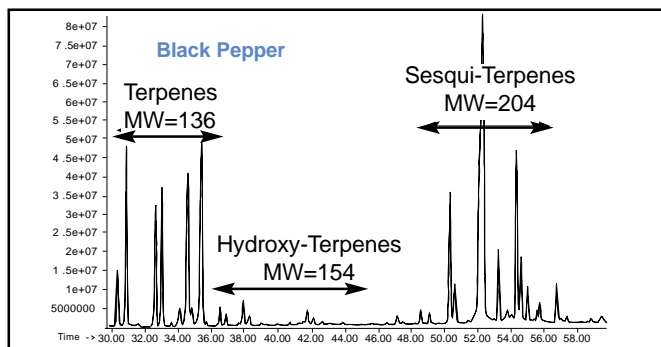


C42 Applications - Direct Thermal Extraction

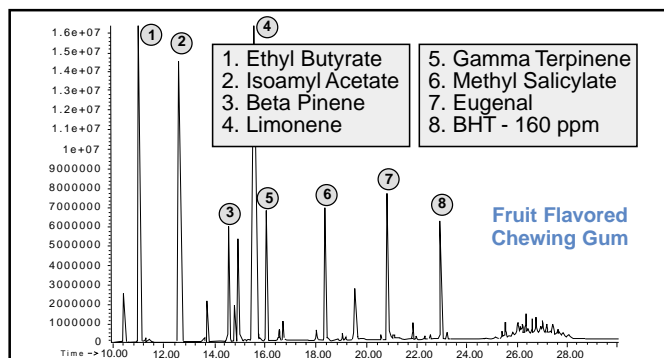
The technique of Direct Thermal Extraction permits the analysis of solid samples without any prior solvent extraction or other sample preparation. Solid samples between 1 and 500 milligrams are placed directly inside the GLT desorption tube between two glass wool plugs. The desorption tube needle is attached to one end of the sample tube. The desorption tube with sample enclosed is then attached to the Short Path Thermal Desorption System, purged with carrier gas to remove all traces of oxygen and injected into the GC injection port. The preheated heater blocks are closed around the desorption tube thereby permitting the thermal extraction of the volatiles and semi-volatiles present into the GC injection port. After the desorption is complete, these components, which have been trapped on the front of the GC column, are eluted and separated via a temperature program of the GC oven. This technique is useful for the analysis and quantification of a wide variety of low moisture content solid samples including vegetation, food products, pharmaceuticals, building materials, forensic samples and packaging products. By the proper selection of the desorption block temperature, the number and molecular weight distributions of components in the samples can be selected. The following three pages show applications of the Direct Thermal Extraction technique for the analysis of the volatiles and semi-volatiles in a wide range of sample matrices.

Food Products

The natural and artificial flavors, preservatives, oils, and other volatile and semi-volatile components in low moisture content food samples can be readily extracted and identified via the Direct Thermal Extraction Technique.



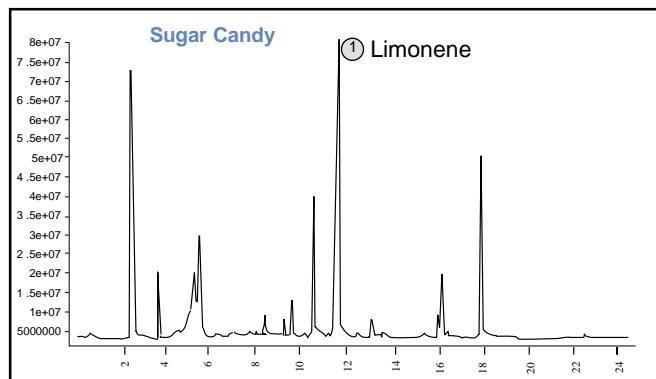
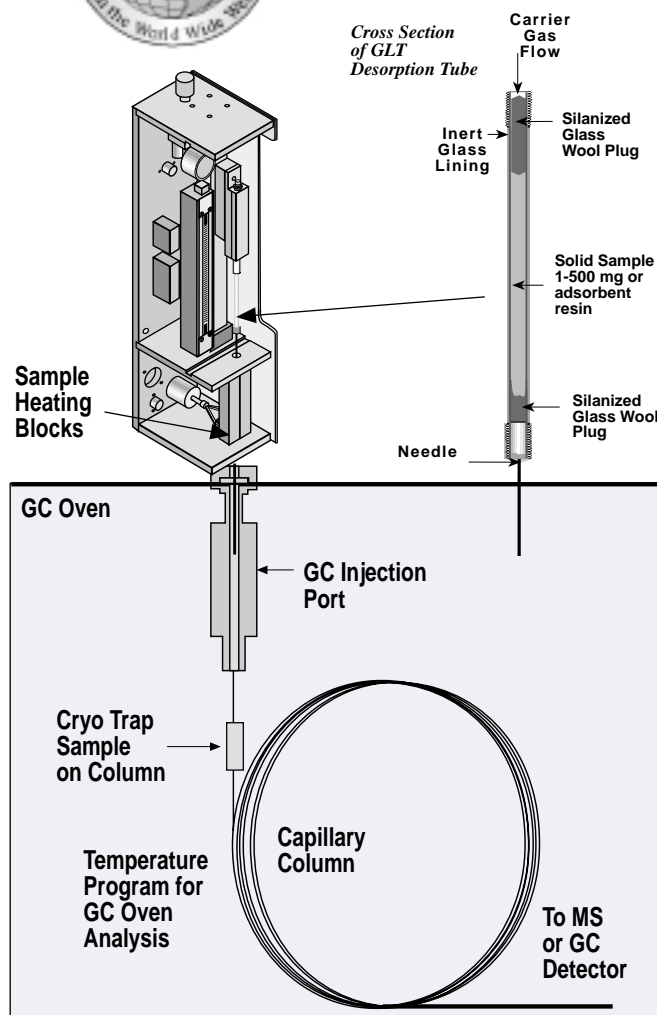
Technique: Direct Thermal Extraction of Solid Samples
Sample: 2.0 mg, crushed black pepper was placed inside the GLT desorption tube
Thermal Desorption: Block temperature: 150°C, Purge flow: 2.0 ml/min He, Desorption time: 6.0 min. Initial column trap temperature: -40°C
Column: DB-5, 60 meter x 0.25 mm I.D., 0.25 µm film, -40° to 280°C at 10°/min.



Technique: Direct Thermal Extraction of Solid Samples
Sample: 8.3 mg, of thinly sliced gum was placed inside the GLT desorption tube
Thermal Desorption: Block temperature: 100°C, Purge flow: 2.0 ml/min He, Desorption time: 10.0 min. Initial column trap temperature: -40°C
Column: DB5-MS, 30 meter x 0.25 mm I.D., 0.25 µm film, -40° to 280°C at 10°/min.



See [WEB Site](#) for complete Application Notes



Technique: Direct Thermal Extraction of Solid Samples
Sample: 2.0 mg, of candy was placed inside the GLT desorption tube
Thermal Desorption: Block temperature: 150°C, Purge flow: 2.0 ml/min He, Desorption time: 6.0 min. Initial column trap temperature: -40°C
Column: DB-5, 25 meter x 0.25 mm I.D., 0.25 µm film, -40° to 280°C at 10°/min.