

Gas Chromatography

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This document describes the results with gas chromatography for
Cocaine Scents for K9 Training

What is Gas Chromatography?

Gas chromatography (GC) is an analytical technique used to separate and analyze samples that can be vaporized without thermal decomposition. GC is used as one test to help identify components of a liquid mixture and determine their relative concentration. It may also be used to separate and purify components of a mixture. Additionally, gas chromatography can be used to determine vapor pressure, heat of solution, and activity coefficients. Industries often use it to monitor processes to test for contamination or ensure a process is going as planned.

First, a liquid sample is prepared. The sample is mixed with a solvent and is injected into the gas chromatograph. Typically the sample size is small -- in the microliters range. Although the sample starts out as a liquid, it is vaporized into the gas phase. An inert carrier gas is also flowing through the chromatograph. The signals from the detector are used to produce a graph, the chromatogram, which shows the amount of sample reaching the detector on the y-axis and generally how quickly it reached the detector on the x-axis (depending on what exactly the detector detects). The chromatogram shows a series of peaks. The size of the peaks is directly proportional to the amount of each component. In order to identify the peaks on a gas chromatogram, the graph needs to be compared to a chromatogram from a standard (known) mixture, to see where the peaks occur.



Results with Cocaine Scents

The cocaine scent imprint for K9 training was submitted to a third party laboratory for gas chromatography. The GC instrument is capable of identifying components at parts per million (ppm) or even parts per billion (ppb) level.

The chromatogram showed that the cocaine scents contain the desired molecules that are part of the scent formulation. No trace of any known opioid or narcotic was observed for the cocaine imprint aid.

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