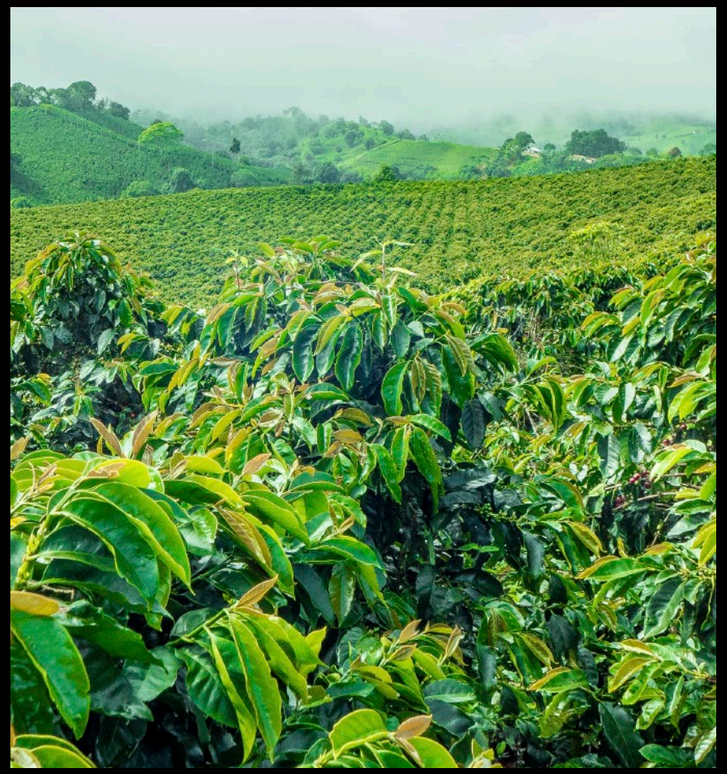
WMF Coffee Excellence

FROM BEAN TO CUP,
THE PATH OF COFFEE EXCELLENCE.

Contents

The History of Coffee

FROM MYSTERIOUS ORIGINS TO RICH REWARDS



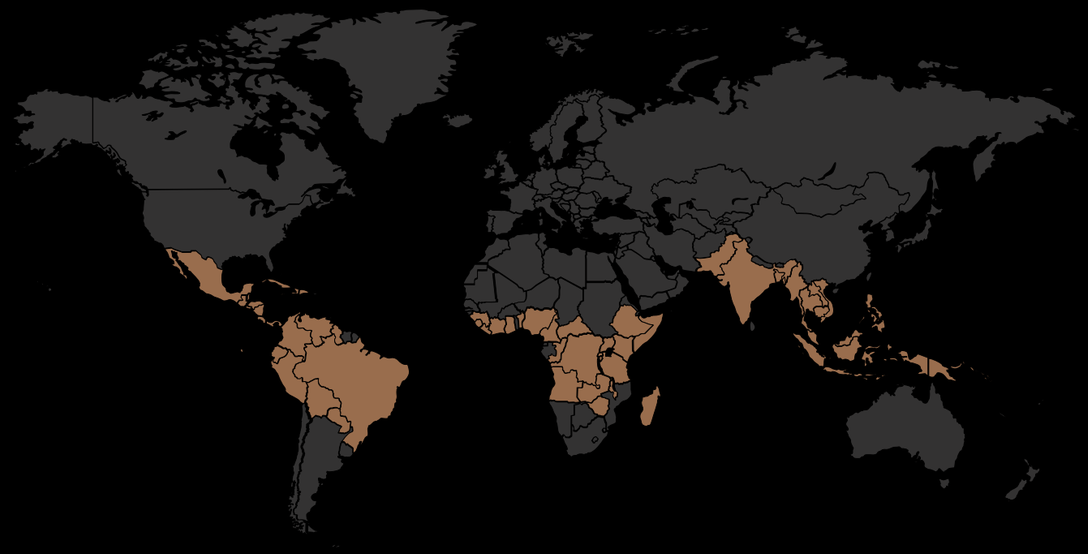
The truth about how and when coffee was first discovered is veiled in myth and legend. What is known is that the origins of the coffee plant can be traced back to southern Ethiopia. The first drinks were made for medical purposes, using the cherries and leaves of the plant, while roasting and grinding of the beans were introduced later in the Arabian peninsula. By the 15th century, coffee was being consumed in the Sufi monasteries of Yemen, before spreading over the following century to Persia, Egypt, Syria and Turkey. From there, it made its way to Europe, where it became popular in the 17th century. Coffee was not cultivated outside of Arabia until the second half of the 17th century, when the Dutch managed to acquire seedlings and successfully transported them to the East Indies. In the 18th century, the Portuguese brought coffee to Brazil, from where it spread around the Americas, becoming one of the most profitable crops for export. After crude oil, coffee is now the most sought commodity in the world.

Countries of Origin

THE PLANT THAT HAS CIRCLED THE GLOBE

Coffee is grown in South and Central America, Asia and Africa. The region where climatic conditions are best suited, generally known as the Coffee Belt, is located along the equatorial zone, between latitudes 23 degrees north and 25 degrees south.

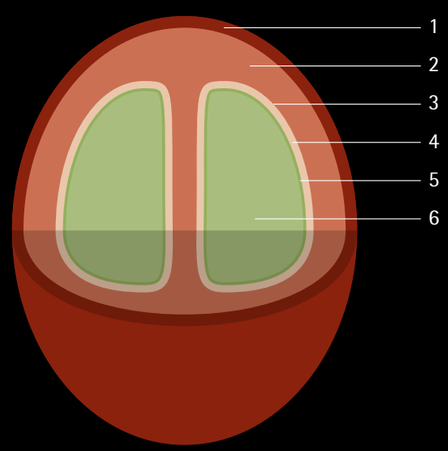
Coffee plants are highly challenging to grow, requiring the right values for a series of factors including elevation, temperature, humidity, rainfall, sun, water and soil conditions. Of the countries that satisfy these conditions, Brazil is the world's main producer, followed by Vietnam - which has shown enormous growth over the last few decades - and Colombia. In these countries coffee plants are often grown, harvested and processed industrially on large plantations. In Ethiopia where the plant originated, on the other hand, there are still many small gardens where coffee is grown and harvested by hand. Recent years have seen considerable change in the panorama of coffee producing countries, for a variety of reasons from politics to strategic choices, but most importantly climate change.



The Plant and its Cherries

THE DELICATE TREE BEARING PRECIOUS FRUIT

Coffee beans come from the fruit - known as cherries - of several species of small tree of the genus Coffea. In the wild, the plants can grow up to 10 metres tall, but when cultivated they are generally cut down to a smaller size for easy harvesting. Being very sensitive, coffee plants often grow in the shadow of large trees to protect them for excessive solar radiation and strong winds. These larger trees are affectionately called "coffee mamas".



1. **OUTER SKIN** exocarp
2. **PULP** mesocarp
3. **MUCILAGE** (pectin layer) mesocarp
4. **HULL** (parchment) endocarp
5. **SILVER SKIN** endosperm
6. **COFFEE BEAN** endosperm

Most cherries grow with two coffee beans inside, although in fact there may be any number from one right up to seventeen. It is important for coffee cherries to be harvested at the perfect point of maturity in order to provide the most flavour, and because coffee cherries ripen at different times the picking process can extend over quite a lengthy period. Generally speaking, the slower the growth of the cherries, the greater the aroma of the beans.

Varieties

A TALE OF TWO SPECIES

ARABICA

ROBUSTA

Over 100 different varieties of coffea plant are known, but in terms of global agricultural importance it's all about the names of two species: Coffea Arabica, which accounts for around 60 % of worldwide production, and Coffea Canephora (Robusta), with a global market share of almost 39 %. These species are divided into many different varieties, which are cultivated according to the different conditions in the regions where they are grown. Also worth mentioning are the Excelsa and Liberica species, with the latter generating increasing interest.

	Coffee Arabica	Coffee Canephora (Robusta)
Country of origin	East Africa (Ethiopia)	West and Central Africa (Congo, Uganda)
Growing height	800 - 2200 metres altitude (highland)	Up to 800 metres altitude (lowland)
Ideal temperature	15 - 24 °C	22 - 30 °C
Reproduction	Self-fertilisation	Cross-fertilisation
Shape of beans	Oval, flat, long, S-shape cut	Round, straight cut, tip to one side
Oil content	13 - 17 %	7 - 11 %
Caffeine content	1 - 1.5 % of the weight	2 - 2.5 % of the weight
Crop yeld for 1 kg raw coffee	4 - 7 kg of coffee cherries	2.5 - 4 kg of coffee cherries
Aroma taste	Fine, fruity, acidity notes	Muddy, woody, strong, bitter
Main varieties	Tipica, Bourbon, Catuai, Pacamara	Robusta, Conillon, Old Paradena

Harvest, Processing and Transportation

THE LONG JOURNEY TO THE CUP STARTS HERE

HARVESTING

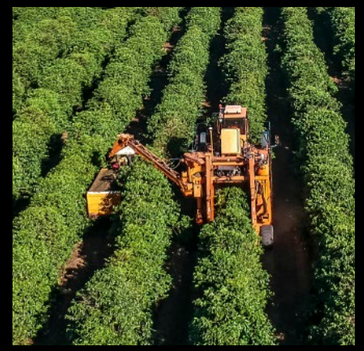
Coffee plants are trees that are mostly cut back to shrubs, making it easier to harvest the coffee cherries that grow on them. A number of different harvesting methods can be used, depending on the structure of the farm, the local geology, and the desired quality.

PICKING

To ensure the highest quality coffee beans, only the ripe ones should be harvested. With the picking method this is done manually, so that only perfectly mature cherries are taken from the plant. The process is repeated after a few days, when the next cherries are ripe. This is the most labour-intensive and expensive way to harvest.

STRIPPING

The stripping method is mostly done by hand as well. The picker removes all cherries from one branch simultaneously, by encircling it with his hand and then simply pulling it down to remove all the fruits. This method is quicker than hand-picking, but the ripeness of the cherries varies, so post-selection needs to be carried out.



MACHINE

Especially on the large farms in the lowlands of Brazil, harvesting machines are common. They harvest one tree at a time, driving along the row of trees and pulling off all the cherries mechanically. Unfortunately they also remove a lot of leaves and small sections of branches. For this reason, a lot of post-selection is required.

PROCESSING

Immediately after harvesting, a process of separating the pulp from the bean has to be initiated. There are various different methods for doing this.

DRY PROCESSING

This is the traditional way of separating the pulp from the beans. First, dirt and other unwanted particles are removed. Then the cherries are spread out on large floors and dried in the sun. When there is little humidity left, the pulp is rubbed off mechanically. Dry processing usually results in sweeter coffee with more body and less acidity.

WET PROCESSING

The wet processing method requires large quantities of water and is commonly used when the space available is limited. Special de-pulping machines are used to remove the outer skin and pulp, before the remaining mucilage is eliminated. Wet processed coffees often feature lively, fruity acids.

PULPED NATURAL

This wet processing method is used in Indonesia and Brazil. After the mechanical removal of the pulp, the beans are dried for up to a day in the sun. During the drying process, the sugars in the mucilage enter the beans by osmosis. Pulped natural coffees contain less acidity, more body and the highest sweetness of all.

FULLY WASHED

With this kind of wet processing, the pulped beans are placed in a tank or basin filled with water for several hours, initiating a process of fermentation that removes the pectin layer from the bean. The process requires close supervision as over-fermentation can lead to undesirable flavours. After fermentation, the beans are dried.

HULLING

What is left of the fruit around the bean is removed by hulling machines. They break the parchment and remove it without harming the bean itself. At this point, only the silver skin remains, and this is then polished away. Otherwise, during the roasting process it would burn and create an unpleasant taste.

EXPORT PROCESSING

First, all non-bean particles are removed. Then the beans are sorted by size using a series of sieves, in a process called screening. To ensure even roasting, it is important that the beans are roughly the same size. At the end of the process, over-fermented, unripe or visually defective beans are sorted by hand or photooptic machines.

TRANSPORTATION

For transportation, the coffee beans are usually packed in bags made of jute or sisal hemp, weighing between 30 kg and 70 kg, depending on the country and the demand. Large bags made of polypropylene are a common alternative, and these can hold one ton of beans. The majority of coffee is shipped directly in containers with no overpack.

One challenge during transportation is to keep the beans dry. Too much humidity can cause over-fermentation or mould. Clean containers are important to prevent the beans absorbing unwanted aromas.

Green coffee can be stored for approximately one year, parchment coffee just 10 days and coffee cherries spoil within 48 hours.

Roasting

THE MOMENT FLAVOUR IS TRULY BORN

ROASTING METHOD

The roasting process is what transforms a green bean with almost no taste into a wonderfully flavourful product. Roasting triggers many different chemical processes, such as the Maillard reaction, to create that characteristic coffee taste. Different roast profiles – temperature curves during roasting – are individually adapted to the coffee in question, enabling the roast master to create a unique product. The higher the roasting temperature, the darker the bean. Different degrees of roast are achieved depending on the type of preparation and beverage. In general, lighter roasts are preferred for filter coffee, whereas darker roasts are used for espresso.

ROASTING METHODS

- With conduction, heat transfer is realised through contact with the surface of the roaster. Limited contact results in uneven roasting.
- With convection, heat is transferred by hot air surrounding the coffee. As about 80 % of the surface absorbs heat, roasting is more even.

TYPES OF ROASTER

- Drum roasters normally consist of a horizontal drum that moves around its own axis, combining conduction and convection.
- Hot-air roasters like centrifugal roasters use a stream of hot air. This keeps the beans flying around, so roasting is by convection.

CONTINUOUS AND BATCH ROASTING

- In continuous roasting, green beans are fed non-stop into one side of a roasting drum and roasted beans come out the other side.
- In batch roasting, on the other hand, the roasting machine is closed during the process, so each batch is roasted separately.

STAGES OF ROASTING

DRYING

In the first stage of roasting, up to 150°C, water is vaporised and the moisture content of the beans is strongly reduced. It involves an endothermic reaction, meaning the beans absorb heat. Volatile components, including some acids, are also vaporised. The shorter this stage, more fine acids remain in the bean.

PYROLYSE, MAILLARD REACTION

The production of melanoidins causes a change in colour in the beans during the second stage of roasting, which sees the temperature rise to about 200°C. During this stage, the process becomes exothermic, meaning it produces heat. At about 170°C, the Maillard reaction begins. This chemical reaction between carbohydrates and amino acids is what gives many browned foods, including coffee, their distinctive flavour. The longer this stage lasts, the more sugar is reduced and the more aromas develop. At about 196°C, the bean cells begin to crack, due to the gases created inside, and the beans gain in size and become more porous.

DEVELOPMENT

During this stage, the sugars continue to caramelise, and oils move to the surface of the bean. A second phase of cracking occurs at about 224°C.

COOLING

In this final stage of the roasting process, the beans are actively cooled.

Blending, Decaffeinated and Instant Coffee

CREATING CONSISTENCY TO SATISFY EXPECTATIONS

BLENDING

Coffee is a natural product, so each season's harvest brings slight differences in quality and flavour. But consumers expect the same taste and quality year after year, especially in the case of industrial brands. Blending - mixing different types and varieties of coffee beans - makes it possible to achieve a consistent flavour profile.

Industrial blends can contain up to ten different types of bean. Smaller and speciality coffee roasters, on the other hand, tend to use blends to harmonise the high notes in certain varieties, and do not usually mix more than four different types. For espresso, most roasters prefer to add some Canephora (Robusta) to a majority of Arabica beans, to produce a better crema.

Blending can occur either before or after roasting. With pre-blending, the blend is mixed before roasting and large batches can then be roasted at the same time. But because for each variety and origin the beans are of different size, density and structure, they are never ideally roasted. With post-blending, the different compositions are first roasted separately to their individual ideal points and then mixed.

ONE VARIETY

BLEND

DECAFFEINATED COFFEE

Caffeine is the coffee ingredient that provokes the strongest physiological reaction, which is a key attraction of drinking coffee for many people. But sometimes this reaction is not desired, and caffeine has a bitter taste. Hence the appeal of decaffeinated coffee.

- Caffeine is removed from regular coffee beans before roasting.
- The beans are moistened to create a larger surface area.
- Different solvents are then used to soak the caffeine out of the beans.
- The solvent itself is then cleaned from the caffeine and reused.

INSTANT COFFEE

It is worth remembering that instant coffee can be of high quality, and has various advantages. For example, it is easy to brew, easy to prepare, and very durable in quality. And there is no need to dispose of leftover coffee grounds after preparing it.

- Coffee beans are roasted at high temperature, coarsely ground, then brewed in large tanks.
- After absorbing the ingredients, the water is then reduced to a thick liquid.
- This liquid is shock-frozen, vaporised, and finally ground into granules.

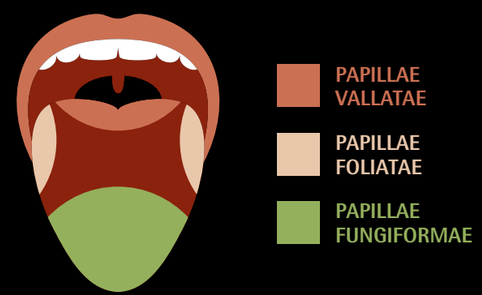
The Sensory Experience

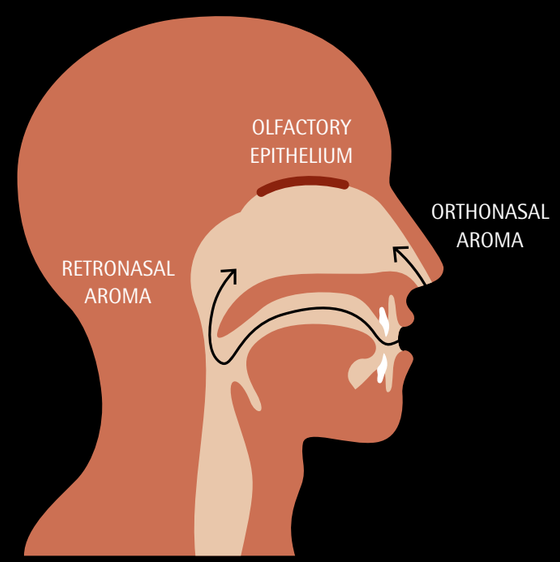
MULTIPLE PERCEPTIONS FOR PURE PLEASURE

In determining whether we enjoy coffee or not, the judgement of our senses is decisive. All five senses are involved in our perception of coffee flavour, but most importantly taste, smell and touch.

GUSTATORY PERCEPTION (TASTE)

Spread over the human tongue are thousands of papillae (taste buds), each containing 50 to 100 taste receptor cells. These cells allow us to distinguish five different taste characteristics: sour, sweet, salty, bitter and umami.





OLFACTORY PERCEPTION (SMELL)

With its strong links to emotion and memory, the sense of smell is a vital factor in how we perceive coffee flavour. Odourant molecules in the air pass through the nose (orthonasal perceptoon) or the throat (retronasal perception) and reach the olfactory epithelium. Here, these molecules bind to olfactory receptors, which allow us to distinguish over 10,000 different odours.

HAPTIC PERCEPTION (TOUCH)

Even the sense of touch is involved in our perception of coffee, in terms of its mouthfeel, in other words the body or viscosity of the beverage.

SCA COFFEE TASTER´S FLAVOUR WHEEL

When we talk about the flavour of coffee, we are actually describing the combination of taste, aroma and mouthfeel. A balanced taste means that bitterness, sweetness and acidity are in harmony, with all three being perceived but no single one of them dominating. Comprising over 800 different aromas, coffee is one of the most complex flavours we encounter. To help describe perception, coffee tasters use a sensory flavour wheel. Originally published in 1995, the Specialty Coffee Association (SCA) Flavor Wheel has been the industry standard for over two decades.

Image source:
Specialty Coffee Association,
World Coffee Research
and UC Davis Coffee Center.

From Roasted Coffee to Beverages

A FEAST FOR THE SENSES, DELIVERED IN A CUP.

The process of transforming roasted coffee beans into delicious beverages involves two main phases: first grinding the beans to access the desired compounds during extraction, and then extracting those compounds effectively by correctly controlling time and water flow.

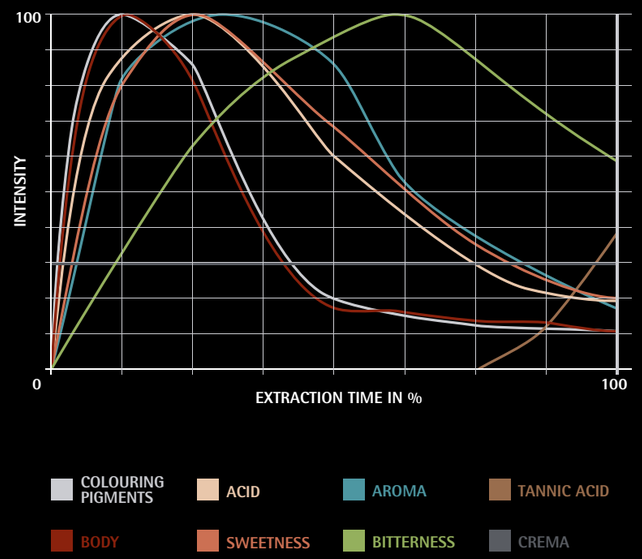
The task of the home brewer, the barista, and the fully automated coffee machine, is to manage all of the many different factors that can influence the flavour of the beverage during each step in the process. Grinding coffee beans increases the surface area, which allows the water to extract the best and most aromatic substances from the coffee. But because of that greater surface area, ground coffee also deteriorates faster than roasted beans. That's why the beans should ideally be ground immediately before brewing. Freshly ground coffee is a feast for the senses. The key to brewing a great cup of coffee is to capture all those desirable flavours and aromas in the water, while leaving behind any undesirable components, through an optimised brewing process. In addition to extracting the soluble compounds, it is necessary to remove or filter out the used coffee grounds. It is also important to bear in mind that the ideal grinding degree differs for different brewing processes and different beans. It all adds up to a lot of complexity for one "simple" cup of coffee.

Coffee Extraction

THE DELICATE PROCESS OF RELEASING THE FLAVOUR

Extraction refers to the process of separating one or more compounds from a mixture with the help of a solvent. In the case of coffee, extraction means dissolving the desired taste and flavours contained in coffee grounds with the help of water.

In order to consume coffee as a beverage, the taste and aromas in the coffee beans need to be extracted. This is a sensitive process. About 30 - 35 % of the compounds of a coffee bean can be extracted, but not all of these are desired. The best coffee and the best machine can still produce an unpleasant drink if extraction is not done correctly. Extraction also has to be done as soon as possible after grinding, as about 60 % of the volatile aromas are lost 10 minutes after grinding.



When brewing begins, colouring particles are extracted first, followed by aromas, then acids. The longer the coffee grounds are in contact with the water, the more bitter-tasting compounds are extracted. To access the desired compounds, it is necessary to grind the coffee beans into small particles. The smaller the particles, the greater the relative surface area and the easier and faster the extraction.

Influencing Factors

THE MANY VARIABLES THAT AFFECT THE TASTE IN YOUR CUP

The flavour of the coffee that ultimately ends up in the cup is affected by a large number of factors. With even a small variation in a single factor leading to different results, successful extraction is a real challenge.

VARIETY, BLEND

Different varieties of coffee beans have different physical properties and chemical compounds that are dissolved and extracted differently. For blends, where different varieties are mixed, this is even more difficult to predict.

ROASTING

The results of roasting depend on the roasting profile, meaning how fast the beans are roasted; the degree, meaning how dark and porous the roast is; and the roasting date, meaning how much time elapses between roasting and brewing.

RECIPE

In the context of extraction, the term "recipe" refers to the ratio of ground coffee to water used when brewing. This is also known as the brew ratio. The correct recipe depends strongly on the brewing method being used.

GRINDING

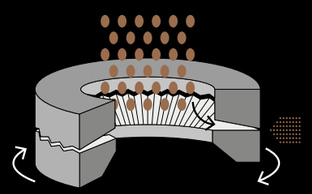
Grinding breaks apart the cells of the beans, allowing the aromas and oils to be extracted. The finer the grind, the greater the surface area and the more soluble parts will be dissolved. Because finer grounds offer greater resistance to water, it takes longer to pass through them. Whatever the grind size, the particles should ideally be as uniform in size as possible: the more uniform the particle size, the better the extraction.

WMF GRINDER

REQUIREMENTS FOR A GRINDER

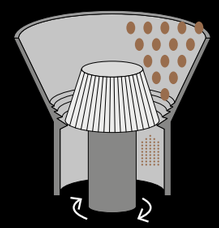
A grinder needs to be adaptable to different grind sizes, and able to produce the exact grind size for each kind of coffee. Above all, it must be capable of producing an even grinding result for each batch, and achieving consistent results over time. Other requirements include durability, ease of cleaning, and generating as little dust and as little heat as possible.

CONSTRUCTION OF GRINDERS



Flat burrs

- Two disks, fixed horizontally
- One is fixed, the other operated by a motor
- Grind size set by changing the distance between the two disks
- Centrifugal forces transport beans from centre to outside
- Very even particle size
- Can be made from ceramics or steel

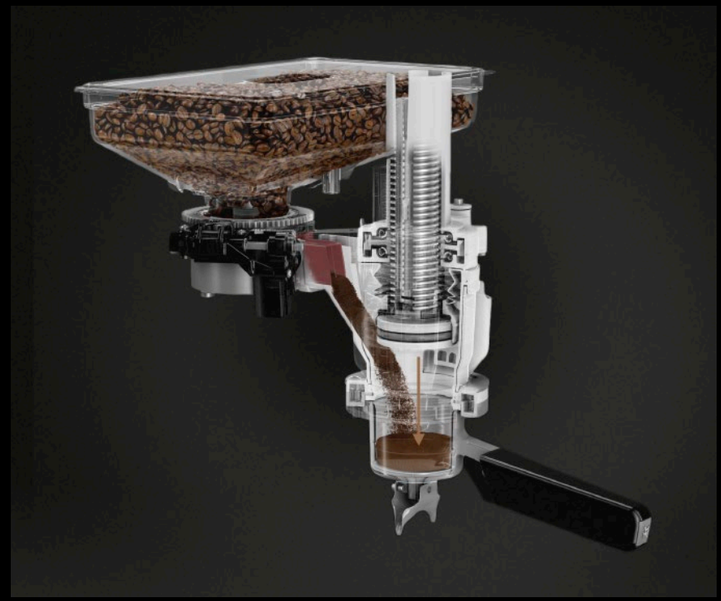


Conical burrs

- Two cones, one of them hollow, fixed vertically
- The hollow cone is fixed to the wall, the other operated by a motor
- Grind size adapted by changing the distance between the two cones
- The shape of the grinding teeth and gravity transport the ground coffee downwards
- Very low increase in temperature
- Can be made from ceramics or steel

One of the greatest challenges for a barista or for an automatic coffee machine is achieving a constant grinding result that matches the selected type of coffee and the chosen preparation method. It is also important to remember that most aromas literally evaporate into thin air within a few minutes of grinding, so for the best results freshly ground coffee should always be used.

In this whole process, the grinding degree is a decisive factor: the finer the coffee grounds, the slower the throughput time and the more substances are dissolved. However, not all components are desirable. If the coffee is ground too finely, it becomes very bitter. Grounds that are too coarse, on the other hand, result in weak and sour coffee. The ideal grind size varies depending on the brewing method being used.


WMF ESPRESSO GRINDING AND BREWING SYSTEM

ESPRESSO

- Brewed under pressure
- Water needs to be slowed down
- Finely ground coffee builds up resistance against the water
- The finer the particles, the longer the contact time
- Surface area about 120 times greater than for an intact coffee bean

FILTERED COFFEE

- Brewed by pouring water through ground coffee, using gravity
- Resistance is built up by the grind size and filter method
- More permeable filter requires coarser ground and more coffee
- Surface area about 80 times greater than for an intact coffee bean

RESISTANCE

To prevent water flowing through the coffee grounds too fast and failing to extract all the soluble elements required to achieve the perfect flavour, the ideal resistance needs to be built up. Ground coffee is never completely evenly distributed after grinding: clumps and different grind sizes can lead to uneven levels of resistance across the dose. Levelling and tamping help ensure uniform resistance, which is vital to extract the best flavour.

LEVELLING AND TAMPING

Tamping is the process of compressing the coffee to increase resistance, and levelling ensures an even flow of water through the grounds. In the case of uneven tamping, more water will pass through the shallow side of the coffee, causing bitter over-extraction, whilst the deeper side will be under-extracted, causing sour flavours.

WETTING: BLOOMING AND PRE-INFUSION

Wetting the coffee before brewing - known as blooming for filter coffee and pre-infusion for espresso - is a process to release the vapour and prepare the ground coffee for extraction. For espresso, there is a second effect of wetting: the longer the contact time during pre-infusion, the more resistance and the slower the brew.

WATER QUALITY

An overall water hardness of 4-8°DH is recommended. It consists of two parameters: carbonate and gypsum hardness. Carbonate hardness should be around 3-6°DH. A lower carbonate content highlights the acids in the coffee, while a higher content makes it dull and flat in taste. A neutral ph level of 6.5-7.5 is best for coffee.

WATER TEMPERATURE

Different compounds in coffee are extracted at different temperatures. The critical temperature is 96°C. At higher temperatures, aromas and fine acids are burnt, resulting in unpleasant flavours, while coffee brewed too cold lacks body. For cold-brewed coffee, the temperature factor is replaced by the time factor.

WATER FILTERS

Only the highest quality water allows the aroma of the coffee to fully develop. WMF water filters not only optimise the taste of the coffee, they also protect your coffee machine, providing 5-fold filtration, effective limescale protection and filtration of bypass water. As water varies from place to place, we offer a range of filters optimised for different local conditions. WMF also provides a full maintenance and filter replacement service.

BREWING METHOD, EXTRACTION

LIXIVIATION – STEEPING

With this method, the coffee is "leached" by pouring hot water over it. One of the best known examples is the Turkish mocha, where the ground coffee is boiled directly together with the water and is not filtered from the beverage at the end. Most cold brew coffee beverages are also prepared using lixiviation.

GRAVITY – DRIP FILTRATION

Here, the beverage is extracted by using gravity. Whether the filter is made of paper, porcelain or metal, and whether the coffee is brewed by hand or prepared with a filter coffee machine, the same principle applies: water flows from above through a "coffee bed", which is retained by a filter medium, into a collection container.

PRESSURISED INFUSION

Fully automatic coffee machines, espresso machines and even moka pots use pressure to drive the water through the ground coffee over a short space of time, extracting its soluble components. This process dissolves other types of compounds and additional fats, giving the coffee an intense taste and a full body.

WMF SOFT BREW COFFEE MAKER

WMF POUR OVER COFFEE CARAFFE

WMF COFFEE / TEA MAKER

IDEAL COFFEE TASTE

The ideal coffee taste is, ultimately, a matter of personal preference. But studies have shown that we appreciate coffee the most when it is prepared with the perfect balance between extraction and strength. Extraction refers to the amount of compounds released from the ground coffee. Strength, on the other hand, refers to the amount of dissolved compounds in the finished brew. Achieving the ideal balance of extraction and strength results in what is known as a "golden cup".

Coffee Beverages

A DIFFERENT DRINK FOR EVERY OCCASION

POPULAR COFFEE BEVERAGES AROUND THE WORLD

ESPRESSO

Italian in origin, global in popularity, espresso is the most famous of all coffee specialities. As a single shot or as the basis for another beverage, it is the most important little cup of coffee in the world. Because despite its size, espresso simply gives you more: more aroma, more taste, more emotion. Espresso is made with high pressure, a small amount of water and a lot of finely ground coffee. The result is a strong, short cup with a characteristic, compact hazelnut "crema": an irresistible taste of Italy.

CAFÉ CRÈME, SCHÜMLI

Mainly consumed in German-speaking countries, it is prepared in a fully automated coffee machine, using four to five times as much water as an espresso, a coarser grind and a lighter roast. The crema on top is an important feature.

CAPPUCCINO

Undoubtedly the best known coffee drink containing milk, it consists of a shot of espresso mixed with very smooth, moist milk foam. In the cup, the two ingredients mix to form a creamy drink with a white top. If not poured in by the machine directly, the foam can also be used by a barista to create Latte Art on the surface of the beverage.

LATTE MACCHIATO

Literally meaning "stained milk", latte macchiato is made with hot milk, milk foam and an espresso that forms a layer separating the two milk parts. Sometimes only half an espresso shot is used, as this drink is all about the milk.

FLAT WHITE

First served in Australia, the flat white is becoming more popular around the world. At first glance it looks similar to a cappuccino, but it features a double shot of espresso and a very smooth and liquid micro-foam.

CAFÉ AU LAIT

Meaning simply "coffee with milk" in French, this is coffee with hot milk added. Café au lait and caffè latte are used as contrasting terms, to indicate whether the beverage is served in the French or the Italian way.

CAFÉ LATTE

A single shot of espresso in a cup filled up with milk foam. Similar to a cappuccino, but far more milk is used. It differs from a latte macchiato in that it is made with a very stable milk foam, with no separation of milk and foam.

WMF FEATURED COFFEE DRINKS

These coffee specialities are exclusive to suitably configured WMF professional coffee machines.

WMF FRESH FILTERED COFFEE

A regular café crème is produced in a fully automated coffee machine, then filtered in a special capsule to remove the crema and some sediments and lipids. The result is very like a regular filter coffee, but far more aromatic.

WMF CHILLED COFFEE

The machine produces a regular espresso and then, using an internal counter cooler, its temperature is lowered to below 50°C. This drink is perfect for cold coffee cocktails or just as a single shot on ice cubes in summer.

Milk

THE SMOOTH COMPLEMENT FOR COFFEE PERFECTION

Many coffee specialities contain milk, either in liquid form or foamed. Milk not only rounds out the beverage by creating a fuller body and a smooth, comfortable mouthfeel. It has the additional advantage of adding sweetness, which masks unpleasant acid notes or bitterness that may dominate the taste of coffee. Fat is an essential flavour carrier and therefore whole milk has more flavour than skimmed milk. Alternatives such as soy milk, almond milk and oat milk may also be used.

MILK FOAMING

When air and water vapour are forced into milk, changes occur at the chemical level. The rising temperature helps unfold the protein structures, and the short protein chains thus created are polarised, with one end being attracted to water and the other repelled by it. As a result, they form a sphere around the air and bubbles are formed. This is what gives drinks like cappuccino, latte and flat white their characteristic smooth mouthfeel and rich body.

MILK FOAMING WITH THE WMF ESPRESSO

Contact Details

GET IN TOUCH TO FIND OUT MORE

WMF GmbH
WMF Platz 1
73312 Geislingen/Steige

PCM@wmf.com
www.wmf-coffeemachines.com

WMF Austria
Langer Weg 28
6020 Innsbruck

+43 512 3302
gastro@wmf.at
www.wmf-kaffeemaschinen.at

WMF in Switzerland
Allmendweg 8
4528 Zuchwil

+41 32 681 62 00
vertrieb.schweiz@schaerer.com

SEB PROFESSIONAL BeLux BV
Halfstraat 5_18
B-2630 Aartselaar | Belgium

+32 3 828 11 28
Belgium@seb-professional.com
www.wmf-coffeemachines.com/nl_be

SEB PROFESSIONAL Iberia S.A.
Avda. Llano Castellano, 15
28034 Madrid I España

+34 91 334 1216
Spain@seb-professional.com
www.wmf-coffeemachines.es

SEB PROFESSIONAL UK Limited
31 Riverside Way
UB8 2YF Uxbridge

+44 1895 816100
UK@seb-professional.com
www.wmf-coffeemachines.uk.com

SEB PROFESSIONAL France SARL
16-18 rue Dubrunfaut
75012 Paris I France

+33 1 49 80 80 10
France@seb-professional.com
www.wmf-coffeemachines.fr

SEB PROFESSIONAL Nederland B.V.
Gyroscoopweg 82-84
1042 AX Amsterdam
Showroombezoek op afspraak
+31 20 480 80 85
Netherlands@seb-professional.com
www.wmf-coffeemachines.com/nl_nl

SEB PROFESSIONAL Japan
13F Hamarikyu Parkside Place
5-6-10 Tsukiji, Chuoku Tokyo, 104-0045

+81 3 3541 1941
Japan@seb-professional.com
www.wmf-japan.co.jp

SEB PROFESSIONAL (Shanghai) Co., Ltd.
1318 North Sichuan Road, ICP, Unit 1101
200080 Shanghai

+86 21 2601 6308
China@seb-professional.com
www.wmf-coffeemachines.com

SEB PROFESSIONAL LATAM & Caribbean
Guadalupe 10801 | P.O Box 75-2120 |
Goicoechea, San Jose | Costa Rica

+506 7016 9885
LATAM@seb-professional.com
www.wmf-coffeemachines.com

SEB PROFESSIONAL North America
15501 Red Hill Avenue, Suite 200
Tustin, California 92648

+1 888 496 3435
NorthAmerica@seb-professional.com
www.wmf-coffeemachines.us.com

63.8484.0391

WMF Professional Coffee Machines

DESIGNED TO PERFORM

wmf.com