

	ARSON-PM 5.1.2.1 Fire Debris Analysis - Heated Headspace	
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The purpose of heated headspace is to vaporize the volatile hydrocarbon components of evidentiary samples into the atmosphere of the sample container. This vapor is directly sampled by syringe and directly introduced into analytical instrumentation. This technique is best used for the determination of light chemical components.

5.1.2.1.1 Heated Headspace - Procedure for Analysis

- For a sealed metal paint can, punch or drill a small hole in the lid of the sample container. Cover the hole with adhesive tape and place container into a preheated oven (approximately 60 - 80°C) or heating mantle.
- For a sealed nylon bag, place bag directly into a preheated oven without puncturing the bag.
- Leave containers in the oven for at least 30 minutes. For metal paint cans, venting is recommended, in the case of wet samples, to prevent "lid blowing" as a result of vapor pressure. "Dry" samples should remain in the oven for at least 30 minutes and may "safely" remain there for several hours.
- After the container is removed from the oven or the heating mantle, obtain and inject a 5ml maximum headspace sample into the gas chromatograph or GC/MS. Use a heated syringe.
- This method will not demonstrate a full range of medium-heavy components and other methods should be used to analyze for those.
- **Blank:** A syringe/room air blank must be run prior to each sample. These blank runs must be satisfactory, having no significant peaks in the region of interest, before injecting case samples.

5.1.2.1.2 Heated Headspace - Interpretation

If no significant or identifiable peaks of interest are present continue with another recovery method. Peaks that are considered significant should be pursued, however, if they are not pursued, an explanation shall be recorded in the case notes. The presence of an oxygenated solvent would be considered significant if it is present at an abundance of at least one order of magnitude above the overall matrix peaks in the chromatograph. If there are no matrix peaks in the chromatograph, the oxygenated solvent would be significant if it were present at an abundance of at least one order of magnitude above the background. The examiner may pursue an oxygenated solvent for identification should he/she feel that the presence of the solvent at low levels would be significant to the case. (example: Isopropanol is observed at low levels in a case where the investigator states that rubbing alcohol is suspected to have been used as an ignitable liquid.) If a peak(s) of interest is present, run a standard(s) using the library search as a guideline. Inject the appropriate standard(s) to confirm retention time.