



# C&A – Q&A

## What does a GC do?

## Why do we use a GC for our lab analysis?

Around here, you are consistently hearing our labs say that they have to run a GC or that they are waiting for the GC or that the GC was no good. This C&A Q&A is going to try to explain what a GC is and why we use it for our essential oils and aroma chemical analysis.

GC refers to gas chromatography. Gas chromatography is a type of chromatography used in analytical chemistry for separating and analyzing compounds. Typically used for testing purity and separating mixtures, compounds, oils and chemicals gas chromatography is essential to aroma chemical analysis & essential oil chemistry.

As discussed previously, essential oils are made up of naturally occurring chemicals or constituents, in order to see these components the oil must be broken down into the components in a careful and reproducible way. This is where GC comes into play.

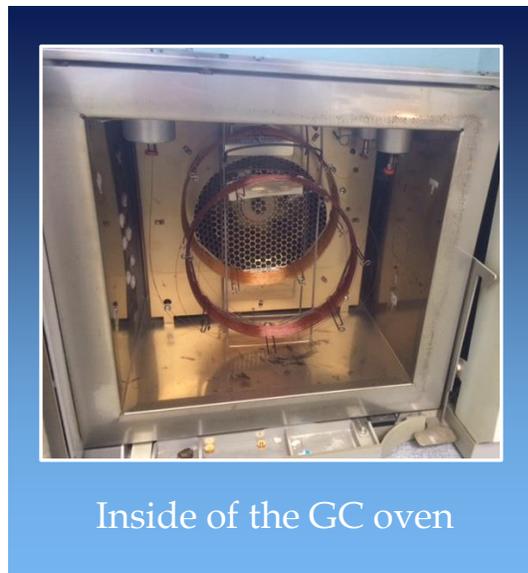
A GC can vaporize materials without decomposition and once vaporized the components can be separated and analyzed. Materials are injected into a heated injection port and vaporized at high temperatures. The vaporized sample is then carried by an inert gas along a thin column. As the sample is carried through the column it is separated into its individual components. To achieve this the column is housed inside an oven where temperature is controlled to allow components to exit the column at different times. When exiting the column the separated sample is directed to a specialized detector. The detector works to transfer the information to the GC's computer and the information obtained by the GC is placed into a graph of the detectors response versus the time the sample leaves the column, this finished graph is what is commonly called a GC curve.

We then use the GC curve to determine purity on aroma chemicals and for essential oils we use the GC curve to show us the various constituents. The GC curves for essential oils are compared to others of the same oil to be sure that all constituents are within acceptable parameters or specs. We look at percentages of the constituents as well as overall pattern and even trace components to be sure the oil is acceptable. GC analysis is also supported by our physical specs and odor comparison of the oil.

Gas chromatography is the backbone of essential oil chemistry and allows us to be sure our oils are pure. We take the time to run all our products on our GC to assure their purity and their constituents.

If you are interested in reading more about GC science you can check out the following link:

[https://simple.wikipedia.org/wiki/Gas\\_chromatography](https://simple.wikipedia.org/wiki/Gas_chromatography) or come to our labs to see our GC's in action.



Inside of the GC oven