





CHOCOLOGY

The Swiss chocolate industry, past and present



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Introduction

It is hardly surprising that so many people simply enjoy chocolate, delight in it and see it as a heaven-sent gift. Yet there are many questions that arouse the curiosity of consumers: What is chocolate and why is it so popular? How is chocolate made, and for how long have we been making it? What are the differences between milk chocolate, dark chocolate and white chocolate? We intend to shed some light on these and other mysteries surrounding chocolate.

When you have read our little book, you will be able to consider your-self a chocolate connoisseur. You will be more aware than ever of the taste of chocolate as it melts on your tongue. Perhaps you will think of the Swiss chocolate pioneers whose inventive zeal made this pleasure possible. Or of the famous Swiss companies whose chocolate products represent Switzerland's calling card, and whose delicacies enjoy great popularity throughout the world.

Swiss chocolate represents high quality. Within the businesses which make up the Swiss chocolate industry, the legacy of the pioneers is preserved and cherished, day after day, with great attention to detail. State-of-the-art production plants ensure perfectly hygienic manufacture. The constant development of new products bears witness to the innovative force of the industry.

Chocosuisse and the Swiss chocolate industry invite you to read on, and to immerse yourself in the sweet world of chocolate.

Yours, CHOCOSUISSE



From cocoa to chocolate

The great botanist Carl von Linné (Linnaeus) was by no means the first to recognise the unique merits of the plant to which he gave the botanical name of "Theobroma Cacao L.". "Theobroma" means "food of the gods". As such, or as the food of princes and the wealthy, cocoa was already recognised by the Toltecs, Mayas and Aztecs, from whom we got the name "cacauatl". Around 600 AD the Mayas were already cultivating cocoa in Central America and establishing the earliest known plantations. They used the cocoa beans to prepare a very nourishing and fiery drink—which they called "Xocolatl", from which we get the modern word "chocolate"—and valued it so highly that the beans were also used as a means of payment! The Aztecs valued the beans equally highly when they conquered Mexico in the 12th century.

The Spanish Conquistadors of the 16th century were also interested in chocolate primarily as a means of payment, and established "money plantations". Nevertheless, in 1528 Cortez took the first cocoa to Spain, along with the equipment needed to prepare the



Cocoa grindstone with grinder to break down cocoa beans from Mexico, as used by the Aztecs.
Costa Rica, c. 500-700 AD.



Aztecs preparing "Xocolatl": cocoa beans were roasted, ground, and mixed with water and spices to form a foamy liquid (Olfert Dapper, "Die Unbekannte Neue Welt").

exotic drink, and it soon met with great approval in the Spanish court. It had little in common with the instant cocoa popular amongst children today, or even with drinking chocolate—it was sharp, highly concentrated, and was even drunk with pepper added. Sugar was rare and expensive. If the drink was sweetened at all, it was with honey. The basic product was diluted with water, milk, wine, or even beer!

In 1615, the infanta Anna of Austria, who grew up in Madrid, is thought to have taken drinking chocolate to the French court when she married King Louis XIII. In Paris it became a badge of status and the fashionable drink of the aristocracy, and from there it spread to the upper echelons of society throughout the whole of Europe.

The 19th century saw the fall of the aristocracy, accompanied by the decline of their drink in favour of the more bourgeois coffee and tea, but at the same time solid chocolate, which had its origins in France in the years following 1830, grew in importance. This method of preparation had been known previously in other European countries, starting with Italy, where "cioccolatieri" or travelling producers moved around the country and offered the brown mixture, which was incredibly expensive, for sale at fairs.



Court scene, engraving, Augsburg 1725.



Chocolate manufacture at the end of the 18th century (engraving from "Schauplatz der Natur und Künste", 1775).

Chocolate arrives in Switzerland

Pioneers

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Travelling journeymen also came to Italy from other countries to learn the art of the confectioners and Cioccolatieri, among them François-Louis Cailler (1796–1852), who then opened a mechanised chocolate production facility in Corsier near Vevey in 1819, establishing the oldest brand of Swiss chocolate still in existence today. Thus chocolate had finally arrived in the country where it was soon to find its greatest patrons and pioneers who would make Switzerland the number one country for chocolate by the early 20th century.

The Swiss seem to be born with a certain tendency to produce sweet treats. But it is still amazing that the Swiss, of all people, became so successful with a product whose ingredients—cocoa and sugar—had to be purchased from abroad at high prices. They managed this thanks to their striving for high quality—another innate Swiss virtue—and their realisation that they, working in a small country with few raw materials, could only stand up to powerful foreign competition if they were better than the rest.



François-Louis Cailler (1796–1852)

... and finds pioneers

In 1825, Philippe Suchard (1797–1884) opened a confiserie in Neuchâtel, and a year later, in 1826, he set up a chocolate factory in Serrières. With just one worker, he was already producing 25 to 30 kg of chocolate per day. And as early as 1880, the busy and versatile entrepreneur opened a branch abroad in Lörrach. An overview of the sector dating from 1883 shows Suchard's company to be the largest Swiss producer: it accounted for half of total national production, and employed about half of the 500 or so people working in the chocolate industry at that time.

In 1826, Jacques Foulquier (1798–1865) also started producing hand-made chocolate in Geneva. His son-in-law Jean-Samuel Favarger would later succeed him.

Charles-Amédée Kohler (1790–1874), a grocer in Lausanne, began by trading ready-made chocolate. He eventually moved into manufacture himself in 1830. Like Cailler and Suchard, he too strove constantly for improvements in the types of chocolate commonly available. One of his attempts gave rise to an important innovation: hazelnut chocolate. Together with his sons, he produced this new speciality in Lausanne.



Philippe Suchard (1797–1884)



Charles-Amédée Kohler (1790–1874)



The early production facilities were proudly referred to as "factories", but really they were small handicraft businesses or "manufactories" like this one operated by Rudolf Sprüngli in Horgen.



Rudolf Sprüngli-Ammann (1816–1897)

1845 saw the establishment of the first chocolate factory in Germanspeaking Switzerland. Rudolf Sprüngli-Ammann (1816–1897) produced chocolate for the first time in his confiserie in Zurich using a sophisticated process.



Aquilino Maestrani (1814–1880)

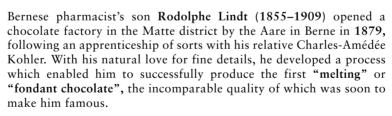
Aquilino Maestrani (1814–1880), whose father was one of the Ticinese who had gone to Lombardy to learn the art of chocolate making in the mid 18th century, opened a chocolate factory in Lucerne in 1852 which he soon relocated to St. Gallen.



Daniel Peter (1836-1919)

In Vevey, Daniel Peter (1836–1919) found not only his lifelong companion Fanny Cailler, eldest daughter of F.-L. Cailler, but also, along with his love, his life's work, chocolate, to which he devoted himself from 1867 onwards with the establishment of the "Peter-Cailler et Compagnie" factory. A true Swiss citizen, he took the milk which was so abundant in his country and combined it with chocolate. In 1875, the whole chocolate landscape changed. Milk chocolate had been invented.

Johann Georg Munz established a confectionery factory in Flawil in 1874. Later, his son Albert Munz also took up chocolate production.





Rudolf (Rodolphe) Lindt (1855–1909)

In 1884, Alexis Séchaud set up his company in Montreux. Jules Séchaud invented filled chocolate in 1913.



Jean Tobler (1830-1905)

In the Länggass district of Berne, the trained confectioner Jean Tobler (1830–1905) ran a "Confiserie speciale". As well as his own specialities, he concentrated mainly on selling chocolate from other producers such as Rodolphe Lindt. In 1899, with his sons, he set up the "Fabrique de Chocolat de Berne, Tobler & Cie.", and in 1908 his son Theodor successfully developed what is probably the most famous Swiss chocolate, the triangular "Toblerone" made from milk chocolate with honey and almond nougat.



The early manufactories soon grew into real factories. The largest at the end of the 19th century was that of Philippe Suchard in Serrières.



Henri Nestlé (1814–1890)

The "grinding room" of a chocolate factory at the end of the 19th century: this is where the roasted cocoa beans were ground and mixed.

Henri Nestlé (1814–1890) was not concerned with chocolate himself. He had invented a milk-based "infant cereal", the famous "farine lactée", and established a factory in Vevey which soon gained international recognition. His company moved into chocolate in 1904 through a contract with "Peter & Kohler réunis", who developed and produced a special sweet milk chocolate for Nestlé, which Nestlé sold via its international distribution network.

Other companies were set up during the pioneer years and later, whose activities helped to shape the international reputation of Swiss chocolate, and which are still operating successfully today:

1887 Robert and Max Frey, Chocolat Frey AG, in Aarau

1901 Villars SA in Fribourg

1908 Max Felchlin AG in Schwyz

1928 Stella SA in Lugano, later moving to Giubiasco

1929 Camille Bloch SA in Berne, later moving to Courtelary

1931 Carma AG, now Barry Callebaut AG in Dübendorf

1933 Bernrain AG in Kreuzlingen

1933 Halba AG in Wallisellen

1957 Titlis AG, now Chocolat Alprose S.A. in Caslano















Swiss chocolate flourishes

The years between 1890 and 1920 saw a real blossoming of the Swiss economy, including the chocolate industry. The number of chocolate producers rose from 13 to 23 between 1888 and 1910, and the numbers working for them increased from 528 to 5547. In 1905, the largest companies in the sector were F.-L. Cailler in Broc, Chocolats Peter & Kohler in Orbe, and Suchard in Neuenburg.

It is certainly no coincidence that the blossoming of the Swiss chocolate industry coincides with the great age of Swiss tourism. The thousands from the top echelons of society throughout the world who spent their holidays in Switzerland were of course very likely to be the opinion-formers, who got to know and appreciate Swiss chocolate here and took its reputation home with them. We know, for instance, that Rodolphe Lindt focussed his attention on the genteel girls' boarding schools in western Switzerland, where sophisticated young women from all over the world came to have a final polish applied to their manners, and where he found the first enthusiastic consumers for his "Chocolat fondant".

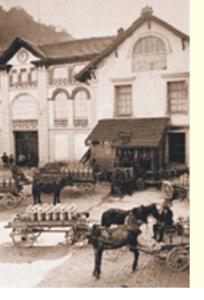
Seen from today's point of view, when average consumption of chocolate in Switzerland is more than 10 kg per head of the population, it is difficult to gain an accurate impression of the market around the beginning of the 20th century. Chocolate was still a luxury product reserved for the upper classes. And Switzerland had only just begun its transition from one of Europe's developing countries to the high standard of living it was to enjoy subsequently: the peak of the wave of poverty-induced emigrations was only twenty years in the past. Per head consumption of chocolate around 1905 can be estimated at about 1 kg, with the 1900 census estimating Switzerland's population at 3.3 million.

This limited home market was far too small to absorb the output of the Swiss chocolate factories, which rose from an estimated 13 000 tonnes in 1905 to 40 000 tonnes in 1918. Up to three quarters of this chocolate was exported. In the first 20 years of the 20th century, little Switzerland became a world power as regards chocolate. In 1912 for instance, its share of the world chocolate export market came to 55%! Of course, "Swiss chocolate" owes its global reputation not just to the quantities exported, but above all to its quality, which made it stand out above the bulk of chocolate produced in other countries.

A "wrapping room" at the end of the 19th century. Hundreds of women packed the moulded chocolate in foil and colourful printed paper. Machines were not used until after the First World War.

A "grinding room" around 1920: dozens of "conches" have arrived in the factory to refine the chocolate mixture. They were already powered by central electric motors via shafts, wheels and transmission belts.

Photograph of a "moulding shop" around 1900. Pressing the tough chocolate mixture into the heavy cast iron moulds using the balls of the thumbs and the elbows was hard man's work.



The invention and success of milk chocolate, and the resulting need for milk, provided work and subsistence for thousands of peasant farmers.



"Gala Peter", the world's first milk chocolate, developed in 1875 by Daniel Peter.

From the "Tages-Anzeiger für Stadt und Kanton Zürich" dated 26 August 1904:

The development of the Swiss chocolate industry to date, and the current market situation, certainly give us cause to hope for further growth in the immediate future. Swiss chocolate, whether it be the western Swiss, Bernese or eastern Swiss brands, has conquered ever greater sections of the world market from one year to the next, leaving the products of French and German factories way behind. In ten years, Swiss chocolate exports have increased tenfold, or 20-fold in value terms! In 1884, 532 000 kg of chocolate were exported, worth CHF 1300000. In each of the last two years on the other hand, exports amounted to: 1902: 4745 700 kg (CHF 18118155); 1903: 5924 300 kg (CHF 22912135).

However, it is two inventions by the Swiss pioneers which promoted the quality and reputation of Swiss chocolate to a particularly high extent.

Milk chocolate

Daniel Peter in Vevey was the first to successfully refine the cocoa mixture with milk. The experiment was obvious: Swiss farms provided milk in abundance, and consumers mixed the cocoa or chocolate powder with milk in any event. So why not add it to the basic mixture? However, because the high water content of milk prevented it from forming a stable emulsion when mixed with cocoa butter, the mixtures quickly turned rancid. It was only when he used condensed milk from the "Anglo-Swiss Condensed Milk Company" in Cham that Peter's new product was a success. Following the launch of cocoa milk powder in 1875, he enjoyed unimagined success with his eating chocolate, "Chocolat au lait Gala Peter" in the 1880s. Soon, the whole industry had adopted the new process, much to Peter's frustration.

Because the addition of milk did not just increase the nutritional value of chocolate and refine its flavour: it also gave rise to fundamental changes in the manufacturers' calculations. Before that, the industry had allowed about 50 kg of cocoa beans for 100 kg of chocolate. The rest was sugar, and a little extra cocoa butter. With a 25 per cent milk content or more, there was a corresponding reduction in the need for expensive cocoa, and with it a reduction in dependence on foreign imports. The development started by Peter thus made a very significant contribution to the great importance of Swiss chocolate.

Towards the end of the 19th century, advertising also began to appear, mainly in the form of posters advertising the sales outlets. One of the earliest "consumer situations" (around 1890).



"Melting chocolate"

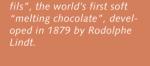
The young Rudolf Lindt—or Rodolphe, as he called himself to fit in with the customs of Bernese high society—was not at all satisfied with the chocolate he produced. It tasted sandy and slightly sour. As did the chocolate made by his rivals. And it quickly developed a whitish coating. His brother, a pharmacist by trade, advised him to heat his roller grinder and to leave it running for longer. Rodolphe Lindt also added extra cocoa butter to his mixture.

The mixture which Rodolphe Lindt took from his machine after three days and three nights of uninterrupted mixing had virtually nothing in common with what he had originally put in. It was like dark velvet, with a matt silky shine. And most important of all, it melted on the tongue, without the need to chew it like traditional chocolate. At the same time, it produced a wealth of exquisite aromas. Lindt called his new creation "chocolat fondant"—melting chocolate. The quality of his chocolate soon became famous. After that he had a machine built specifically for this newly discovered refinement process, a longitudinal grinder which he called a "conche" because of its shape. It was not until the early 20th century that this process, which is now known as "conching", became familiar in the business.

There was another aspect of Lindt's invention which had a decisive effect on the development of the industry. Up until then, the chocolate mixture had been a tough dough, which had to be pressed and knocked into moulds using the balls of the thumbs and the elbows. Now however, the chocolate mixture, through the addition of cocoa butter and days of processing in the conche, had become liquid and could be poured into the moulds, making the production process considerably simpler and quicker.



Rodolphe Lindt's production secret was the "conche" which he had developed, a roller grinder, in which the chocolate mixture moved around for 72 hours, making it aromatic and homogeneous, and giving it a soft melting texture.

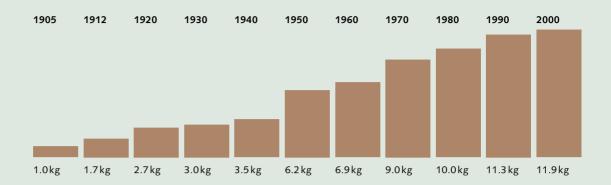


"Chocolat fondant Rod. Lindt



Trends in per head consumption of chocolate in Switzerland





For comparison

Per head consumption of chocolate in other countries:

Germany	1999	10.0 kg
England	1999	8.4 kg
France	1999	7.0 kg
USA	1999	5.4 kg
Italy	1999	3.3 kg
Japan	1999	2.0 kg
(Switzerland	1999	11.5 kg)

Up to 1950: estimates or rough calculations, 1940 incl. "chocolate substitute" products; 1950 onwards, information from CHOCOSUISSE.

According to industry estimates, around 20% of chocolate bought in Switzerland is purchased by people living in other countries (tourists, crossborder commuters).

Through crises to a golden age

Overall, the Swiss economy, and the chocolate industry, benefited from the First World War, despite the existence of very strict import restrictions at times. The borders remained open, and in the countries involved in the war, industry had to concentrate on meeting war needs. After the war however, this brief phase in the business cycle was followed by hard times, during which the industry had to cope with almost unthinkable challenges. Increased protectionism, and the economic crises of the 20s and 30s, gradually led to almost complete loss of all export markets. The chocolate industry's total exports shrank to just CHF 1.9 million by 1937—compared to 106 million in 1919. Companies which—unlike the large firms from western Switzerland—had not already set up factories and branches abroad in the early boom years, had to concentrate exclusively on the slow-growing Swiss market.

The Second World War brought strict import restrictions on sugar and cocoa, with rationing being introduced in 1943. During this period, the chocolate industry managed by making increasing use of unrationed, valuable ingredients such as nuts, preserved fruits and honey. After the war, demand snowballed, first at home, and then abroad. The challenge now was to replace plants which had been placed under terrible strain and become out of date during the times of crisis and war, and to extend premises which were now too small, in order to keep up with the rapid growth in demand and markets. And soon, recruiting staff at home would also become a problem.

Since 1950, the Swiss chocolate industry has enjoyed constant growth, interrupted only by temporary recessions, for instance following the oil crisis in the mid 1970s. Total sales rose from 26 000 tons in 1950 to more than 130 000 tons today. Now the problems are no longer political or social in origin, they are no longer caused by

Posters for famous Swiss chocolate brands from the first half of the 20th century.



import restrictions or closed borders, but by markets and the competitive environment which began to force rationalisation measures as early as the 1960s. Automation, and the development of new technologies in chocolate manufacture, have made great strides forward. The advances in European economic integration, and the dismantling of customs controls throughout the world, have promoted the international exchange of goods. Manufacturers recognised the signs of the times and extended their market position in many parts of the world.

The development of new products and product forms in keeping with modern consumer habits, the maintaining of quality, the consistent pursuit of modernisation in factories, and the promotion of professional training for employees, are the methods being employed by the Swiss chocolate industry to assert its global market position into the 21st century.







Consolidation

Mergers and takeovers are by no means a new occurrence in economic history. As early as the beginning of the 20th century, many company founders or their successors were deciding to merge their companies with others, either because there was nobody in the family to take over, or because they believed that joining together with others would give their own company a better chance of surviving and expanding in rapidly developing markets. This was also the case within the young Swiss chocolate industry.

In 1899 the bachelor Rodolphe Lindt sold his factory in Berne, his brand name and his secret production process to Rudolf Sprüngli of Zurich, who immediately renamed his "Chocolat Sprüngli AG" as "AG Vereinigte Berner und Zürcher Chocoladefabriken Lindt & Sprüngli".

In 1904, "Société des Chocolats au Lait Peter S.A." took over "S.A. de la Fabrique des Chocolats Amédée Kohler et Fils", trading from 1909 under the name of "Peter et Kohler Chocolats Suisses S.A.". In 1911 however, this new company merged with the successful "S.A. des Chocolats au Lait F.-L. Cailler" to form the eminent "Peter, Cailler, Kohler, Chocolats Suisses SA". The "Nestlé and Anglo-Swiss Condensed Milk Co." owned almost 40% of this company. The two companies were also linked through a co-operation and distribution agreement. In 1929, the long-awaited takeover of "Peter, Cailler, Kohler" by "Nestlé and Anglo-Swiss" took place, so that the largest food group in Switzerland also became the largest chocolate producer.

Thus, for a few years, the hierarchy of the chocolate industry was defined—apart from a few smaller mergers—until in 1950, "Chocolat Frey AG" was absorbed into the production organisation of the wholesale distributor Migros, and in 1970, in the next great "chocolate marriage", "Suchard S.A." and "Chocolat Tobler AG" came together under the "Interfood" banner. In 1982, the Jacobs Café company and Interfood combined to form "Jacobs Suchard AG". In 1990, Philip Morris took over Jacobs Suchard AG, which merged with "Kraft General Foods Europa" in 1993 to form today's "Kraft Foods".



Famous brands do not recognise national borders

The structures of the Swiss chocolate industry have changed dramatically since the beginning of the 20th century. Mergers, greater focus on foreign markets, and increasing globalisation, have resulted in the major Swiss chocolate companies running factories all over the world and establishing their brands internationally.

When a group owns factories in several countries, it does not make economic sense to manufacture the same products everywhere. The various factories sensibly specialise in certain products, which they supply to their sister companies. This division of labour guarantees a constant, uniformly high quality. Chocolates bearing the brand names of well-known Swiss companies are thus produced abroad in some cases. Even though these products are not genuine Swiss chocolate, they are very often made using tried and tested recipes from the Swiss parent company, and under Swiss guidance. The packaging gives information about the chocolate's country of origin.

The term "Swiss chocolate" can only be used to refer to chocolate products which are manufactured exclusively at production sites in Switzerland. For decades, the Swiss chocolate industry has been very successful in protecting the "Swiss chocolate" label, and it defends itself against any misuse. "Swiss chocolate" has therefore remained a badge of quality in its original sense, and enjoys an excellent reputation throughout the world.





Cocoa: brown gold

The tree and its fruit

Cocoa is a product of the tropics. The delicate tree, which belongs to the botanical sterculiaceae family, grows best in the humid zones 20° north and south of the equator.

As it does not like full sun, the cocoa tree grows in the shade of larger tropical trees, mainly coconut palms and banana plants. The evergreen tree is pruned back to a height of about 6 metres to make harvesting easier. At one and the same time, it bears both small delicate blossoms—50000 to 100000 in a year—and fruits at various stages of ripeness, which sit right on the trunk or close to it in the forks of the main branches. Despite the large numbers of blossoms, which are pollinated by insects or artificially by hand, only 20 to 50 fruits will ripen on any tree each year, each weighing around 500 g. They are the size of sugar beet, with an elongated shape, 15 to 25 cm long and 7 to 10 cm in diameter. The firm, rough skin changes from green, via yellow, to yellowish red or reddish brown. The ripe fruits are harvested from the ground using machetes and long bamboo poles fitted with sharp knives. They never fall from the tree of their own accord.

Although the cocoa tree flowers and develops fruits all year round, the harvest tends to be concentrated in two periods. The main harvest begins at the end of the rainy season in October and continues into the beginning of the dry season. The second, smaller, harvest is collected at the beginning of the next rainy season in March.

Handling the fruits

The harvested fruits are taken straight to collection sites, where they are opened. Inside the fruit are 25 to 50 long oval seeds, arranged in five longitudinal rows and embedded in a bittersweet pulp. These are the cocoa beans. They are scraped out of the skin together with the fruit pulp, shaken into a pile, and loaded into baskets or large boxes.



Harvest on a cocoa plantation. Workers use machetes and long poles to remove the fruits carefully from the trunks. The location is shady, the climate humid and balanced.





Next comes a very important process for the extraction of high-quality raw cocoa: fermentation. Under the protection of large banana leaves or branches, the seeds are left for 2 to 6 days. Larger heaps are turned several times to ensure that they ferment evenly. During the complex fermentation process, the sugary fruit pulp is broken down by enzymes. The heat produced as a result, about 50°C, destroys the capacity of the cocoa beans to germinate. The astringent and bitter natural flavour of the beans becomes less intense, while at the same time new aromas start to develop, which will later become the cocoa aroma during drying and roasting.

As the fermented raw cocoa still contains too much water, which could give rise to the formation of mould and rotting, the beans are spread out on mats or in large flat boxes on the sun-drenched ground to dry, and are turned constantly. After a week, the vast majority of the water has evaporated, the beans have become a deeper brown, and the aroma is more pronounced. Now the dry harvest is loaded into jute sacks, weighed, classified, and taken to collection points throughout the country.

After being removed from the fruits and fermented, the beans dry in the tropical sun.



Varieties of cocoa

Growers and dealers distinguish between two basic varieties: "Criollo" or flavour cocoa and "Forastero" or standard quality cocoa. The Criollo tree in its pure form is found in Central America and northern South America, especially in Ecuador and Venezuela where it originated. It is more sensitive to the effects of weather conditions, more difficult to cultivate, and produces a smaller harvest. But its seeds are finer than those of the Forastero trees, with a richer aroma and fragrance. Criollo cocoa is more expensive than standard quality cocoa, and is therefore treated with great care and used only for high quality chocolate. However, Criollo accounts for less than 10% of the total harvest.

Over 90% of the total cocoa harvest comes from the standard quality or Forastero family with its different hybrids and varieties. The main cultivation areas are West Africa, Brazil and Southeast Asia. The hardy and productive Forastero trees provide a cocoa which is rather bitter and sharp, and which is also cheaper than Criollo. Within this group there are finer and more ordinary qualities, depending on the region where the fruits are grown, and these are selected, or mixed together, according to the purpose for which they are to be used.

Where cocoa grows

The oldest cultivation areas are to be found in the north of South America and in Central America. Mexico, Venezuela and Ecuador are seen as the original home of the cocoa bean. Later, cocoa cultivation spread further south, mainly to Brazil, and in the late 19th century it crossed the Atlantic to the equatorial region of West Africa. Unlike coffee, cocoa is grown mainly by peasant farmers rather than in large plantations, often as a secondary source of income. Since the mid 20th century, Indonesia and Malaysia have been working hard to build up cocoa plantations.





The cocoa trade

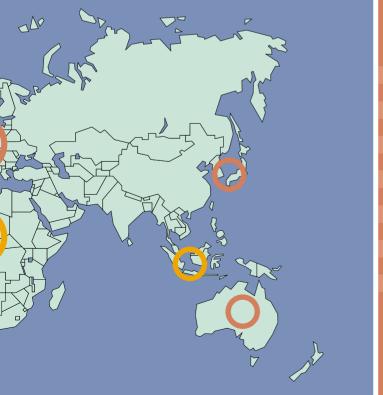
Until the late 20th century, the purchase and export of cocoa harvests was the responsibility of state organisations in most countries. Their main task was to stabilise the income of planters by fixing an annual price. They entered into buying contracts with intermediaries at the cocoa exchanges in London and New York, and set up facilities for purchasing, transporting, storing, inspecting and selling the cocoa. With the money raised, they hoped to support prices and grant preferential loans to the planters. But these state organisations were often not very efficient, and skimmed off high taxes from their earnings. It was hoped that the international cocoa agreements would stabilise prices on the world markets and thus provide the planters with a guaranteed income. However, they remained largely ineffective, mainly as a result of the continued over-production of cocoa and the conflicting interests of producer and consumer nations.

Africa	
Amca	
	Ivory Coast
	Ghana
	Nigeria
	Cameroon
Central and South America	
	Brazil
	Ecuador
	Colombia
	Mexico
	Dominican Republic
	Venezuela
Southeast Asia	
	Indonesia
	Malaysia
	Papua New Guinea

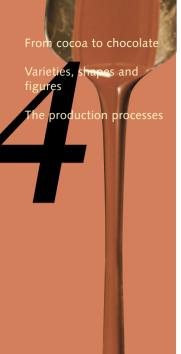


Under the influence of the World Bank and the International Monetary Fund, this raw material market, like others, has seen a certain degree of liberalisation. The producer nations are handing over cocoa trading to private companies and thus opening up competition within countries. On the other hand, large processors and manufacturers of semi-finished goods (cocoa paste, cocoa powder and cocoa butter)—which do not include the Swiss chocolate producers—are rationalising their transportation networks and moving towards relocation to the producer nations, to achieve vertical integration of the various stages of the production process. In fact, these measures are also resulting in improved income for planters.

In 2000, the world harvest amounted to 3 million tons. Only about 1% of this was imported by Switzerland, this relatively small quantity being inversely proportional to the high reputation of Swiss chocolate.



The main consumers of chocolate in order of importance:		
Eur	ope	
		Germany
		Britain
		France
		Italy
		Netherlands
		Belgium
		Spain
		Switzerland
Nor	th America	
		USA
		Canada
Japa	an	
Aus	tralia	



Chocolate Production

From cocoa to chocolate

"The cocoa beans are roasted until they start to crack or until the husks come away easily. Then the beans are cleaned away from the husks and a certain amount placed in the chocolate machine (a semi-circular iron cauldron with a club attached to the wall).

Under this machine a fire is made with coal, not too hot, and the contents are rubbed with the club until they have all become liquid, and no longer have a granular texture. After the gentle rubbing, the required quantity of sugar is added, and everything is blended together well. The weighed out portions are pressed into moulds, and shaken and beaten on a table until they become quite smooth on top."

Housewives, house husbands and enterprising kids: here is the recipe which anyone can use to make chocolate. If you don't have a "chocolate machine" you can use a semicircular metal bowl and a mortar instead. The only problem is that it is virtually impossible to obtain unroasted cocoa beans. And "chocolate" made in this way is not at all pleasing to our discerning modern palates!

But that is how it started—the recipe comes from a set of instructions for making chocolate from Germany, dated 1816. And this gives a rough idea of what the likes of François-Louis Cailler or Philippe Suchard would have done each day.

But our chocolate has improved considerably over the past 180 years. It can no longer be made in a domestic kitchen.

We should begin by emphasising that chocolate production depends on the ancient craft of the confectioner and—as a specialist—the chocolatier. Even today, industrial manufacturing still follows the basic stages of the original craft, although of course highly sophisticated technical apparatus has taken over the work at every stage.

Today, state-of-the-art, largely automated production methods, and increasingly refined machinery, ensure the smooth running of the chocolate production process. As well as making it possible to rationalise production, they also guarantee consistently high quality. Each individual process undergone by the cocoa beans on their way to becoming finished chocolate is precisely defined and is controlled electronically at all times. Furthermore, in accordance with the principles of modern quality management, the processes are constantly checked.





Storage

The imported raw cocoa is first subjected to detailed quality control checks. In the laboratory, specialists make sure that the cocoa beans are healthy, perfectly fermented, and comply with the check plan. Then the cocoa is stored in air-conditioned silos.

Cleaning

Before the processing itself, the raw cocoa is cleaned thoroughly using sieves and brushes. The residues of wood, sand and very fine dust are removed by powerful air currents, and metal pieces are captured by magnets.

The fermented and dried cocoa beans as they are supplied to factories.

The roasting engineer checks the beans with a probe before they leave the roaster.



Mixing

The beans are weighed out and mixed according to specific recipes. The proportions of the different varieties of cocoa form part of the closely guarded trade secrets of each chocolate factory. The aromas of beans from individual origins, in carefully calculated proportions, determine whether the flavour of the chocolate in question is stronger or more delicate.

Crushing and shelling

The crushing machine breaks the cocoa beans into medium-sized pieces. These crushed cocoa beans are separated from the husks using a sieve and vacuum equipment, and the husks are then used by other industries.

Roasting

The main aim of roasting is to develop the aroma. For a long time it has been known that roasting certain foods not only makes them more digestible, but also more aromatic. We need only think of coffee, almonds, or hazelnuts. Depending on what they are to be used for, the cocoa beans are roasted to a greater or lesser extent: for cocoa powder for instance, more intense roasting is the aim, with finer roasting for chocolate.

Grinding

The mixture of still relatively coarse crushed cocoa beans is now broken down in special mills and then, depending on the process used, fed into rollers where it is ground to form a fine cocoa paste. The heat produced by the pressure and grinding of this process liquefies the cocoa butter in the beans (approx. 50% of the bean), and a thick liquid paste appears. This is dark brown, has a characteristic strong smell and flavour, and gradually solidifies as it cools.

Individual manufacturers may alter the order of these basic processing steps according to their specific expertise and requirements, or additional steps may be added, for instance the addition of further cleaning processes to eliminate fungus, micro-organisms and undesirable residues.

Crushed cocoa beans.





Rolling mill with five steel rollers which rotate at different speeds so that the mixture is moved from bottom to top and constantly broken down.

Cocoa butter

Part of the cocoa paste is fed into large hydraulic presses which remove most of the cocoa butter. This is a fine, valuable fat with a distinctive aroma. When filtered and cleaned it looks similar to ordinary butter, but it is considerably harder. Later, when combined with the cocoa paste, it will give the chocolate its fine texture, attractive shine. and pleasant delicate lustre.

Cocoa powder

Pressing the cocoa butter out of the cocoa paste produces, almost as a by-product, "cocoa cake" which still contains 10 to 20% fat depending on the pressing. This is ground and sifted to produce cocoa powder, to which sugar may be added. This powder represents a homogenous product which is different from chocolate because of the lower proportion of cocoa butter, and also because it has not been refined, or conched.



In the rolling mills, the mixture is broken down using pressure and shearing force, and refined until the particles measure only 15 to 20 thousandths of a millimetre across.

The route to chocolate

Three basic types

Cocoa paste, cocoa butter, sugar and powdered milk are the four basic ingredients which go into chocolate. By mixing them according to certain key recipes, the three main types of chocolate are obtained which also form the fundamental basis for all other product development:

Dark chocolate:

cocoa paste + cocoa butter + sugar + vanilla or vanilla extract

Milk chocolate:

cocoa paste + cocoa butter + sugar + powdered milk + vanilla or vanilla extract

White chocolate:

cocoa butter + sugar + powdered milk + vanilla or vanilla extract

The Swiss food regulations stipulate the upper and lower limits on proportions in the mixture. However, there is enough leeway to give the recipes used by the different manufacturers their own unique character.



The paste-like chocolate mixture in the conche prior to processing.

Kneading

Cocoa paste, cocoa butter, sugar and flavourings (such as vanilla), with powdered or condensed milk for milk chocolate, are now put into the mixer together, where they are finely distributed and kneaded. This gives rise to a homogenous, paste-like mixture which already has some of the appeal of chocolate, but is still gritty in texture and does not yet have a fully rounded flavour.

Rolling

In large rolling mills, the paste is broken down and refined using pressure and shearing force, until the particles are only 15 to 20 thousands of a millimetre across (15–20 microns).

Refining (Conching)

The chocolate paste is still too bitter and too sharp, the individual elements have not yet combined with one another to create a single flavour, and the fine rounded aroma is absent. In the "conches", the chocolate paste is warmed to about 80°C by internal friction, brought about by intensive movement and strong shearing force, and it liquefies. The hours of powerful movement cause the chocolate to be aerated: the undesirable bitter smells gradually subside and the desired aromas are able to develop to the full. At the same time, the chocolate paste becomes completely homogenised, with a fine film of cocoa butter surrounding each of the microscopic particles. Now the chocolate melts on the tongue and has that delicate fineness which we all love so much.

As the manufacturing process has developed, other refining methods have come into use. The removal of unwanted flavour elements, and homogenisation, are no longer achieved simultaneously in the conche but in separate processes. These modern processes promote a consistent quality and allow considerable savings in terms of time and energy.



In modern high-performance rotary conches, the cocoa paste is heated up to about 80°C through internal friction brought about by intensive movement and strong shearing force, and becomes liquid chocolate.

Tempering

After the temporary storage of the chocolate mixture—usually in large tanks—and immediately before the moulding process, it is tempered—an important process, which will later give the set chocolate a soft lustre, a silky sheen and a rounded flavour, and which also extends its shelf life. During tempering, the chocolate mixture is heated to 50°C while being moved gently, then it is cooled to 28° and heated again to a little over 30°. By this time it has reached the right flowing consistency and preliminary level of crystallisation, so that when it has been poured into the moulds and has set, it can be removed from the moulds without difficulty.

The liquid chocolate as it comes out of the conche, ready to be placed in the moulds: fragrant, silky, totally homogenous.

Varieties, shapes and figures

Varieties of chocolate

Starting from the three basic types—plain chocolate, milk chocolate and white chocolate—an almost endless variety of products are made using very different production plants, by pouring, pressing, coating or moulding:

- chocolate bars in various weights, solid, with nuts, sultanas, etc. added. or filled:
- "small format" chocolates such as Neapolitans;
- chocolate confectionery such as confectionery bars, sticks, bite-size sweets;
- assorted chocolates with a wide range of shapes and fillings;
- novelty and seasonal items such as Easter bunnies and Christmas tree decorations:
- couverture, chocolate supplied in blocks to confectioners and pastry cooks as well as to industrial companies for further processing.

In a technical sense, we can distinguish between four basic ways of shaping chocolate products:

- pouring into moulds which are open on top, or into pre-formed packaging: bars, Neapolitans, assorted chocolates, novelty shapes;
- pouring into hinged hollow moulds: balls of all kinds, Easter bunnies,
 Easter eggs;
- coating or pouring chocolate over centres of some sort (moulded or pressed): sticks, confectionery bars, filled chocolates, liqueur chocolates;
- cutting homogenous masses which have been rolled flat or poured out, to form geometric shapes: cut or layered chocolates, confectionery bars.









View of a chocolate bar plant. The moulds are filled and shaken to remove trapped air before they enter the cooling tunnel.

Ingredients

The delightful variety of chocolate products would not be possible without the gifts of nature which were the confectioner's raw materials long before cocoa reached Europe: hazelnuts, walnuts, almonds, pine kernels and pistachios, dried fruit such as raisins and sultanas, candied fruits such as oranges, lemons, cherries and pineapple, honey, a wide variety of spirits and liqueurs and, more recently, puffed grains. The nuts are roasted and added to the chocolate, either whole or broken into pieces. They are broken down to make cracknel, ground into nougat and marzipan or mixed with chocolate to create delicious gianduja and praline fillings.









Moulding

The oldest shaping technique: the liquid chocolate is measured into flat moulds representing the shape of the finished product in reverse. The chocolate may also contain other ingredients: whole or broken nuts, almonds, hard and soft nougat, raisins, candied fruits.

After the chocolate mixture has been measured out, accurate to a fraction of a gram, the moulds slide through the plant on a production line up to 100 metres long, over a shaking section where the air bubbles contained in the mixture disappear, and then into the cooling tunnel. Once they have cooled and set, the finished products are knocked out of the mould onto a conveyor belt which takes them immediately to the fast, often fully automatic wrapping machines.

With filled bars, there are additional steps to be completed. After the first chocolate mixture is measured out, to form the shell, the moulds are tilted so that any chocolate which is not stuck to the mould flows out again. After a cool stretch, the filling mixture is measured into the resulting hollows, shaken, and cooled, and finally, the chocolate lid is poured on, to form the base of the finished product.

Hollow moulds

Three-dimensional shapes ranging from the simple ball to the imaginative Easter bunny are produced in "hollow moulds"—folding plastic moulds, the inside of which, when folded shut, represents the shape of the finished product. The required quantity of liquid chocolate is measured into these moulds, the moulds are closed, then immediately turned and shaken carefully in all directions, so that the chocolate is evenly distributed over the inner wall of the mould. The mould is then cooled and opened. The hollow chocolate shapes produced in this way can then be filled with liquid fillings which are added via a small opening.

Coating

Many modern products such as confectionery bars, but also filled chocolates, are made by sliding a pre-shaped centre through a "chocolate curtain" and thus coating it with chocolate—above and below of course. The "centre" may consist of gianduja paste, marzipan, or layered biscuit with various substances in between. Liqueur chocolates with a sugar crust are also made in this way—pre-formed sugar crusts with the liqueur sealed in are coated with chocolate.

The oldest way of shaping chocolate: the fragrant liquid chocolate is measured out into flat moulds whose shape represents the finished product in reverse.

Three-dimensional shapes are made in "hollow moulds". These moulds are turned and shaken in all directions so that the chocolate is evenly distributed over the inner wall of the mould

Many modern products such as confectionery bars, but also filled chocolates, are produced by sliding pre-formed centres through a "chocolate curtain" to coat them in chocolate

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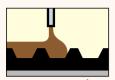
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Grinding

Filled bars, filled chocolates, various shapes

Hollow bodies

Layered or cut chocolates, confectionery bars Pre-shaped filled chocolates, confectionery bars Chocolates with a liquid filling



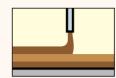
Pouring



Pouring



Measuring out



Spreading or pouring out

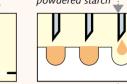


Centres





Hollows in powdered starch



Pouring in syrup



Shaking, cooling



Turning



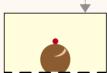
Spinning

Cooling

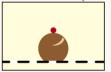


Coating

Cooling



Coating



Decorating

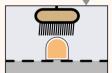




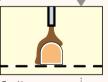
Cooling



Forming a sugar crust



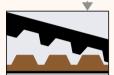
Removing powdered starch i



Coating



Cooling



Removing from moulds



Cooling

Filling



Removing from moulds



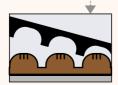




Covering



Cooling



Removing from moulds



Cutting

Layered or cut chocolates, and certain confectionery bars, consist of different separate quantities of chocolate and/or filling, which are spread, poured or pressed over one another in wide layers. After cooling, the wide multi-layered strip is cut to the desired shape and size. These chocolates and confectionery bars are either wrapped in this form, or given another coating of chocolate.

Packing

Packing is the area of chocolate production which has probably undergone the greatest technological progress. Where, at the turn of the last century, industrious female hands still wrapped chocolate bars first in foil and then in colourful printed paper which they sealed with sealing wax, today machines wrap the bars at a bewildering speed. And where, in the past, dozens of women stood at long tables, and later at conveyor belts, placing chocolates in boxes, today robots do the same work in a fraction of the time. The Swiss packaging machinery industry has been at the forefront of these developments.

Where in the past women stood at long tables, and later conveyor belts, carefully placing chocolates in boxes, today robots do the same job in a fraction of the time. Attentive staff check and correct the work of the robots.



Transporting semi-finished goods within the plant, for example from the moulds to the packing area, used to occupy large numbers of people and take up much time and space. Today, well-designed conveyor belts do this work.



Couverture and powder

Quality

Where, and for how long, can chocolate be kept?

State regulation

Chocolate is good for you



All about chocolate

Couverture

Smaller chocolate processors such as confectioners and pastry cooks, but also confectionery factories, ice cream and biscuit producers do not normally produce their own chocolate from beans, but purchase it from chocolate factories and from companies specialising in semifinished chocolate, so that they can then use it to produce their own specialities such as filled chocolates and Easter bunnies.

This kind of chocolate, which is delivered in large blocks or in liquid form in tanks, is known as couverture, and also comes in many different types for making a wide variety of specialities. Couverture contains a slightly higher proportion of cocoa butter, to make it easier to handle in liquid form. The specialities produced by pastry cooks and confectioners with great professional knowledge and much pride, which are popular with connoisseurs and foreign visitors, do a great deal to spread and reinforce the reputation of Swiss chocolate making.

Instant cocoa powder

The instant powders made mainly from sugar and defatted cocoa, which are easy to wet and which dissolve well, are used to make aromatic cocoa drinks, particular popular with children. These can be drunk hot or cold, with or without milk. Manufacturers often enrich them with vitamins and fortifying substances.

Many confectioners still make their own chocolate products, with a great deal of love and skill, making their own important contribution to the fame of Swiss chocolate. They normally obtain the chocolate in the form of "couverture" from specialist businesses or from the large chocolate factories.



Chocolate confectionery

This is the name given to products which contain at least 10%, and no more than 20% chocolate—and therefore cannot be called chocolate—or which are coated with couverture. They come in almost infinite variety: confectionery bars, snacks, sticks, chocolate-covered marshmallows, sweets.

The delightful variety of chocolate products would be unthinkable without the gifts of nature which formed the confectioner's raw materials long before cocoa arrived in Europe.

Quality

There is no internationally accepted idea of what a good chocolate should taste like. With a product such as chocolate, developed as a local craft over generations, there are inevitable national and regional tastes. These different preferences—which in the case of chocolate are still influenced by national food laws—provide a guide to "culinary" quality. We can however assume that national preferences will become more alike as a result of increasingly global markets. But despite converging tastes, one chocolate is not the same as another! Swiss chocolate makers make high claims as to quality, which they guarantee by using only first-class raw materials, careful processing and complete supervision.

Apart from the silky, spotless shine, the difference in quality between different chocolates is barely noticeable with the eye alone, even to the expert. But connoisseurs recognise quality when they break a piece from a really good bar of chocolate: the break is hard and crisp, the edges of the break are clean, the surfaces do not crumble. The nose can also detect quality: the smell of a fine chocolate is, as with a good wine, full and rounded, but never obtrusive. One then becomes very aware of true quality on the tongue: good chocolate melts like butter, does not stick to the roof of the mouth or feel gritty, and leaves hardly any aftertaste. Its flavour is fine, delicate, complete—unique.

Connoisseurs recognise quality when they break a piece from a really good bar of chocolate: the break is hard and crisp, the edges of the break are clean, the surfaces do not crumble.













Shelf life

Chocolate belongs to the rather long-lasting foodstuffs. Cocoa paste, cocoa butter and sugar, as well as—within certain limits—powdered and condensed milk, age only slowly. The aroma and appearance suffer if chocolate is kept too long, but such chocolate does not present any risk to health. The whitish coating which sometimes appears is due to the cocoa butter coming to the surface (when storage conditions are too warm) and is completely harmless. Depending on the recipe, chocolate will remain at its best for up to 12 months, and plain dark chocolate for as long as 15 months. But this does not mean that the chocolate cannot, or should not, be eaten after the end of this time, particularly if it is stored in ideal conditions (such as exist in the manufacturers' and sellers' warehouses): chocolate should be kept at a temperature of between 10° and 18°C, protected from light, moisture and foreign odours.

These relatively long periods do not quite apply to all products: the flavour of chocolates with delicate fillings will naturally age more quickly, spirits evaporate, and chocolates with fresh cream fillings must be consumed within a few days.

Refrigerator and "heatproof" chocolate

One of the secrets of the pleasure of chocolate lies in the way it melts in the mouth. This is due to the fact that cocoa butter melts at 32°C. Anyone who thinks it is important for chocolate to melt quickly should not try to enjoy it straight from the fridge, since the chocolate is then cooled to below 10°C and takes too long to melt in the mouth, thus no longer giving optimum pleasure. Chocolate from the fridge can also attract condensation. From a keeping point of view however, storage in a cool place is certainly to be recommended.

It would not be difficult, technically speaking, to make "heatproof" chocolate, which does not melt on hot summer days and in southern climes. But such chocolate would no longer melt in the mouth, and would have to be chewed. The typical chocolate pleasure would be lost.

State regulation

Nobody will be surprised to learn that in Switzerland—but also in the EU and other countries—the state imposes strict regulations as to what is, and is not, chocolate. The Swiss Foodstuffs Regulations (LMV) of 1.7.1995 contain the following provisions:

"Chocolate is a food made from cocoa seeds, cocoa paste, cocoa powder or low-fat cocoa powder and sugar, with or without the addition of cocoa butter, which meets the following criteria:

a. Total dry mass of cocoa	at least 35 per cent by volume
b. Non-fat cocoa dry mass	at least 14 per cent by volume
c. Cocoa butter	at least 18 per cent by volume"

"Milk chocolate is a food made from cocoa seeds, cocoa paste, cocoa powder or low-fat cocoa powder, sugar, milk (liquid or dried) and if necessary, semi-skimmed or skimmed milk or its component parts, with or without the addition of cocoa butter, which meets the following criteria:

a. Total dry mass of cocoa	at least 25 per cent by volume
b. Non-fat cocoa dry mass	at least 2.5 per cent by volume
c. Total milk solids obtained from the ingredients mentioned in this section	at least 14 per cent by volume
d. Milk fat	at least 3.5 per cent by volume
e. Total fat	at least 25 per cent by volume
f. Sugar	maximum 55 per cent by volume"

These complicated rules for food technologists and food scientists can only go so far. But our readers and chocolate lovers can rest assured that the state itself is working to ensure that with Swiss chocolate you will always get what you pay for!



Exquisite and imaginative filled chocolates still represent the height of the art of chocolate making, even though nowadays most of them are produced by machine.

Other vegetable fats

In agreement with the EU, the Foodstuffs Regulations also allow chocolate to contain up to 5 per cent by volume of vegetable fats other than cocoa butter. However, the prescribed minimum cocoa content must still be maintained. Up until now, no Swiss producer has yet taken advantage of this possibility to alter an existing recipe. The provision has been included with an eye to the future: other vegetable fats would allow new technological developments, for example to make chocolate more heat resistant.

It could not happen without them: attentive staff with an essential feeling for quality check the machines and take corrective action where necessary.



Physiology

The famous naturalist Alexander von Humboldt (1769–1859) said of cocoa: "Nature has nowhere else concentrated such an abundance of the most valuable foods in such a limited space as in the cocoa bean." Nor can we add much to this today, now that modern analysis is able to prove him right. Detailed analysis of chocolate uncovers surprising quantities of the most important elements of our diet: seldom do we find concentrated in one food in such a small space such large quantities of valuable and energy-giving substances, all of them completely natural. On average, a 100 g bar of good quality chocolate contains:

Constituents	Plain dark chocolate	Milk chocolate	White chocolate
Nutrients:			
Protein	3.2 g	7.6g	7.5 g
Fat	33.5 g	32.3 g	37.0 g
Carbohydrate	60.3 g	57.0 g	52.0 g
Pure lecithin	0.3 g	0.3 g	0.3 g
Theobromine	0.6g	0.2 g	-
Minerals:			
Calcium	20 mg	220 mg	250 mg
Magnesium	80 mg	50 mg	30 mg
Phosphorus	130mg	210 mg	200 mg
Filospilorus	Isonig	2101118	2001118
Trace elements:			
Iron	2.0 mg	0.8 mg	trace
Copper	0.7 mg	0.4 mg	trace
Vitamins:			
A	12 µg	90µg	66µg
B1	0.06mg	0.1 mg	0.1 mg
B2	0.06 mg	0.3 mg	0.4 mg
С	1.14 mg	3.0 mg	3.0 mg
D	1.3 µg	1.8µg	0.4 µg
E	2.4 mg	1.2 mg	trace
Usable energy:			
Kilojoules (kJ)	2320	2300	2380
Kilocalories (kcal)	555	550	570
(1µg = 1 millionth of a gram)			
46			



In the past, as well as technical skills, muscles were also required. Today the male and female specialists must also know how to operate the electronic controls.

Its great variety of valuable ingredients makes chocolate a concentrated food. It also has an invigorating effect since it contains a small amount of natural theobromine. It effectively satisfies food cravings between meals by providing the body with the energy it needs, even in small amounts. It aids concentration at work and when driving. It protects sportsmen from hypoglycaemia and boosts the stamina of manual workers. We reach for chocolate when we feel a little hungry: when doing housework, out for a walk, during the rigours of military service. Chocolate has even ventured into space with astronauts and cosmonauts. You can always rely on chocolate.

Chocolate is one of very few luxuries which do not have a dark side. It does not make you "high", is not addictive, and contains no hallucinogenic substances. But there are people who cannot keep their enjoyment of chocolate under control and who swallow it by the bar. In such cases, pleasure can become frustration, and chocolate is blamed for all kinds of health problems.

Sheer prejudice!

Chocolate makes you fat, they say. Wrong. Milk chocolate provides about 550 kcal per 100 g and contains 54% carbohydrate, 31.5% fat and 9% protein. In terms of calories, a line of chocolate weighing about 15 g is equivalent to an apple or a slice of wholemeal bread. If the bathroom scales enter the danger zone, this is as likely to be caused by an apple or a slice of bread as by a row of chocolate. But a whole bar is more like a meal consisting of 7 slices of bread...

Chocolate causes tooth decay. Not entirely false. Tooth decay is caused by bacteria in the mouth which form a coating (plaque) on the surface of the teeth. All carbohydrates which can be broken down, such as sugars and starches, provide an ideal breeding ground for these micro-organisms. The bacteria convert these substances into acid, which in turn attacks and strips the tooth enamel. But good oral hygiene with fluoride toothpaste gives dental caries little chance to develop. And chocolate even contains anti-decay factors which have been scientifically proven. The tannin contained in cocoa slows down the activity of the bacteria. Traces of oxalic acid prevent the activity of enzymes and thus the build-up of acid. Milk proteins such as casein in milk chocolate act against the formation of plaque. Calcium and phosphorus encourage mineral formation in the teeth.



Permanent inspections or spot checks during the manufacturing process ensure consistent quality which the producers guarantee to consumers.

Chocolate causes headaches. Wrong. People who suffer from migraine are quick to blame chocolate. But in mass screening, chocolate was a factor, but not the only factor, in only around 15% of migraine patients.

Chocolate causes acne. Wrong. Acne is the result of blocked sebaceous glands. Various studies have made it clear that there is no connection between acne and the consumption of chocolate.

Chocolate is a risk factor contributing to raised cholesterol levels. Wrong. One of the main components of cocoa butter is stearic acid, a saturated fatty acid. But stearic acid reacts differently in the body from other saturated fatty acids, does not affect the cholesterol level, and thus does not give rise to any deposits in the blood vessels.

People become dependent on chocolate. Wrong. It is true that chocolate contains theobromine and traces of caffeine, substances which belong to the methylxanthine group and which act as mild stimulants. But they are not toxic. And a row of chocolate contains much less caffeine than a cup of coffee or tea, or a glass of cola.

Chocolate causes constipation. Wrong. Digestive problems such as constipation are usually attributable to poor eating habits and not to individual foods, and that includes chocolate.

The utmost cleanliness is absolutely essential when producing food. Modern materials such as chromium steel and aluminium make it easier. Tank store in a modern chocolate factory.



Caution recommended

No allergies to cocoa have yet been recorded. However, the situation is different when it comes to nuts, which are often used as ingredients. People who suffer from nut allergies should be careful, since in a few rare cases, even very small quantities of nut in chocolate can trigger a reaction.

Summary: Chocolate is good and healthy. It supports the balanced diet which should always be our aim, but it does not replace it. We should remember that you can have too much of a good thing. Or as Goethe put it: Moderation is good in all things.

GMOs (genetically modified organisms)

Since the mid 1990s there have been various food ingredients on the market which are based on genetically modified organisms (GMOs). Knowing that the majority of consumers reject products with genetically modified ingredients, the Swiss chocolate producers are doing everything they can to manage with ingredients from conventional sources for as long as possible. However, genetically modified ingredients in small quantities may unintentionally become mixed with conventional raw materials at the seed stage, during harvest or during



transportation. To ensure that the strict specifications contained in the foodstuffs legislation can be adhered to, chocolate and all its ingredients undergo continuing scientific testing.

These analyses also test lecithin, for example. Lecithin is a natural product which is obtained primarily from soya beans. In chocolate production it is used in minute quantities as an important emulsifier, to ensure that the chocolate flows better when being measured into moulds and used for coating.

Environmental impact of manufacture

In general, the chocolate industry is in a relatively favourable position, in that it works only with natural products, the processing of which places little strain on the environment. In areas such as energy consumption, water, transportation, recycling of packaging used during transportation, etc., which tend to be hidden from the public, Swiss manufacturers do everything which is ecologically reasonable and financially sustainable to protect the environment and save resources.

Factory visits

It is understandable that many chocolate lovers, especially children, would like to see how their favourite treat is made. But many producers—like other manufacturers of sensitive products such as foods—are unable to allow factory visits for technical reasons such as the layout of their production areas. Please do not be disappointed therefore, if your wish cannot be satisfied.

CHOCOSUISSE

A little over 100 years ago—on 1 July 1901 to be precise—16 chocolate manufacturers came together to form the "Union libre des fabricants suisses de chocolat", to represent the common interests of the sector. As early as 1916 the association underwent a fundamental reorganisation and was renamed as a result. Its new name was "Chambre syndicale des fabricants suisses de chocolat" and it restricted itself to dealing with problems affecting the sector. At the same time, the "Convention chocolatière suisse" was established, and dealt with matters relating to marketing and contract terms until it was dissolved in 1994. From 1939 to 1946, the 36 chocolate producers in existence at the time were combined within a compulsory wartime syndicate, to enable them to contribute to supplying Switzerland during the Second World War. Since 1946, the association of Swiss chocolate producers has been called "Chocosuisse".



In large computer-controlled stores, the finished chocolate products are kept in ideal conditions until they can be delivered to holding warehouses and retail shops.



Chocosuisse is where the Swiss chocolate industry comes together for representational purposes, and it comprises 15 companies involved in the industrial manufacture of chocolate and chocolate products, as well as the biggest importers of finished products. Chocosuisse serves its member companies and is committed to a competitive Swiss chocolate industry. Chocosuisse represents the interests of the Swiss chocolate industry in dealings with public bodies, leading business organisations, trade unions and the public. Chocosuisse protects the good reputation which Swiss chocolate enjoys throughout the world, and defends itself resolutely at home and abroad against the misuse of the "Swiss chocolate" label. Chocosuisse deals with matters relating to employment law, safety at work, foreign trade, food safety, agricultural policy, further education and training etc., and ensures that member companies receive up-to-date information. Members of Chocosuisse receive support in connection with business management, food laws, the law in general, and knowledge specific to chocolate, from the association office as required. Chocosuisse is the first point of contact for school children and students interested in producing presentations or written work on the chocolate industry, and is responsible for working with the public on behalf of the industry as a whole. Chocosuisse works within international organisations and supports action to ensure that cocoa production is of high quality and meets the needs of all concerned.

Chocosuisse and its member companies are aware of their social responsibilities as employers. Since 1938 there has been a collective labour agreement for the Swiss chocolate industry, setting out employment terms and conditions to which factory employees are entitled. Chocosuisse has entered into contracts with the VHTL and SYNA trade unions.

Would you like more information?

For more information about anything to do with chocolate, see the publications listed on page 59. Current figures relating to the Swiss chocolate market can be obtained from Chocosuisse in Berne (Münzgraben 6, Postfach, CH-3000 Berne 7; Tel. +(0)31 310 09 90, Fax +(0)31 310 09 99, Internet: www.chocosuisse.ch)

Chocolate mousse Creams and parfait Chocolate cake Drinking chocolate



Recipes using chocolate

There are endless possibilities for making the finest drinks and desserts from chocolate and cocoa. You will find countless recipes in the relevant cookery and recipe books. We are therefore restricting ourselves here to just a few recipes to inspire you and launch you into a delicious world of chocolate pleasure.

Chocolate mousse Simple version

100g plain or milk chocolate

50ml cream

Break the chocolate into small pieces. Bring the cream to the boil quickly and remove from the heat. Add the chocolate pieces and stir until the chocolate has melted.

Chill overnight or for at least 3–4 hours (refrigerate at about 5°C.). Before serving, beat the mixture with a hand whisk until it is light and fluffy.

Serving suggestion:

Place the mousse in an icing bag and pipe it onto round biscuits, decorate with grated chocolate.

Chocolate mousse Rich version, for 6-8 people

2 bars of plain chocolate
1 bar of light-coloured milk chocolate
100ml milk
300ml double cream
3 egg yolks
3 egg whites
1 tbsp of sugar

Break the chocolate into pieces, place in a basin with the milk and melt over a pan of hot water (no hotter than 60°C) until the chocolate has dissolved in the milk. Remove the basin from the water and mix in the egg yolks. Beat the egg whites until stiff, add the sugar and beat for another minute, then fold into the chocolate mixture until it is well mixed. Beat the cream until stiff and mix into the chocolate mixture. Place the mousse in a glass bowl, cover with clingfilm and chill for 2–3 hours or longer. Can be served with pouring cream and biscuits.



Gourmet chocolate cream

200g plain chocolate

500 ml milk 30 g butter 1 tbsp cornflour

1 tbsp instant coffee powder

4 eggs 50g sugar 2 tbsp Kirsch 150–200ml cream ½ tsp vanilla sugar

Place the butter, cornflour, milk, chocolate (broken into pieces) and coffee in a pan and heat gently, stirring continuously. Place the eggs in a basin and beat with the sugar until frothy. Pour in the chocolate sauce, stirring well. Return the whole mixture to the pan and heat, stirring, until it thickens, but do not allow to boil. Cool immediately. Then season with Kirsch. Sieve the cream into a basin and chill. Flavour the cream with vanilla sugar and use to decorate the chocolate cream.

Poire Belle Hélène

400 ml water 2 tbsp sugar

1 strip of lemon zest 1 tbsp of lemon juice

4 pears (or 1 tin of peeled pear halves)

1 cake

2-4 tbsp Maraschino, Williams or Cognac

150g plain chocolate

30g butter

150ml milk or single cream

2 egg yolks1 tbsp sugar

Bring the water, lemon zest, lemon juice and sugar to the boil. Peel and halve the pears, remove the core with a spoon. Cook the pears in the sugar syrup until they are soft and have a yellowish, glazed appearance. Cool ¾ of the pear juice, season with Maraschino, Williams or Cognac. Cut the cake into pieces and soak these in the pear juice. Place the pear halves on top, domed side upwards.

Break the chocolate into small pieces, heat gently together with the sugar, butter, and milk or cream, until the chocolate has melted. Remove the pan from the heat and stir in the egg yolk. Pour this warm chocolate cream over the pear halves. Serve hot or cold.





Chocolate parfait

200g plain chocolate

250 ml cream
4 eggs
6 tbsp icing sugar

Melt the chocolate and icing sugar, with 2 dessertspoons of warm water, in a basin over a pan. Separate the eggs. Beat the egg whites until stiff. Stirring briskly, add first the egg yolks and then the egg whites, and place the mixture in the fridge (freezer compartment) to cool. When cool, fold in the whipped cream. Leave in the fridge for 2 to 3 hours.

Chocolate mousse cake (no-bake cake)

4 bars of plain chocolate
1l boiling water
2 tbsp freeze-dried coffee

2 tbsp hot water 150g butter

3 tbsp Grand Marnier or Kirsch

6 egg yolks 6 egg whites Pinch of salt

Optional: grated zest of half an orange and 1–2 sugar cubes

Line a cake tin with clingfilm.

Break the bars of chocolate in half and place them in a large bowl, then cover with boiling water. Leave to stand until the chocolate is soft when tested with the point of a knife. Then carefully pour off the water, leaving just 1 tablespoonful. Mix in the butter and egg yolks. Dissolve the coffee in 2 tablespoonfuls of hot water, and add to the mixture along with the Grand Marnier or Kirsch and orange zest, rubbed into sugar cubes, if used. Add a pinch of salt to the egg whites and beat until stiff, then fold into the chocolate mixture until everything is well mixed. Then place the mixture in the cake tin and chill for at least 3 hours.

Before serving, turn out onto a plate and decorate with slices of orange.

If you wish, you can dip half of the orange slices into the chocolate mixture or a chocolate glaze first.

Chocolate cake like granny used to make

150g	butter
¹/₄ tsp	salt
100g	granulated sugar
5	egg yolks
150g	finely ground hazelnuts or almonds
150g	plain chocolate
100g	flour
1 tsp	baking powder
5	egg whites
100g	sugar

Butter a 28cm long rectangular cake tin and line the base and the shorter sides with baking paper.

Mix the butter with the salt until it forms peaks, then mix in 100 g sugar and the egg yolks, preferably using an electric mixer. Chop the chocolate finely with a knife, and mix in together with the ground nuts. Sift the flour and baking powder and mix well into the foamy mixture. Beat the egg whites until stiff, then beat in 100 g sugar to produce a shiny mixture. Fold this carefully into the cake mixture until it is all well mixed in. Place in the cake tin and cook in a preheated oven at 180°C/350°F/Gas Mark 4 for 50 minutes. Test with a skewer. Allow to cool, then sift icing sugar over the top.

Café Louvois

Mix equal quantities of hot drinking chocolate and hot black coffee, and decorate each cup with a topping of whipped cream.

Mocha coffee

Add a small piece of plain chocolate to a cup of hot espresso, flavour with a dash of Kirsch and top with whipped cream.





Chocolate cocktail

60g plain chocolate

500 ml milk egg yolk

of rum, port or Cognac 1 glass

Dissolve 60 g chocolate in 500 ml milk over a low heat and leave to cool in the fridge. In a cocktail shaker, mix the cooled liquid with one egg yolk and a small glass of rum, port or Cognac.

Driver's cocktail

60g plain chocolate

500 ml milk 1 tbsb sugar

of orange juice 1 glass

Dissolve the chocolate in the milk over a low heat and leave in the fridge to cool. In a mixer, mix the cold liquid with the sugar and orange juice.

Montezuma cocktail

70 g plain chocolate

500 ml milk 2 tbsp of honey

grated zest of ½ lemon

½ small glass of rum of arrack 1/4 small glass allspice, ginger

As exotic as the king of the Aztecs!

Dissolve the chocolate in the milk over a low heat and leave to cool in the fridge. In a mixer or shaker, mix the honey, lemon zest, rum, arrack and ¼ tsp each of allspice and ginger into the cold liquid.



Picture credits

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