts.

We need to protect our desirable bacteria from foreign bodies that could ruin our cheese

On their own, starters would take too long to bring about clotting (although we do make yoghurt this way) so we speed the process up by using a clotting agent, either adding acid directly (e.g. lemon juice, vinegar, etc) or rennet.

They work by pulling the milk protein casein out of solution. This traps moisture and fats and the resulting clots are what we all know as curds.

Curds and Whey

At the point we have curds and whey in our pan, we have effectively 'made' cheese, or at least its foundation. The next steps all determine what kind of cheese we end up with. Probably the most important of these is how we treat the curds.

There are three parts to curd treatment: cutting, resting, and handling and all with the aim of getting the right moisture content for the cheese being made.

Large pieces of curd handled delicately keep more moisture in them leading to a soft cheese, whereas smaller pieces heated (scalded) to remove more moisture will give us a hard cheese.

Salting

With curds made, we're ready to salt the cheese and form our final shape. The type of cheese being made will determine which way around these two steps happen.

Salting homemade cheese can be done either dry by adding salt to the curds, or wet by immersing a formed cheese in a brine solution. Salting is a vital stage because it adds flavour to the cheese, controls maturation, dries out the curds and combats unwanted bacteria.

Forming the Cheese

Forming a soft cheese normally means using a mould through which whey will drain out under gravity.

For a hard cheese, we need a cheese press which expels whey under pressure to form a firm, dry cheese.

Curd handling is all about achieving the right moisture content

When we've reached this stage, all that is left is the storage and maturation of the fruits of your labours. Before putting the cheese into storage we might give it a surface treatment such as bandaging or waxing, which to different degrees protect the maturing cheese from unwanted bacteria and moisture loss.

Maturing

Maturing or ripening homemade cheese is, for some types of cheese, the most important step of all and involves managing the moisture and temperature around the stored cheese.

For us home cheese makers this can often be the most difficult stage to manage effectively as minor variations in storage conditions can give us a different cheese to the one we anticipated.

What is certain is that with care and attention we can make any type of cheese at home. If you've not had a go yet, why not spend an hour making your first cheese by following the video at: http://www.homemadecheese.org/lemon-cheese-video.html

Milk

Milk is simply the ingredient in cheese making. So it's absolutely vital to use the right type

There is more to milk than meets the eye and since it is normally the only food ingredient we use to make a cheese, it is essential that we know a little more about it.

Where it Comes From

In cheese making there are three main animals that supply our milk: cows, goats and sheep. We can also use water buffalo (think mozzarella) but that is not too easy to come across in the UK.

For the purposes of this beginner's book, all we're going to consider is cows' milk. If you want to know more about the others, check out the article on goats and sheep milk on HomemadeCheese.org.

Cows' Milk

Cows' milk is about 90% water. It also contains a sugar called lactose, vitamins, minerals and enzymes.

However, the most important constituents for us cheese makers are the proteins and fats, which each make up between 3% and 4% of raw milk (i.e. milk straight from the cow).

Milk from cows, goats and sheep can be used to make cheese

The proteins in milk come in many forms, but the casein group is crucial to the act of making cheese.

As milk becomes more acidic (for example, by adding lemon juice or a bacterial culture) the caseins precipitate out of solution, and start to become solid, or clot. Crucially, these clots trap within them some water and fats.

We call these protein/water/fat clots curds, so casein clotting is the very essence of cheese making, as it is how we cause the clotting, and then treat the formed curds, that determines the character of our cheese.

With this appreciation of how cheese is created from milk, it's easy to understand why higher fat milk will yield more curds than lower fat and, for that reason, why more cheese recipes call for full fat milk, rather than semi-skimmed or skimmed.

Milk Treatments

When it comes to buying milk though, the amount of fat within it is only part of the consideration. Firstly, all shop bought milk in the UK has to be pasteurised.

Milk is an excellent medium for growing bacteria in, which makes it very quick to spoil unless treated. Pasteurisation is a process designed to increase the shelf life of

milk by reducing the number of bacteria within it. Raw milk is heated to 72C for 15 seconds which kills the majority of bacteria and leaves the milk with most of its original structure.

UHT or ultra-heat treated milk is raised to a temperature above boiling point. Whilst this kills all the bacteria and means the milk can be kept out of the fridge almost indefinitely, it also spells the end for it as a cheese making ingredient.

The chemistry of UHT milk is so radically different from raw milk that it just will not form curds and so cannot be used to make cheese.

Homogenisation

Homogenisation of milk affects how we make cheese at home. This process creates a standard product (same taste, whiteness, etc in each bottle) by mixing milk from many dairies in huge vats which is then forced at very high pressure through an incredibly small nozzle.

Unfortunately, homogenisation also reduces the size of fat globules in the milk by as much as 500-fold, which is bad news for making cheese at home.

UHT milk will not form curds, so it cannot be used to make cheese

Very small fat globules avoid getting trapped by the casein clots, so it becomes impossible to achieve a solid curd and yields are very much reduced.

You may not have ever noticed before, but virtually all milk sold in the UK is homogenised leaving us with few choices of off the shelf milk we can productively use.

In summary

- Higher fat milks are generally better for cheese making (but this is recipe specific)
- Pasteurised milk is all you will be able to buy in store, which is fine for homemade cheese
- Homogenised milk compromises curd formation and is best avoided

Buying the Right Milk

The obvious remaining question then, is: where can I buy unhomogonised milk to make cheese at home?

Happily there are some options that should be convenient for most people. The ones I know of are:

- Waitrose organic milk
- Waitrose Duchy Originals organic milk
- Tesco Finest Channel Island milk / Gold Top milk
- Ocado Gold Top Jersey and Guernsey milk

Asda Gold Top **is** homogenised, and Sainsbury and Morrison don't appear to sell any Gold Top.

Setting Milk with Rennet

Rennet is the coagulant most commonly used in cheese making. It turns liquid milk into a gel, forming curds and whey

Most non-cheese makers will be aware of rennet just through noticing it mentioned on packets of shop bought cheese. But, for the home cheese maker, rennet is an essential tool for the construction of most cheeses that we make. In this article, we explore rennet a bit more deeply.

What Rennet Does

Rennet is a coagulant; its role in cheese making is to coagulate the caseins out of the milk to form curds. What makes rennet different from coagulants used in simpler cheese making, such as lemon juice or citric acid, is that it works at a low temperature over a sustained period of time, which means we can create our cheese from cooler milk – better for the starter culture – and over a longer time, which allows richer, deeper and more complex flavours to form.

Rennet and Micelles

The way rennet works is incredibly simple and yet, completely compelling. In the previous chapter on milk, we talked about the casein group of proteins.

This group consists of four proteins and they attach to each other in little groups called micelles.

Micelles are naturally inclined to stick together as a solid but clearly they don't because milk is a liquid.

To understand why this is so, it helps to think of micelles as little globes. One of the four casein proteins (kappa-casein) produces hair-like structures that rise from the surface of each micelle globe and attract water molecules to them.

It is this architecture which means each micelle orb is surrounded by water, preventing them from sticking to each other as they'd wish and keeping milk liquid.

Rennet allows richer, deeper and more complex flavours to form in cheese

Rennet evolved in cows, sheep and goats to help unweaned calves, lambs and kids solidify mother's milk in their stomachs. Solidified, they can take longer to digest it and, consequently, take more nutrition from it than if it remained as a liquid.

Rennet is actually a very powerful enzyme called chymosin, it is so powerful that one part enzyme can coagulate 15,000 parts of milk!

This goes some way towards explaining why cheese makers find it indispensible.

How Rennet Works

Today, we take the chymosin from the fourth stomach of a calf and refine it (in days gone by, you would buy strips of dried calf stomach to source your rennet) to a product, either liquid or tablet, that we can use with our shop-bought milk.

When it is added in appropriate dilute form, the enzyme rapidly sets about removing the kappa-casein hairs from the casein micelles in the milk.

Once the hairs are gone, the micelles can no longer resist their compulsion to group together, and so they come out of precipitation, coagulating the milk into more of a gel than a liquid. We cheese makers then cut that gel to form curds and whey.

Other Sources of Rennet

Thankfully for the many vegetarian cheese makers and eaters, there are alternatives to rennet from a calf's fourth stomach.

Vegetable rennet can be sourced from plants such thistles, nettles and melon amongst others.

Traditionally, the enzyme (which is similar to chymosin) would be derived by creating a 'tea' from the plant and using it in the milk. As you might imagine, however, that made it exceedingly difficult to control the concentration of rennet in any particular cheese batch.

There are alternatives to rennet from a calf's fourth stomach

A different vegetarian-friendly alternative comes from two moulds that naturally create chymosin, and in a way that can be controlled and manufactured.

The most 'modern' version of rennet is a genetically modified version. Cells from a calf's stomach are extracted and the genetic code which creates the chymosin is transplanted into a yeast.

The yeast then produces chymosin exactly as a calf would. Where a vegetarian would stand on this (or a GM campaigner for that matter) is for them to comment.

Simple Brilliance

Traditional rennet is thought by many producers to be superior to vegetable- or microbe-sourced rennet, as the latter can lend a bitter taste to a cheese matured over time.

Either way, as a homemade cheese producer, there are several stores that can supply you with rennet in the form most suitable for you.

And now, at least, you understand the simple brilliance of how it works.

Making Mozzarella

Now you're ready to have a go with using rennet yourself. Check out the video:

http://www.homemadecheese.org/mozzarella-cheese-video.html

Starter Cultures

It is the starter culture that brings the flavour, texture and personality to our cheese

Alongside milk and rennet, the third and final primary ingredient we need to make a cheese is a starter culture.

This section examines what they are, the two main types, and how they work. What is not covered here, but you can read more about on HomemadeCheese.org is secondary cultures, which give rise to certain cheese rinds, or the blue veins in, for example, stilton.

Acidifying the Milk

Starter cultures are generally bacterial and are added to the milk at specific temperatures to ripen it.

What they actually do is slowly (the slower the better in fact, as more desirable flavours and structures are generated) acidify the milk by converting the lactose sugar present into lactic acid.

Before the modern era of cheese making, these bacteria would have been one of a number of natural microbes contaminating milk. Over time, cultures or strains have developed from the practice of using the whey from a successful batch of cheese making as the starter culture for the next batch.

Starters acidify the milk by slowly converting lactose into lactic acid

Today very finely controlled cultures are grown in laboratories around the world for quite specific outcomes, such as buttery taste, holes in cheese (think Emmental), texture, etc.

Two Types of Starter

There are two groups of starter culture: mesophilic and thermophilic.

Mesophilic bacteria like moderate temperatures, so cheese recipes using them need milk to be at temperatures around 30C (86F), which is the temperature at which they are most proficient at converting lactose to lactic acid.

Thermophilic bacteria, as the name suggests, prefer warmer conditions and you'll see recipes using them call for milk temperatures of around 42C (108F).

Specific Starters

All together, there are 16 broad types of bacterial starter which can be purchased from cheese making suppliers as either pure strain, such as *meso I* which has just one bacterium type within it and is suitable for making cheddars, to *Aroma B* which has a blend of four

bacteria and is used to make Camembert, amongst others.

Buying cultures for making cheese at home is a straight forward process. Suppliers can be found through search engines, and they sell pre-blended and packaged cultures.

Helpfully, they generally stay away from technical names and instead have the more useful convention of saying 'culture for goats cheese' or 'starter culture for Parmesan' which makes it much easier for us home cheese makers to know which starter type to order.

Size Matters

One frustration you are likely to experience is the quantities we deal with when making an individual cheese using just a few litres of milk.

Generally, a sachet of starter culture with, say, a teaspoon of material in it, will be enough to treat anything up to 50 or 100litres of milk.

A great tip to get really accurate is to invest in some very small measuring spoons which go down to (at least) an eighth of a teaspoon. You should be able to find these on Amazon at low cost.

Generally, a sachet of starter culture will be enough to treat 50 litres of milk

On the positive side, cultures can be stored for up to two years in the freezer (although you should always pay attention to the instructions from your supplier) but keep in mind the golden rule: your bacterial starter must always be kept dry! Even the smallest amount of moisture getting into the packet will spoil the whole amount.

Mother Cultures

It is possible to create a mother culture of your own, which can then be used to create your own starter cultures (very similar to the process of using a sourdough starter in bread making). You'll find more detail of how to do that on HomemadeCheese.org.

For many cheeses, with the right milk, rennet and the appropriate starter culture you'll have almost all you need to get going.

However, there are one or two additions that might be relevant, depending on the type of cheese you're making and the milk being used, and we explore those additional cheese making ingredients in the next article.

Six More Ingredients

After milk, starter and rennet, these are priority ingredients in your cheese making arsenal

There are a number of ingredients that we all need to be aware of before we get into making our first 'proper' cheese.

Water

Water is interesting in that we don't really use it as an ingredient in cheese, rather as a facilitator for other parts of the cheese making process.

If you've watched the mozzarella video, you'll have seen water being used to dissolve/dilute rennet and citric acid, and we also use it to dissolve calcium chloride.

Water's other main use in cheese making is as a salt solvent, i.e. to make a brine which is used in many cheese recipes.

There are two crucial aspects to water usage: firstly, it needs to be non-chlorinated. This is simply achieved by boiling tap water and allowing it to cool or by using bottled water. Secondly, the water needs to be cool, around 10C to 15C before using.

Lipase Powder

Lipase is an enzyme found in raw cows' milk which imparts a stronger, tangy taste to finished cheeses but is depleted by pasteurisation and homogenisation.

Adding lipase powder to shop-bought milk will go some way to countering their impacts of milk treatments

It's used in cheese making recipes by adding to the milk before rennet.

Salt

This is probably the most important ingredient after milk, starters and rennet. It enhances flavour, acts as a preservative, aids whey removal from curds and is naturally antibacterial.

Water needs to be non-chlorinated and used cool

We usually either mix it in with the cut curds or we use it to form brine which the pressed cheese is left in for a certain period of time.

The latter is especially the case where we need a certain rind to be formed on the outside of the cheese.

Coarse salt is preferable to fine and it has to be non-iodised, otherwise it will destroy the bacteria which are working hard to generate the flavours of your cheese.

Calcium Chloride

You will have read in the milk chapter that pasteurising and homogenising milk reduces the amount of calcium naturally

present. As it is this calcium that helps to give a firmer curd, its loss can result in something weaker, or softer, and so it can be beneficial (although far from essential) to replace some of that lost calcium using calcium chloride.

Just like lipase powder, this is added to the milk before the rennet.

Herbs, Spices and other flavours

We've all tasted a cheese with added taste ingredients such as cranberries, pepper and chilli, and really, the world is your oyster when it comes to adding ingredients.

The only watch outs are to make sure that they are clean and they are dry – wet ingredients will only cause an untimely demise in your cheese long before it reaches the biscuit!

One other form of flavour addition is in soaking the cheese before it is wrapped and aged. Alcohol is a common example, such as beer or whisky. This is either added by steeping the curds in the liquor for a period of time before putting into the mould and pressing, or by putting the formed, pressed cheese into the liquor to soak it up, before leaving it to dry, wrapping and aging (of course, both of these methods can be used together to further add flavour).

Annatto

Think red Leicester and it's annatto that changes the white curds to orange.

Make sure any added ingredients are clean and dry

Annatto is a yellow/orange dye that comes from the seeds of the achiote tree in tropical countries. It is added to many food products as a dye as well as textiles.

Just Add Equipment

There we have it, with these six additional ingredients at our disposal we can make virtually any of the millions of cheeses available to us out there, or even design a new one all of our own.

We're almost at the end of this cheese making for beginner's eBook. After the final chapter on cheese making equipment, you'll be ready to have a go at making your very own soft cheese.

Cheese Making Equipment

There are some pieces of equipment that we need to make great cheese at home

You can make cheese in your own home with bits of kit that most of us already have. As we move towards more 'regular' cheese making there are some bits of equipment that we need to do a good job. This article provides an overview of the main pieces we should have in our kitchens.

Non-Reactivity

Before moving into the list, it is worth noting that all the equipment needs to be non-reactive. You'll see and hear this phrase a lot in relation to cheese making at home and it is quite important.

The reason we need non-reactive cookware is because cheese making is an acidic process and reactive materials, like aluminium, tin or unprotected copper will stain or pit when acidic materials are in them.

Some equipment is universal; we need it for all cheese making

Non-reactive materials include stainless steel, ceramics (although any chips in your ceramic pots can be attacked by acid) and glass.

General Equipment

Cheesecloth – This is used to separate curds from whey. It has a very fine weave allowing the whey to drain through whilst retaining even the smallest pieces of curd.

If you are not ready to invest in this yet, then a clean, sterilised tea towel will perform almost as well.

Colander or **Sieve** – These give the cheesecloth shape and have the form to hold the curds whilst they're filtered but they still allow the whey to drain through.

Large Knife or **Spatula** – Use either of these to cut the curds in the pan. Even for a relatively small cheese we start with a large volume of milk, so the blade needs to be long enough to reach to the bottom of your pan.

Pans or ***Bain Marie*** – Temperature control is a crucial element of quality cheese making and is made a lot easier if you can use two pans for making cheese, one which contains your milk sitting inside a second with water in it.

When heat is applied to the water-filled pan the milk in the second pan heats much more steadily than if heat is applied to it directly, giving a better quality cheese.

The other benefit of this arrangement is that milk left to stand at a certain temperature for ripening is cooled much more

slowly, which means optimal temperatures are retained for longer.

All that said, it can be very hard (not to mention expensive) to find two pans big enough to deal with the milk volumes needed, especially if making a round of hard cheese.

I've always found that I can make perfectly fine cheeses with a single non-reactive cook pot, so long as the heat applied is very gentle. Don't be afraid to use the lowest setting for the smallest ring on the hob.

Bowl – used for draining whey into. Again, keep in mind the volumes that we might be dealing with: using eight litres of milk to produce a kilo of cheddar produces *a lot* of whey

Thermometer – Cheese recipes rely on accurate temperature measurement, so you'll need a thermometer that can clip onto the side of your milk pan. It should measure up to 100C in 1C increments and be easy to read. These can be obtained from any kitchenware supplier and are relatively inexpensive

Measuring Spoons – Quantities of starter culture are generally very small, so a set of tiny spoons (down to 1/8th teaspoon) are ideal.

Making a kilo of cheddar produces a lot of whey

Ripening Boxes – Not many of us have access to a cheese cave so the next best thing is a food grade storage box with a lid which we can keep cheese in. This can then be kept in the fridge as it matures.

Spray Bottle – The best way of applying a coat of, for example, mould solution, onto the outside of a cheese to form a specific type of rind.

Specialised Equipment

The rest of the equipment we use is very specifically for cheese making and, as such, will be most readily sourced from a cheese making supplier (just Google 'cheese making supplies' for a list).

Cheese Moulds – These give shape to your cheese. Put your curds into them and the whey drains out through the holes in the side.

They are made from food grade (non-reactive) plastic and come in various shapes and sizes. Your recipe should tell you which is best for the cheese you're making, but a general P2 is great to have available if you're just getting started.

Followers – Hard cheese moulds can be open ended. The bottom has a cheese mat placed under it, the top has a follower placed within it.

The follower is a solid piece of plastic that fits within the mould and can move down it under pressure from a cheese press.

Cheese Mats – A plastic mesh mat that sits underneath the mould to allow whey to drain away from it rather than pooling at the bottom

Cheese Press – for making hard cheeses this is a must. They are relatively expensive to buy, although you can improvise your own cheese press using household equipment.

The press allows you to gradually increase the pressure on the curds in a mould to squeeze out more whey and form densely packed curds.

Cheese Wax – Lots of cheeses call for the finished round to be encased in wax.

Wax for cheese making is food grade and comes in 1kg slabs. Ideally, you'll need an old saucepan to melt it in and store it in afterwards.

Cheese Paper – Another material for wrapping cheese which allows it to continue to breath as it matures

Beyond Basic Equipment

If you get all the pieces in this article, you will be equipped to make the vast majority of cheeses you'll come across.

However, there are more specialist items of cheese kit that you might want to invest in over time as you become more exacting in your hobby or branch into more challenging cheeses.

Refer to the practiced and expert sections of HomemadeCheese.org to see articles detailing irons, cutters, syringes and pH sticks.

You'll need an old saucepan to store your melted wax in.

Congratulations! Getting to this stage in the book means you are ready to progress to the next level.

You now have all the equipment and knowledge you need to make your first 'proper' cheese at home.

This video shows you how to make a soft cheese and uses liquid rennet and starter cultures for the first time.

Enjoy it – making cheese is great fun – and let me know how you get on, with pictures!

Jack@HomemadeCheese.org

The Language of Cheese

It's always useful, especially so as a beginner, to have a reference point for the terms used in making cheese at home. This list will continuously update on the website, and I invite all of the homemade cheese community to contribute new terms or improved definitions: *Jack@HomemadeCheese.org*

acidity Making milk acid causes milk proteins (caseins) to clot, which makes curds. Milk is made acid by starter cultures consuming milk sugars (lactose) and creating lactic acid as a waste product

bacteria Micro organisms present in starter cultures that convert lactose into lactic acid and so clot the milk and create curds

casein A group of proteins present in milk

cave A temperature and humidity controlled area for storing cheese whilst it matures

cheese The product resulting from the acidification of milk and the subsequent treatment of the curds that acidification forms

cheesecloth Cloth with a very fine weave that is used to separate curds from whey

Chymosin The enzyme produced in the stomach of calves, lambs and kids which causes milk to solidify so they can get more nutrients from it when feeding from their mothers which is the basis for rennet

clot Formed when increasing acidity in the milk causes casein to precipitate out of solution. The clots trap moisture and fat to form curds

curds are the very foundation of cheese. They are formed through the clotting of casein when milk becomes acidified and contain fats, moisture and precipitated casein protein. Their treatment after formation is a significant determinant of the cheese that is created.

cutting The process of cutting the curds to allow the whey to drain out of them. The size of the cut impacts the moisture content of the finished cheese, larger curds retain more moisture and make a softer cheese, smaller curds lose more moisture and create a harder cheese

double boiler Also known as a *bain marie*, this is a pan that holds the milk sitting in a larger pan containing water which sits directly on the heat source. A double boiler allows for much gentler changes in temperature and makes it easier to maintain a temperature than applying a pan of milk directly to a heat source

fat Raw cow's milk is around 4% fat, with goat's and sheep containing respectively more. Higher amounts of fat give greater volumes of curd and so higher fat milks generally yield greater quantities of cheese for a given volume

fermentation The process of converting one chemical to another using micro organisms. In cheese making, this is converting lactose to lactic acid using bacteria

follower When pressing a hard cheese, the follower is the piece that fits inside the mould and pushes the curds down under the pressure of a press

hard cheese A cheese with low moisture content that has been pressed during formation and usually matured for a long period of time

homogenisation A commercial milk treatment designed to give the consumer uniformity when buying milk from a supermarket. Soft and hard cheeses cannot be made with homogenised milk.

hygiene Using specific micro organisms to create cheese means that hygiene becomes even more vital with cheese making than usual in the kitchen. All utensils and working environments should be scrupulously clean so as not to introduce unwanted bacteria to our milk

Lactic acid The acid which splits milk into curds and whey. It is a waste product from starter bacteria consuming the lactose within milk

Lactose A sugar found within milk that starter micro organisms consume, creating lactic acid.

matting Placed under moulds and presses to allow whey to drain out of the curds

maturation A step in cheese making where the cheese is kept at a specific temperature and/or humidity for a period of time to improve flavour and texture

mesophilic culture a cheese culture that has an optimum temperature of 30C (86F)

micelle The globular structure of four different casein proteins in milk which rennet acts upon to cause clotting

milk Cheese maker's main ingredient, cow's, sheep, goat's and buffalo milk can be used. Cow's in particular is sold in many different forms, only some of which are suitable for cheese making

mother culture A culture created at home which is used as a perpetual starter culture through constant feeding

mould (i) A container used for holding curds in a particular shape pierced with holes to allow whey to drain away

mould (ii) Growths caused by micro organisms, some of which are beneficial, such as the rind on a brie or the veins in a blue cheese, and others of which cause the cheese to spoil

pasteurisation A process of heating milk for a short period of time to reduce and denature bacteria within it, so making it safer to drink and extending the shelf life. It is impossible to buy unpasteurised milk in supermarkets in the UK

pressing Pushing the curds together in a mould under weight to force whey out of them

raw milk Unpasteurised and unhomgonised, i.e. straight from the cow/goat/sheep. Raw milk can be bought directly from farms in the UK but not in retail stores.

rennet An enzyme extracted from the fourth stomach of calves which coagulates milk. Vegetarian rennet is readily available.

ripening What happens to milk as starter cultures convert lactose into lactic acid

salt Added to most cheeses as a soaking brine or directly to the curds. Enhances flavour, preserves and naturally antibacterial. Should be non-iodised to prevent the destruction of beneficial micro-organisms

scalding Heating cut curds to further remove moisture from them

Secondary culture Bacteria, yeast or moulds that are used to create, for example, the blue veins in a cheese or a bloomy rind

soft cheese Cheese which contains a higher proportion of moisture, not pressed into shape and eaten soon after making

starter culture A culture of micro organisms which is added to milk to begin the acidification process. Different starters are available to create different types of cheese.

temperature Micro organisms are very delicate as they only work optimally in a narrow temperature range. Temperature control using a good thermometer is therefore imperative in great cheese making

thermophilic culture a culture which has an optimum temperature of 42C (108F)

thermometer For measuring milk temperature, should

show individual degrees centigrade to be most useful

turning Hard cheese in storage needs to be turned to ensure even distribution of fats through the body of the cheese

UHT Ultra heat treated milk. The raw milk is so denatured by the process that it can no longer be used to make cheese.

waxing The coating of a cheese in wax to form a barrier between it and the outside world which controls moisture content and prevents spoiling by micro organisms in the air

whey The greeny/yellow watery product left of the milk when curds are created which contains water, sugars, protein and fat