

The power of airflow

The aim of roasting is to achieve an even heat transfer from the outward shell through the whole bean to the inner core. The whole coffee bean needs to be developed uniformly. The following parameters are crucial for this goal: bean size, density, processing, altitude and moisture. A roaster is supposed to know all these characteristics. This would make it possible to get better roasting results without too many attempts.

The taste of the coffee should be pure, sweet, clean, well balanced and with a delicate acidity. The body should be creamy and the finish is supposed to be smooth and pleasant. The taste of each coffee should represent its origin.

The airflow is the biggest and most effective tool which the roast master can handle. Besides it depends also on the design of the roasting machine, the temperature probes, chimney, etc.

A high airflow setting is no guarantee for a good roast though. A high airflow setting allows to roast the coffee in a shorter time because the heat transfer reaches the inner core faster. But the roast master has to find the right combination between the roasting time and the correct dose of the airflow. This will have influence on the style of roasting and on the parameters emphasized in the taste.

The correct dose is a big topic in roasting coffee. During the process of roasting the roaster has to react fast to achieve his target airflow settings.

In general there are two ways the heat transfers to the coffee: conductive (= heat transfer by the drum through the surficial contact between the drum and the bean) and convective (= heat transfer by the hot air through the surface of the bean to the inner core). Both processes have influence on the taste of the coffee and the task for the roaster is to find the right balance of these two mechanisms.

At the beginning of the roast the conductive heat transfer is crucial until the yellow phase. During the yellow phase you should increase the airflow to start the convective heat transfer. This will lead to a well developed coffee bean.

You can set the airflow just one step higher or you can set it higher in several smaller steps during the whole roasting process. It depends on your roasting machine, the green coffee and last but not least - your taste.

The effect of different airflow settings

	very low airflow	low airflow	the sweet spot of airflow	high airflow	very high airflow
aroma	+ weak aromas, flat,	+++ ok developed aromas, green notes	++++ well developed aromas, floral, more fruity notes, more complexity	+++ ok developed aromas, more chocolate & nut notes, more balanced	+ aromas are vanished
acidity	+ acidity is very emphasized, but very unpleasant (astringent), very sour, unripe fruits	++ acidity is emphasized, but slightly astringent, bright	++++ crisp, very emphasized, very balanced, very delicate, well developed	+++ balanced, but is getting unexciting	++ acidity is emphasized, but dull & boring
body	+ weak body	++ ok body	+++ good body	++++ very good, rich	+++++ very massive
sweetness	++ low sweetness	+++ good sweetness	+++++ very sweet, honey like, candy like	+++ good sweetness	++ low sweetness
bitterness	+++ bitterness is very present, bitterness of unripe fruits	++ bitterness is still present, enjoyable	+ no bitterness	+++ bitterness is noticeable	+++++ sharp, very carbonised
aftertaste	+ slightly dry aftertaste, green peas, vegetable, smoky	+++ pleasant	++++ clean, smooth, very pleasant	++ dry, light unpleasant	+ very dry, not enjoyable, a glass of water please!