

AIRFLOW ON ROASTERS WITH A MANUAL DIAL DAMPER:

The new manual dial damper systems allow for a much better precise airflow than the older steeples fan speed which was very hard to control and really only allowed about 3 settings despite the Potentiometer showing speeds of 0-100 (or 0-10).

To operate If your roaster has both the fan speed control and MDDS damper turn fan speed to 100 and use only the damper for airflow.

Depending on the type roaster you may need to turn the manual damper from 2-4 to allow enough air to start gas roaster (electric roasters are much different and will be discussed in a different note).

Once flame or burners are lit you must always keep some airflow to keep burners running and pulling flame to drum as well as through drum. But as a general guide please consider the settings below:

AIRFLOW SETTINGS ON THE MANUAL DIAL DAMPER:

2-4: Charge thru drying phase (charge to 330F)

3-6: Maillard Phase (Browning Phase) 330F to first crack

5-8: Roasting Phase (First crack until dropping beans into cooling)

Conductive heat:

During the first part of roast your main source of heat is conductive (mass touching mass) This is especially true during drying phase. Therefore it's best to generally keep airflow low (2-4). If you turn up airflow high during this phase it may slow the ROR (rate of rise) as you will be pulling cooler air into drum. (You may note BT climbing slower and even see the Hot air or ET temps drop)

The drying phase may last from average 3.5-7 minutes depending on size of roast and roaster type.

CONVECTIVE HEAT INCREASE:

During the Maillard or browning phase the momentum of roast is picking up and you and you may be able to slowly increase the air flow to pull excessive chaff out of drum and increasing smoke out of drum. But do not go from one extreme to the other as this could effect rate of rise (maybe 3-6) The Maillard will likely be shorter than drying phase lasting 1.5-3 minutes when temps range from 330F. to first crack which, depending on bean, may be 375-400F.

ROASTING PHASE: This is the most critical point as this will determine in part the development of the flavors of roast. Generally during this phase you want to slow the process keeping in mind that every 15-30 seconds the beans change much as they develop. At this point some roast-masters will increase airflow from 5-8 which will

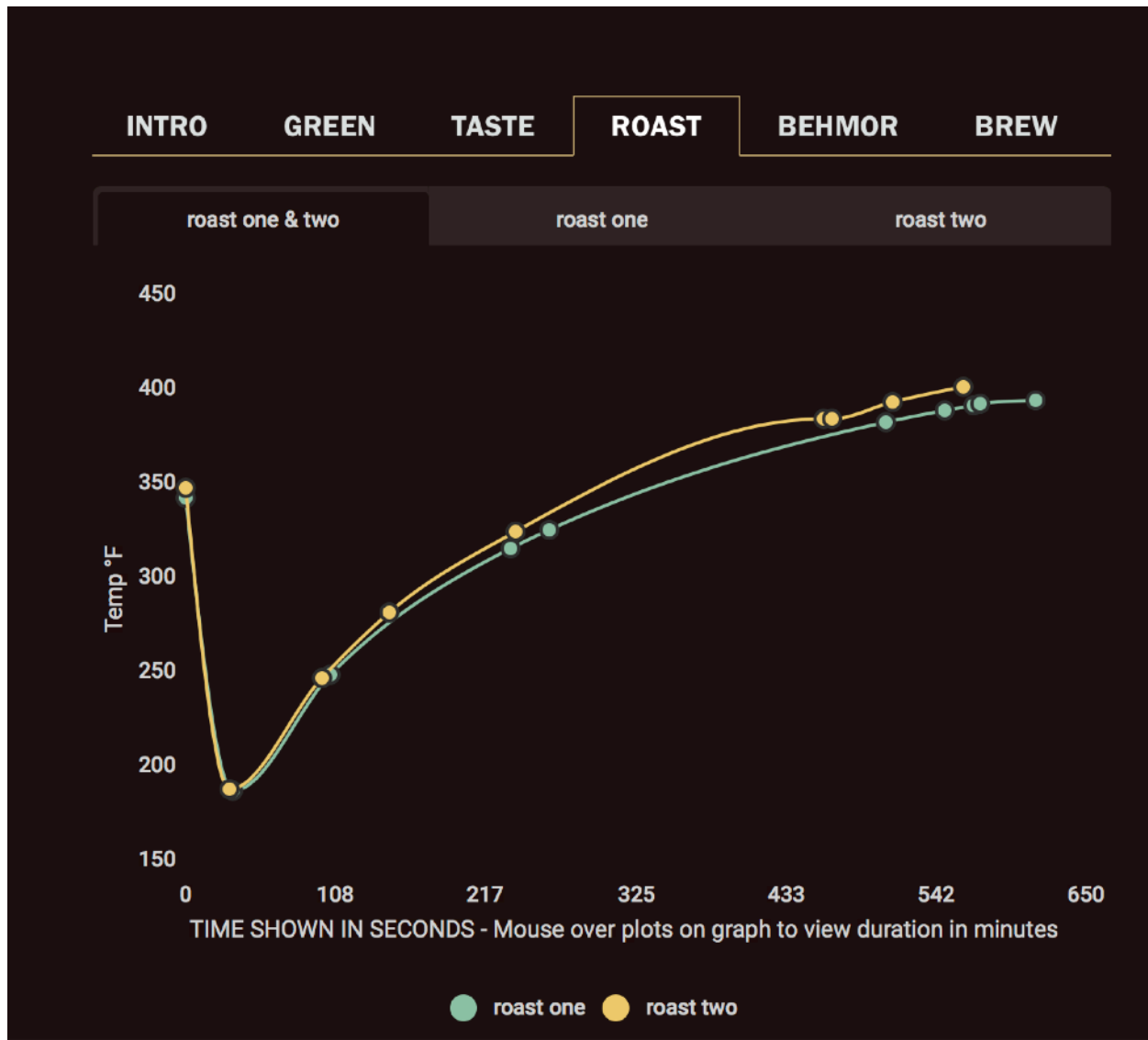
increase the ROR so therefore you will likely reduce heat unless you ROR was already slowing. On small roasters you may even cut the gas completely to help slow the ROR. This phase could last from 1.5-4 minutes depending on how dark your roast will be as well as size of roast.

DRUM SPEED CONTROL

For roasters with drum speed control find the speed at beginning of roast that allows beans to tumble in drum at about a 45 degree angle. Not moving too fast or too slow. When at the beginning of roast if drum speed is too fast while beans are getting most heat from conduction you could slow ROR by running drum too fast. Generally speaking there is no need to increase the speed of drum until the roasting phase begins and by turning up speed 5-10% this will increase ROR which may cause you to cut back gas as well.

These are all just general ideas and much that you develop is your own style of art in the roasting process. It can be helpful to observe the profiles offered by the coffee suppliers such as [Royalcoffee.com](https://royalcoffee.com) to help you understand the process.

Remember the decision making is based on BT (Bean Temperature)
Here is a sample roast profile:



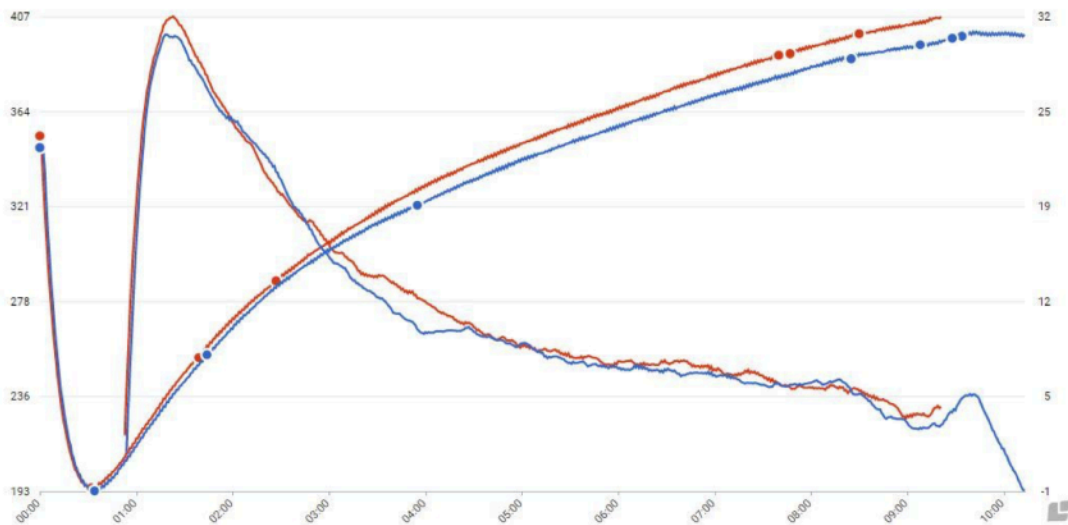
<https://royalcoffee.com/product-category/crown-jewels/>

CJ1162 - Colombia Balcón Del Cesar Mujeres Cafeteras Fully Washed Crown Jewel

October 11th, 2017 | [See This Coffee Online Here](#)

Roast one: Apple, baked lemon, butter cookie, pecan pie

Roast two: Blackberry juice, green apple, honey, vanilla, buttery texture



roast one (blue)

TIME TEMP (°F) & COMMENT

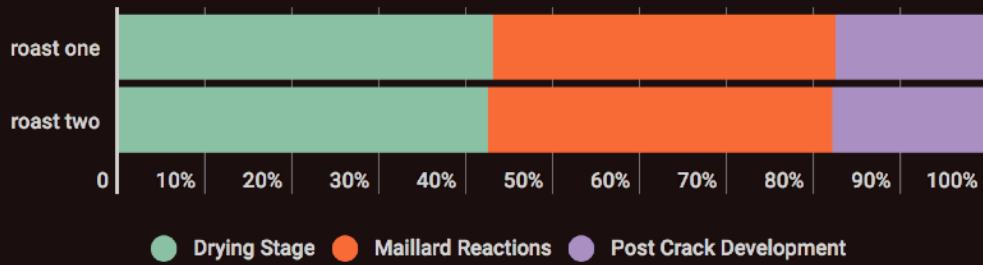
0:00	347.9 - 1 1/2 gas
0:34	192.6 - Turning Point
1:44	254.2 - 2 1/2 gas
3:55	321.8 - 3 gas
4:23	330.8 - Maillard Begins
8:25	388.1 - First Crack
9:08	394.4 - 3 1/2 gas
9:28	397.4 - 3 gas
9:34	398.3 - 2 1/2 gas
10:13	400.3 - End Roast
42.9%	4:23 Drying Stage
39.5%	4:02 Maillard Reactions
17.6%	1:48 Post-Crack Development
16.0%	Weight loss

roast two (red)

TIME TEMP (°F) & COMMENT

0:00	353.2 - 2 gas
0:32	194.0 - Turning Point
1:39	252.9 - 2 1/2 gas
2:27	287.6 - 3 gas
3:58	330.3 - Maillard Begins
7:40	389.7 - First Crack
7:47	390.4 - 3 1/4 gas
8:30	399.4 - 3 gas
9:21	407.3 - End Roast
42.4%	3:58 Drying Stage
39.6%	3:42 Maillard Reactions
18.0%	1:41 Post-Crack Development
15.0%	Weight loss

* Roasted on a 1 kilo Probatino in 400g batches



Maillard Reactions Begin

roast one: 4:23 @ 330.8 °F
roast two: 3:58 @ 330.3 °F



First Crack Begins

roast one: 8:25 @ 388.1 °F
roast one: 7:40 @ 389.7 °F



End of Roast

roast one: 10:13 @ 400.3 °F
roast two: 9:21 @ 407.3 °F



ColorTrack

roast one: whole bean 61.71 / ground 58.54
roast two: whole bean 63.05 / ground 57.44



Weight Loss

roast one: 16.0%
roast two: 15.0%