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## <sup>13</sup>C ANALYSIS OF ORGANIC COMPOUNDS

### *Sample Preparation:*

Carbon stable isotope analysis is conducted on carbon dioxide gas after combusting and converting organic compounds that were separated by gas chromatography to carbon dioxide and water. Obtaining detailed VOC concentrations of any submitted sample for compound-specific carbon isotope analyses is crucial prior to commencing the analytical process, in order to decide the required sample weight or volume.

### *Sample Analysis:*

Samples are analyzed by continuous-flow isotope ratio mass spectrometry (CF-IRMS) coupled with gas chromatography and combustion. A Finnigan Deltaplus XL, Thermo is used to conduct this type of analysis, interfaced with an Agilent 6890 GC that is coupled with a Finnigan, Thermo GC Combustion III. The GC is used to separate the different organic compounds. Separated compounds are then combusted to CO<sub>2</sub> gas by the means of the combustion furnace, and then directed to the IRMS for carbon isotopic ratio measurements. A repeat sample is analyzed after every seven samples. The measurement of any sample or standard consists of measuring the separated CO<sub>2</sub> peaks(s) against set CO<sub>2</sub> reference gas pulses. Calibrated internal standards are analyzed before and after sample analysis, with one standard batch imbedded in the middle. The results are evaluated and corrected against standards that bracket the samples, and then reported against VPDB, the international reference material.

The analytical precision for analysis is  $\pm 0.5\%$ .