

Brewing Coffee

The Final Step of Excellence



Some coffee brewing equipment found at the home of one local aficionado.

From Left to Right: 1.5 liter French Press, Burr Grinder, Cloth Funnel sock, Moka Pot, Espresso machine, Scale, Pour-over Kettle, Frothing Pitcher, Espresso Tamper, V-60 Pour-over, Vacuum Siphon, Chemex, Hot Water Kettle, .75 Liter French Press.

You have found the tastiest high-altitude coffee beans, and you have roasted them to perfection. Now comes the final step of transforming that red cherry into a delicious cup of Coffee.

The Brew

Coffee needs to be ground and placed in water that is at least 200 degrees F. It is at this temperature that the optimum extraction of flavonoids from the ground coffee occurs. Use two level tablespoons of ground coffee per six ounces of water. This is the standard measurement.

There are many devices that have been invented over the years to brew coffee. Let's take a look at a few.

Cowboy Coffee

Take any metal container and fill it with water. Bring the water to a boil. Pull the container off the fire and dump in the ground coffee. Stir for a few moments, and cover. Let it sit for four minutes. Do not stir! Allow the grounds to sink to the bottom. Now pour the top layer of liquid into cups. You may also use a cloth to filter the grounds as you pour.



Turkish Coffee

Similar to Cowboy Coffee, but using an Ibrik, a metal container with a handle and spout. Turkish coffee is finely ground- more fine than espresso grind. Usually Cardamom is ground with the coffee and added to the brew along with sugar.

Fill the Ibrik with water but leave about an inch or two at the top of the Ibrik. Add the coffee, cardamom, and sugar. Bring the water to a boil, stirring occasionally. The coffee will foam up- thus the reason why you leave space at the top! Pull the Ibrik off the heat, and let it cool and the foam dissipate. Return it to the heat, and bring it to a boil again. It will foam up once more; pull it off the heat and let it cool for a few moments. Then set the Ibrik back on the fire, and let the water boil a third time. Turn off the heat, and let the Ibrik sit for about 3-5 minutes. This allows the coffee to settle to the bottom.

Now it is ready to serve. This is where the spout comes in. Many ibriks have a long curved spout. Pour slowly through the spout, keeping as much of the “mud” inside the ibrik. In fact, in Israel, this brew is called “Botz”, Hebrew for “mud”.



French Press

This is “cowboy coffee” refined. This brewer has a circular mesh “press” that when “plunged”, forces all the coffee grounds to the bottom of the container. Here are the steps to make one of the best brews possible.

Heat water to 200 – 204 degrees F. If it boils, take it off the heat immediately, and let it cool. Be careful with a lengthy boil, or using water that has already been boiled once. The flavonoids attach themselves to oxygen molecules. Boiling releases oxygen from water. If you use twice boiled or over boiled water, your brew will taste flat.

Grind your coffee to a course grind- small granules. Pour the coffee into the empty cylinder, add the water, give it a stir, and then cover the cylinder with the top plunger assembly. Wait four minutes, then plunge the circular mesh screen to the bottom of the cylinder. You are ready for a full flavored, hearty brew.



Drip Coffee Makers

This is the brew method of choice for the majority of coffee drinkers. It is easy, although not always the best method of extraction. Simply fill the water reservoir with the best water you have, place medium grind coffee in the metal or paper filter, and press the ‘on’ button. Hot water will drip through the coffee inside the filter and drop through to the glass coffee container. Some have heated pads to keep the coffee warm, but after 20 – 30 minutes you will notice a degradation in flavor as the coffee sits on the burner.



Percolator

The percolator was invented by American soldier and scientist Count Rumford, U.S. patented by James Mason 1865, and adapted to stove-tops by farmer Hanson Goodrich in 1889. It has been a staple of American coffee culture for decades.

The percolator has a flared metal tube that connects to a metal basket. The water is boiled, and hot water is forced up the tube to the top where it falls into the metal basket that contains the coffee grounds. After it passes through the coffee grounds, it falls back into the hot water where it gets boiled again, repeating the trip up the tube, through the basket, and back into the now-becoming-darker-by-the-moment liquid below. Most percolators have a glass bulb on top so that you can see the darkness of the coffee. When you see the color of your preferred brew, then its time to take the percolator off the heat.

Although the design of the percolator is brilliant, the science behind coffee brewing suggests that this is not the optimum method of making a delicious cup, for three reasons.

First, coffee flavonoids attach themselves to oxygen molecules. A long boiling cycle releases oxygen molecules from the water, and the resulting brew will taste ‘flat’.

Second, according to studies done by the Specialty Coffee Association of America, the optimal brewing temperature is 200-204 degrees F. I was told this by a coffee grower in Matagalpa Nicaragua one morning at his home when I was preparing a press of Ethiopian coffee. As I was beginning to pour boiling water over those precious Yirgacheffe beans, he stopped me and asked to wait until the water had cooled to 204 degrees. He then told me about a workshop he had attended at a recent SCAA convention, where they scientifically tested the extraction of flavonoids from 185 degrees to 212. He was an engineer by training who had taken his family land in the mountains around Matagalpa and planted coffee. I was impressed. He did not want to ruin the Ethiopian brew, which is hard to come by in Nicaragua!

Third, when coffee is reheated, the flavor changes, and specific flavor notes disappear. The percolator reheats coffee over and over.



Pour Over

For this smooth brew you need a V-60 cone shaped filter holder, or Chemex (hour glass shaped), paper filter, and a hot water kettle, with preferably a gooseneck spout.

Heat the water to 204 degrees F. Wet the paper filter and place it in the V-60 or Chemex. Use a finer grind that ‘Drip’, but not as fine as ‘Espresso’.

Measure on a scale 20 grams of coffee (for a 12 oz cup). Some prefer 17 grams, while others use 24 grams. For 16 oz cup, use 24-28 grams. For the Chemex, use about 50 grams of coffee and 25-28 oz. of water.



If you don't have a scale, fill the filter to about the $\frac{1}{3}$ level.

Pour a small amount of water over the coffee to wet all the grounds. Wait 20 seconds. Now begin to pour small amounts of hot water over the coffee in a circular pattern. Avoid pouring coffee over the edges of the filter- keep the pour more in the middle. Keep the level of brewing coffee to about $\frac{3}{4}$ full. Allow the coffee to brew slowly in the cone, dripping into the cup below.

Pour Over coffee is a smooth brew, although the paper filter does eliminate some of the oils that do provide certain flavor notes. It takes more time than other methods of brewing, and more attention.



Moka Pot

This handy stovetop brewer is a device that uses steam pressure and an external heat source to create a strong coffee concentrate. They are typically made of aluminum and consist of three major parts: a boiler, a filter basket and a collection chamber. There are also a few minor parts including a gasket, and a removable metal screen. The bottom boiler section has a relief valve that will allow excess steam pressure to bleed off. This is an important part of the brewer.

A "moka" pot has two chambers. Water goes into the bottom chamber with the finely ground coffee suspended in metal basket above. Be careful not to fill the water over the pressure relief valve. This could cause serious brewing and safety issues. Use a grind that is coarser than 'espresso', but finer than 'drip'.

Screw the bottom chamber together with the top chamber and place the entire pot over medium heat.

As the water boils, steam pressure forces the water through the coffee above it, into a narrow tube, and eventually collects in the upper chamber. Remove the entire assembly from the heat and allow the coffee to settle. Now you have a cup of coffee that resembles an espresso brew, with concentrated flavor.



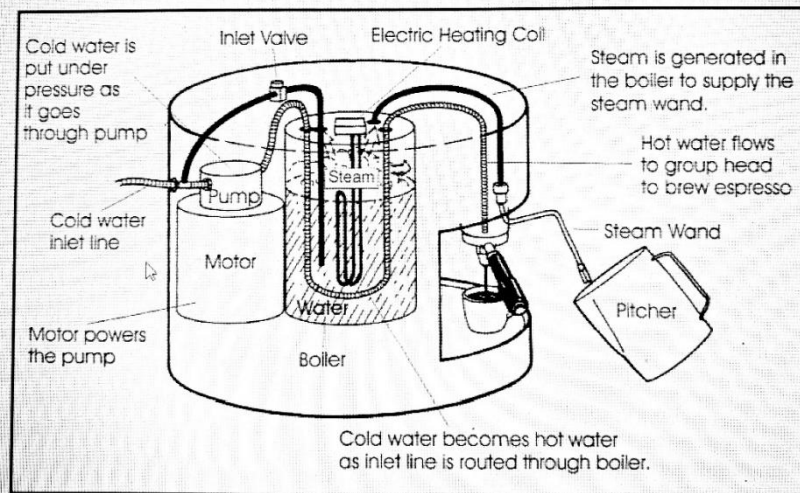
Espresso

One of the first times I stopped for gas in Italy, I noticed an espresso machine next to the cash register. Most of the drivers were served a small cup of espresso as they paid for their fuel. What a nice custom!

Espresso is a method of brewing that uses a boiler to heat water, and a pump to force the hot water through finely ground coffee to produce a syrupy brew that includes a layer of 'crema' that floats on top of the brew.

Here is a simple description I found in a tech manual. Pardon the screen texture!

Understanding Basic Concepts about Brewing Espresso



Cold water passes through a boiler that heats the water as well as produces steam for the frothing wand. The boiler water level is automatically adjusted, and the pump supplies hot water at the proper pressure to produce a good shot.

The water temperature should be around 195 degrees F. The water pressure is generally between 8-9 bars or atmospheres of pressure. Pressures higher than this will often result in a bitter extraction. Normally a double shot (2.5 to 3 oz.) should take 25-30 seconds. Many espresso machines have a flow meter to accurately measure the amount of water.

In the early days of espresso machines—around the turn of the 20th century—steam power alone was used to move hot water through the ground coffee, but the results were often acrid and bitter. The process and machinery were refined over subsequent decades, culminating around 1940 with Achille Gaggia's innovation of adding a hand-operated pump to help pressurize the water, eliminating the need to rely on steam pressure alone. This hand pump is how we've come to talk about "pulling a shot" today, though most modern espresso machines have replaced manual pumps with automated ones.

At the Rio Coco Cafes, we use Astra Espresso machines. We met Richard Hourizadeh, the owner/engineer of the company, in 2008 at the SCAA convention, and he explained the simple design of his machines. We purchased an Astra Pro machine for our home, and the Mega 2 Compact when we opened the Utila Café. Richard is quick to offer us all the technical support and parts we need to keep our machines running in good order.



Espresso coffee is finely ground to a state where the small granules start to clump together. The grind is important to produce the crema.

Coffee is placed in a portafilter and manually tamped with about 25-30 lbs. of pressure. Some espresso machines automatically tamp the coffee when the portafilter is attached to the machine.

It is important to preheat the portafilter to ensure a proper brew and formation of crema. This is usually done by running through a few cycles of hot water going through the empty portafilter. Keeping the portafilter attached to the espresso machine between shots will maintain a proper temperature.



The process:

Fill the portafilter with 14 grams of coffee (for a double shot). Tamp the coffee to make a level bed. Attach the portafilter to the 'group head'.

Press the 'start button', which engages the pump, which forces high pressure hot water through the portafilter. Notice the flow of the espresso. It should produce a thin stream of foamed liquid that forms a 'rat's tail' as it drips from the portafilter spout. Too high a volume will flow straight down, indicating a coarse grind or improper tamp.



As the espresso hits the cup, a layer of crema should begin to form on the top of the brew. Single shots should measure 1 to 1.5 oz. Double shot should be 2.5 to 3 oz.



Now is the time to serve either a straight Espresso shot, or add steamed and or foamed milk to create a number of drinks.

Milk should be foamed in a frothing pitcher before the shot is pulled. This allows settling of the frothing process, with drier foam at the top.

Here are a few of the classic espresso varieties that will be found in most Italian coffee shops:



Americano: A double espresso shot with hot water added.

Macchiato: espresso with a dollop of foam floating on top.

This is not the macchiato found in many of the chain coffee stores in the U.S. where many shots of flavor with whipped cream and more volume of steamed milk are added to the traditional recipe.

Cappuccino: 1/3 espresso, one 1/3 steamed milk, 1/3 foam. We use a clear glass cappuccino mug, adding the steamed and foamed milk first, before adding the espresso. This creates a very attractive layered cup of cappuccino.

Latte: espresso with mostly steamed milk, with a layer of foam floating on the top.

Espresso Con Panna: this is an espresso shot with whipped cream floating on top.

There are many varieties of espresso drinks that are often regional. For example, a “Flat White” something that our Aussie friends will order. It is espresso with steamed milk and very little foam on top.

At the Rio Coco Café, we serve traditional espresso drinks, but it is important to know what our friends are ordering from us based on their local coffee culture.



Cold Brew

Cold Brew coffee is made by steeping coarse ground coffee in cold water for 12-24 hours. This can be done in an open container and poured through a cloth or paper filter, or in a special cold brew container with a cloth bag. The usual recipe is one gallon of water to one pound of coffee.

The brew that is drained from the container is a concentrate, which can be diluted with cold water and chilled, or added to hot water and served.

One variation of Cold Brew is when it is infused with nitrogen, which produces a milky foam filled glass that resembles a Guinness Draught.

