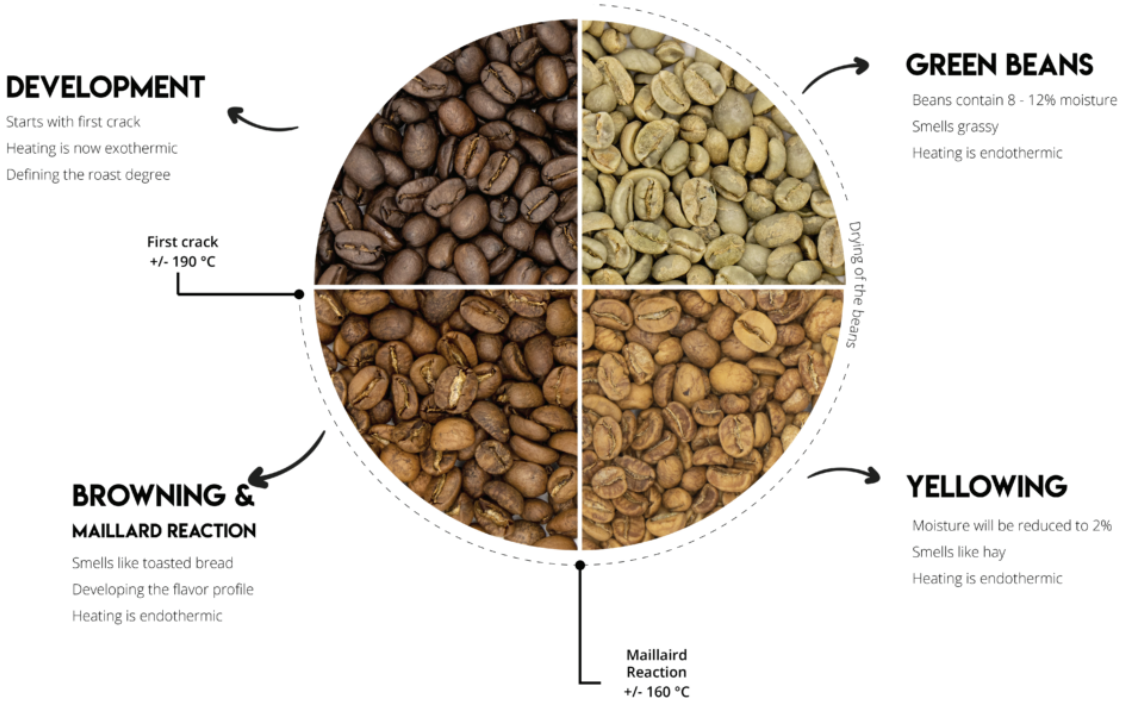
Cold Brew Factory

What is Roasting ?

(Planning A Perfect Roast Curve, Detailed Explained)



(Image from Giesen Coffee Roasters)

(Fundamental Roasting Curve Modification Concept)

— A Better Way To Recharge —

What is roasting?

Basic concept detailed explained

When talk about roasting in the subject of coffee, it's always feels like it's a complicated subject to talk about or not much people talk about it. It seems like it is some kind of mystery to talk about. When you ask someone else about roasting or even how do you roast the coffee, somehow it seems you are trying to reveal his special "secret". Actually there are numerous and plenty of books about coffee, two famous writers Scott Rao, Rob Hobs, they are like the fundamental teachers that telling you the basic about roasting.

I like the way they do, they talk about it, they write about it, and even teach you about it. I think this a very nice thing to do, sharing experience and knowledge, makes the world a better place. I am going to share some of my little experience about roasting, and hoping that you may find something inspiring or useful to you, and I will be happy about it. I am hoping that you can share what you know to me, we can keep up and making better coffee to the world. Let's get started!

Stages in roasting

Roasting step by step explained

We are going to talk about the few stages in roasting, then I will explain some of the theory in between, and finally how do you modify your batch of coffee.

Stages in roasting

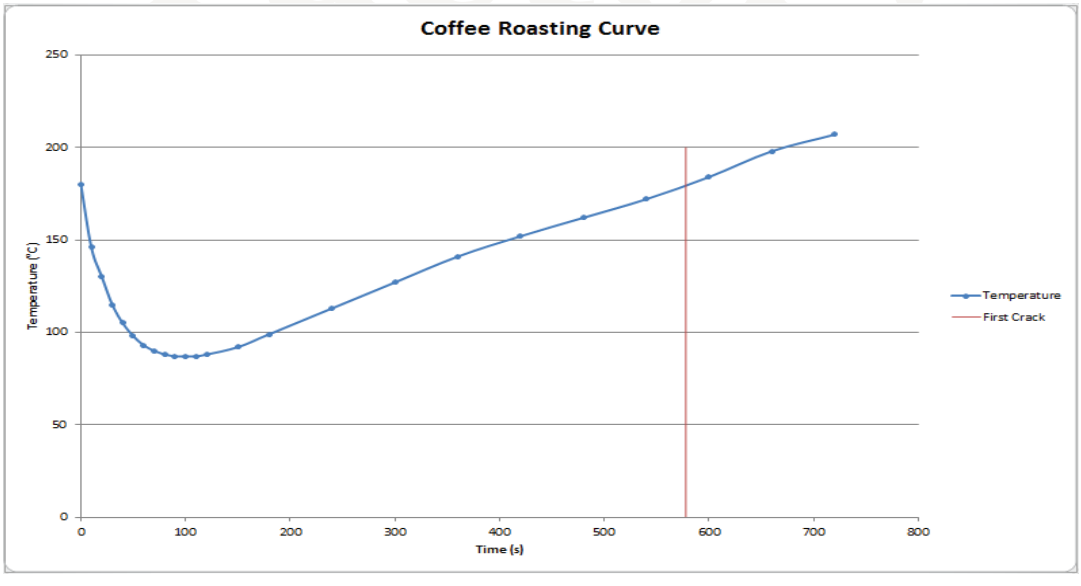
It’s easy for everybody to search and know there is actually a few critical moment during roasting.

- Charge (Start of a roast)
- Heat absorption
- Turing point
- Drying phrase
- Millard reaction
- 1st crack
- Development
- Cooling (Finish)

Stages in roasting

Seems a lot of stages, but actually it happens all along the roast from time to time, so you will face those stage minutes after minutes. Think of it as a bungee jump, that's no turning back, everything is decided at the moment you start. You can ask me directly via IG message or I am planning to do some online classes that is good price with good value, if you want to know fast, please dm us; if you can wait, wait for the online class later.

As this is just a fundamental or generally explanation, I am not going to go very deep to mess you up, I will simple explain one each right at this moment.



(Image from Chemical-engineering Students)

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Stages in roasting

1) Charge – is when you start loading off your bean into the drum, you have set certain temperature, air flow, drum speed in advance to control and expect the over results of the beans.

2) Heat absorption – is when you put the room temperature bean into the hot drum, it will absorb the heat from the drum and reach an equilibrium point.

3) Turning point – is the moment after equilibrium point and more heat is getting absorbed by the bean, and it is a control point of what temperature you want to start the roast at. Usually around 100 degrees Celsius.

4) Drying phase – when more heat is stored inside the bean, the water molecule will start to boil and evaporate. Beans will start smoking because of the steam and bean will swell as well as it getting hotter and hotter. This is actually a critical phrase where your bean can be well-developed or under-developed.

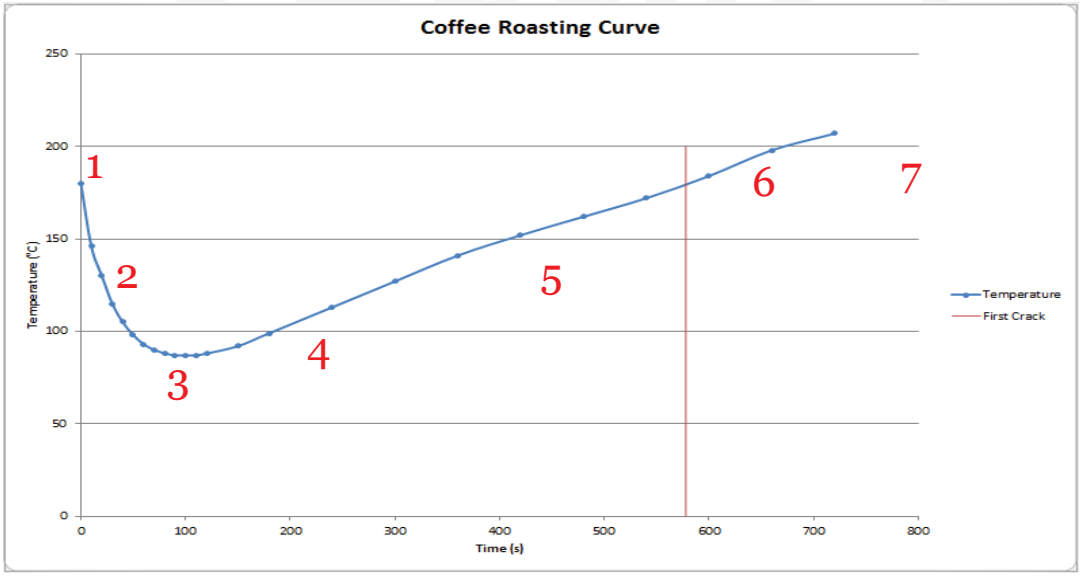
5) Millard reaction – is the chemical reaction inside the bean during temperature increase, this is also “browning” the coffee bean. The longer the stage the more substance inside the bean, more complex and thick it is; shorter will be the opposite. It is also a phrase deciding how complex your bean will be in the development phrase.

Stages in roasting

6) Development – is where the actual bean flavor developed, fruity, nutty, floral, etc. the shorter the time, the less flavor it has; the longer, the flavor will be fade away. You have a smell it for the first few testing batches, until then you know the temperature for releasing the bean from the drum.

7) Cooling – this is critical too, you have to cool the bean down as fast as possible to stop every chemical reaction inside and to preserve the overall flavor you want to have.

Well, this is a few phrase in coffee bean roasting, just a very brief intro to you guys, I could talk about it all days if you go very deep into each topics during a roast.



(Image from Chemical-engineering Students)

How do you modify a roast?

As I said just before, it's like a bungee jump, once you have decided where to start, there's actually no turning back. So where want to start (charge temperature, air flow) is very critical, it has decided how long each phrase will be, and how well the bean will be developed.

Deciding the charge temperature, that's actually try and error, there isn't any bench mark as it will be different from each roaster. But the concept will be having around 10% heat absorption stage, 35-40% drying stage, 35-40% Millard reaction, 10-15% development stage.

If you have charged you batch too high, the % of the heat absorption stage will be too fast, if you have charged too low, the % will be too slow. You will have to be familiar with your roaster and try different charge temperature in order to find a perfect one.

Once you have had a charge temperature in mind, you will have to modify the turning point by calculating the time you want to finish the roast, how much degree increase per minutes, how long the drying phrase will be, how long the Millard reaction will be, how long the development time, what temperature you want to release the bean. Ask yourself these few questions, then you will eventually have an estimated turning point.

How do you modify a roast?

How do you calculate everything?

Assume you want to roast a coffee bean in 7 minutes with 210 Degree Celsius release temperature. With a normal increase per minutes (rate of rise) of 10 degrees per minutes assume, most like the bean will absorb heat for 1 min to 1.5 min. By deducing 10 degrees everyone from 7 minutes to 1 minutes, there will be around 60 degrees increase from 1 minutes to 7 minutes, thus, we get a turning point of 140 degrees.

Here's how it works:

00:00 - drop the bean
01:00 - turning point at 140 degree
02:00 – 150 degrees
03:00 – 160 degrees
04:00 – 170 degrees
05:00 – 180 degrees
06:00 – 190 degrees, 1st crack (assume)
07:00 – 200 degrees, release the bean and cool down

This is just a very simple way of roasting, basic concept to start and plan a roast if you have just started, you can think of it as a suggestion of how you calculate a roasting curve, but do use it as a benchmark.

Continue the assumption, you have to measure how much degree your bean absorbs after it is charged, so you can decide the charge temperature easily.

Summary

After all, it is all up to you, I am just sharing some of my opinion and experience in here. I suggest you try it first before you believe in me or having any conclusion reading up until here.

What you taste and how you feel is more important, you are the one who enjoy the coffee, just give it a try.

Let's end this topic here and we will discuss more in our next e-book. Follow us on IG and stay update with us.

Stay update and get notice on our Instagram. (@coldbrewfactory)

Here is pretty much a brief intro of coffee roasting, you can dm us if you have any questions, or you may join our online that will release soon. I will see you in the next e-book, cheers!

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