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present-day Mexico. In Oaxaca, a convent developed its own recipe by adding, aside from sugar, also anise and cinnamon to the mixture. From that moment onwards, the cocoa drink was very much in vogue with the colonial communities in Latin America. During a period of 80 years, the Spaniards retained the monopoly on cocoa. They exported the chocolate to Spain, where only the aristocracy could afford to savour this exclusive product. The country's mass population would have to wait until the 20th century before being able to enjoy the chocolate delights.

Chocolate conquers Europe

In 1557, it is Emanuele Filiberto, Duke of Savoy, who introduces the first chocolate into Turin. Another Italian, the Milanese historian Girolamo Benzoni, is one of the first chroniclers to give, in 1565, a detailed description of the original chocolate in his work 'A History of the New World': *"They remove the nibs and spread them out on mats to dry. When they want to prepare the drink, they first roast the nibs in an earthenware pan over a fire and grind them up with the stones that they also use to make flour. They then place the paste in vessels and gradually stir in a volume of water. Sometimes they complement this by adding a few spices.*

Then they drink this concoction, although this tends to turn out to be fit for hogs rather than for people. Its flavour is slightly bitter, but it is nonetheless a satisfying and refreshing drink without any soporific qualities. The Indians that are accustomed to drinking this beverage appreciate it above all others."

The Europeans tended to add their own flavouring agents such as sugar, cinnamon, nutmeg, anise,



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a darker colour, a lighter taste, and becomes more soluble in water. Van Houten sells the defatted cocoa powder, which contains practically the whole full flavour, to use it for making warm chocolate milk. The pure cocoa butter that is pressed out of the beans by Van Houten's screw press is initially seen as just a by-product of the process. But it isn't long before it is realized that this butter is the key to the development of modern chocolate. When this cocoa butter is added to a paste of normal ground cocoa beans and sugar, a less crumbly paste is produced that is likewise frothier and smoother. Because of the fat content, the cocoa paste can also absorb the sugar more efficiently. Two years later, the moulding and casting techniques are perfected. The Swiss Charles-Amedée Kohler, established in the city of Lausanne, for the first time creates a blend of hazelnuts and chocolate.

Chocolate in Belgium

Ever since the country's independence, chocolate has been an important Belgian product: in 1831, Meurisse produces chocolate in Antwerp while, in 1840, the Belgian firm Berwaerts develops the first pressed chocolate bars, pastilles, and figurines. Jean Neuhaus arrives in Belgium in 1857 and opens a chocolate

boutique inside the Koninginnegalerij in Brussels. The year 1883 gives birth to the Côte d'Or chocolates. In 1896, Antoine Jacques establishes his chocolate production plant in Verviers and starts out as one of the first to sell chocolate bars. Callebaut is founded in 1911 in Wieze and starts out with the production of chocolate bars. In 1912, Jean Neuhaus, the founder's grandson, is first to introduce the idea of the filled chocolate 'bonbon', thus inaugurating the birth of the 'praline'. In 1920, his wife invents the 'ballotin', a special box for packaging the pralines. During that same year, the first chocolate bar weighing between 30 and 45 g. (previously this was around 150 g.) was produced in Belgium. The invention of the '*couverture*' chocolate is to be attributed to Frans Callebaut in 1925. In 1988, Belcolade was founded and, in 1996, the merger between Barry and Callebaut becomes a reality. In 2004, Bruges celebrates the festive inauguration of the chocolate museum, Choco-Story.

Technical improvements

But also other countries have not been idle in the meanwhile. Rudolf Sprüngli-Ammann in 1845 produces for the first time chocolate by the refining process. The British firm Fry and Sons introduces in

Cooling and congealing

Following the conching process, one finally obtains chocolate that is ready for commercial use and delivery to the client. The chocolate may be in a liquid state, at a temperature of approximately 50° C, or in the form of blocs or drops by letting the chocolate solidify further. This final step – the transition from a liquid to a solid state – is quite labour intensive: in order to achieve stable cocoa butter crystals and a glossy, crunchy chocolate with a hard snap, manufacturers carefully let the mass cool down to predetermined temperatures, to have it heated up again before the chocolate is cast into its desired form and, finally, congeals at room temperature. Chefs, bakers, and '*chocolatiers*', the expert chocolate makers, melt down the chocolate in order to give it a certain shape and form or to use as couverture on other food stuffs. When they want the chocolate to resume its original gloss and snappy crunchiness, they will need to repeat this cycle of cooling and heating. This alternating process is called 'tempering'.



total fat (cocoa butter and milk fat). White chocolate may not use the term couverture, since there is no enrobing present. Because of the extra cocoa butter, the couverture chocolate melts more readily on the tongue and breaks with a harder snap.

Some manufacturers even go to the extent of blending spices, special aromas, or fruit extracts into their chocolates. Sometimes, they even add a colouring agent to the mix, being mindful not to exceed legal parameters.

European legislation

The following table presents a summary of the most significant limitations that apply to the manufacturing of chocolate under current European legislation. In certain countries, exceptions to this legislation have been adapted and accommodated to fit within the legal directives, or the authorities have turned a blind eye when they were ignored. The European Union allows the use of a 5% vegetable fat content.

MINIMUM %	DRY COCOA -COMPONENTS	COCOA BUTTER	DRY FAT-FREE COCOA	TOTAL FAT	BUTTER FAT	DRY MILK-COMPONENTS
CHOCOLATE FOR DOMESTIC USE	30.0	18.0	12.0			
CHOCOLATE	35.0	18.0	14.0			
CHOCOLATE QUALITY REFERENCE	43.0	26.0	14.0			
BITTER-SWEET CHOCOLATE	50.0	26.0	14.0			
CHOCOLATE COUVERTURE	35.0	31.0	2.5			
DARK COUVERTURE	47.0	31.0	16.0			
MILK CHOCOLATE FOR DOMESTIC USE	20.0		2.5	25.0	5.0	20.0
MILK CHOCOLATE	25.0		2.5	25.0	3.5	14.0
MILK CHOCOLATE COUVERTURE	25.0		2.5	31.0	3.5	14.0
MILK CHOCOLATE QUALITY REFERENCE	30.0		2.5	25.0	4.5	18.0
WHITE CHOCOLATE		20.0			3.5	14.0

If, by some unfortunate coincidence, chocolate should end up too close to a heat source, these unstable crystals will predominate and the chocolate substance will become greasy and soft. When the chocolate is subsequently placed in a refrigerator to restore its hardness, it will taste fine but be dulled in appearance and display blemished spots, besides being soft instead of hard and brittle. This is the result of the chocolate being cooled so quickly that the cocoa fat has turned into a loose, weakened network of unstable crystals. In such cases, in order to restore the chocolate to its original consistency, tempering is called for.

What is meant by tempering?

The purpose of tempering is the pre-crystallisation of the cocoa butter in the chocolate. It is intimately connected to the chocolate's processing temperature. During the tempering process, the cocoa butter in the chocolate is transformed into a stable crystallized form. This ensures the hardness, the contraction force, the clean, hard snap, the smooth-melting character, and the gloss of the cooled down end product. The 3 important factors during the tempering process are: time, temperature, and motion.

The tempering process must last a sufficiently long time span during which adequate stirring is an absolute requirement. If this condition is not met, too few stable crystals will be created while, at the same time, unstable crystals will be formed during the cooling process. However, too much stirring and too protracted tempering will result in too many or too large stable crystals. The chocolate is in that case not characterized by a collective network of crystals but rather by individual crystals. The chocolate will be stable but have a grainy, crumbly appearance with a dulled surface and a waxy taste.

Tempering is conducted in 3 stages:

- ✦ The chocolate is heated to a degree to melt down all of the crystals (40 to 45° C).
- ✦ The chocolate is to be cooled (25 to 27° C) but stirred without let-up, this in order to promote the formation of a new set of start-crystals. When the crystal formation has started, it keeps on continuing and more and more crystals are being generated. After the chocolate has been tempered, it retains an ideal liquidity only for a limited period of time. After this period, it will thicken more and

Tempering with chocolate drops

Pre-crystallisation is greatly facilitated when you add already tempered chocolate to the melted chocolate. Chocolate drops are very useful in this since drops have obviously already been tempered before. In other words, they already have the required crystalline form and can be added immediately to the melted chocolate. The required quantity depends on the temperature of the melted chocolate and the drops. When the melted chocolate reaches a temperature of approximately 40° C, you can add 15% to 20% of chocolate drops at room temperature (between 15 and 20° C). In restaurants, tempering with chocolate drops is the simplest tempering method for small quantities. As soon as the chocolate has melted, one can perfectly control the temperature while adding and melting the drops into the melted mass.

Werkwijze

- ✘ Melt the chocolate at a temperature between 40 and 45° C (see p. 47-48). **1**

- ✘ Lower the thermostat (approximately 32° C for dark chocolate and 30° C for white and milk chocolate) and immediately add 15% to 20% of chocolate drops at room temperature. **2**
- ✘ Stir the chocolate well in order to adequately distribute the stable crystals of the drops. If the drops melt down too quickly, then the chocolate is still too warm. In that case, add more solid chocolate and continue stirring. **3**
- ✘ In this way you will achieve a slightly thickened chocolate, ready to be processed further. **4**

Tip

Control the temperature with a core thermometer. This will tell you when to stop at the required temperature and prevent the adding of too many drops, which would make the chocolate too thick and force you to restart the melting process.

There are currently tempering machines on the market, from smaller ones for private use to large industrial ones, which greatly facilitate this process.



Praline moulds

NEEDED MATERIALS

- praline moulds
- chocolate melting bin or tempering machine
- pallet knife
- triangular pallet, scraper
- paper
- plastic glove, top quality brush
- ganache, praliné, or filling of choice
- piping bag with a straight flat nozzle

Temper the melted chocolate. Ascertain that the moulds be at room temperature and heat them slightly by using an air blower (the ideal temperature for the moulds is 26 to 27° C), but avoid that the moulds become warmer than the temperature of the tempered chocolate. To obtain an extra glossy praline, you can grease the moulds in advance with liquid cocoa butter, rubbing it on with a fine cloth.

Procedure

- ✦ Fill the mould with tempered chocolate. Hold the mould at an angle and scrape away the extra





- chocolate from the top and the outside edges of the mould with the pallet knife or the scraper. **1 2 p.63**
- ✘ Vibrate the mould well on the marble slab or the worktable in order to expel any possible air bubbles from the chocolate. **3 p.63**
 - ✘ Pour the extra chocolate from the mould, ascertaining that all crannies and nooks and the insides of the mould are evenly covered with an equal coating of chocolate. **4**
 - ✘ Remove the chocolate residue from the top and the outsides of the mould with the narrow pallet knife. **5**
 - ✘ Leave the chocolate to solidify for 5 minutes inside a room with ambient temperature of approximately 22° C. **6**
 - ✘ Scrape the last remaining chocolate residue away from the mould and let it harden for a few minutes inside the refrigerator (10° C). The moulds are now ready to be filled with ganache or some other filling of one's preference. **7 8 9**
 - ✘ Fill the moulds with ganache, praliné, or any other filling of choice. It is recommended to use a piping bag with a straight flat nozzle for this purpose (or without any nozzle at all). Fill to 2 mm below





11



12



13



14

Chocolate fans

NEEDED MATERIALS

- marble slab at room temperature (20° C)
- triangular pallet knife
- tempered chocolate
- stainless steel plate with paper sheet
- angle pallet knife

Procedure

- ✘ Temper the chocolate and pour part of it onto the marble slab. **1**
- ✘ Spread the chocolate thinly and evenly, using the angle pallet knife. **2**
- ✘ Let the chocolate briefly solidify until it feels dry to the fingers (but not for too long). Cut the edges off the chocolate coating using the side of the pallet knife and scrape the slivers away. **3**
- ✘ At a shallow angle, insert the pallet knife underneath the chocolate coating. Push the broad pallet knife firmly and briefly forwards and draw it back in a quick motion. During this motion, use a finger to hold the chocolate against one side of the pallet knife. A wavy fan will result with a



short and a broad side. Scoop it up and put it on the paper sheet. **4**

- ✘ Leave it to solidify further.
- ✘ These little fans look very decorative at the edges of pastries or cakes or as chocolate decorations on a dessert plate. **5**

All chocolate types with a basic viscosity (☹☹☹) will render excellent results. They possess just the right kind of liquidity to produce decorations with a perfect thickness. Moreover, these basic types are very easy to work with.



GANACHE

One of the best known chocolate ingredients is ganache, a mixture of cream, butter, and chopped chocolate. Ganache is a soft, creamy chocolate ingredient that has circa 38% fat content, of which one third is butter fat. It can be given all sorts of flavours. The product is used as filling for chocolate truffles and pastry, for moulded and cut pralines, and also serves as glazing for cakes and as a sandwich spread (chocolate paste).

Ganache is both an emulsion and a suspension.

- ✦ Emulsion: a mixture of a liquid that in very fine drops is blended into another non-soluble liquid.
- ✦ Suspension: a mixture of liquid and minute solid particles.

Ganache components

The main ingredients of ganache are invariably fat, sugars, water, dry substances, and, obviously, chocolate. It is the latter that provides the chocolate flavour and determines the colour of the ganache. The cocoa butter content in the chocolate ensures a solid or a soft texture.

The type of fat and its firmness determine the soft, smooth, and creamy texture of the ganache. The texture plays an important role in the intensity of the taste on the tongue. A high, soft fat content makes for a firm and fat texture and helps to prolong the product's shelf life. For a good ganache, a total fat content of approximately 38% is recommended. The fat's melting point likewise determines the firmness and the stability of the cream and is an important factor in establishing the smoothly dissolving effect on the tongue.

Milk products contribute to the creamy taste and the soft, pleasant, and buttery texture. Milk fats do lower the melting point of the cocoa butter. The more milk fat added to the ganache, the lower the melting point of the mixture of cocoa butter and milk fat.



Bitter chocolate mousse

INGREDIENTS

- ✓ 330 g Belcolade Noir Supreme E740
- ✓ 100 g milk
- ✓ 260 g cream
- ✓ 30 g granulated sugar
- ✓ 425 g semi-whipped cream

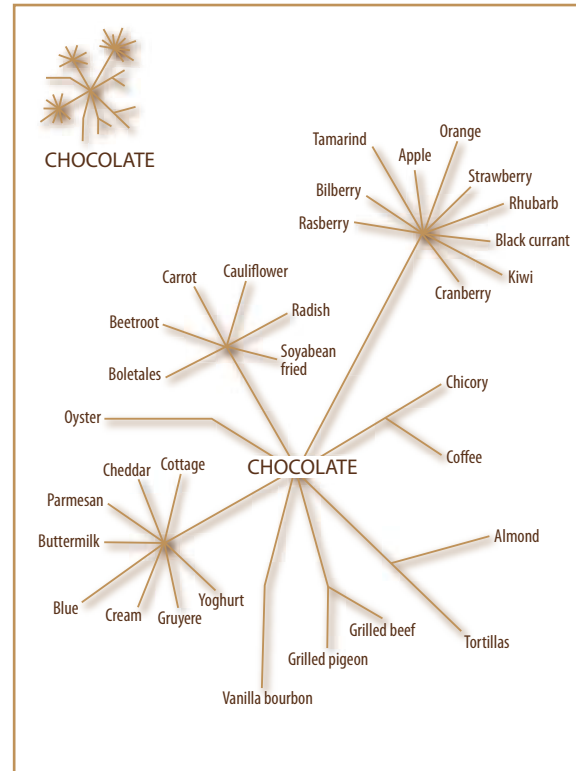
Recipe

- ✘ Boil the milk and the cream together with the sugar.
- ✘ Add the warm cream to the chocolate.
- ✘ Stir the chocolate mixture into a smooth homogeneous ganache.
- ✘ Do not let the temperature of the ganache exceed 35° C.
- ✘ Mix half of the semi-whipped cream with the ganache.
- ✘ Repeat this process with the remaining half portion of the cream.
- ✘ Leave the mousse to stiffen in the refrigerator.

FOODPAIRING

Aroma, taste, and smell: why do they fit together? Have you ever paused to wonder why some ingredients combine perfectly together and other combinations do not work at all?

When we talk about taste, we are referring to the way something smells rather than how its tastes. It has been noted that in a tasting test only 20% of the observations result from the taste and 80% from the smell or the aroma. Our tongue harbours approximately 9.000 taste buds, which are capable of distinguishing between sweet, salty, sour, and bitter. We have, however, 5 to 10 million cells that are receptive to smell. We possess some thousand different smell receptors that enable us to make a distinction amongst over 10.000 different smells. This is made possible by the fact that certain volatile molecules can be accepted by several cells. It is the combination of these receptors that ensures our ability to identify a certain odour or scent.



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