

ANALYTICAL SAMPLING PROCEDURE
GILDED SILICA SORBENT TUBES FOR MERCURY ANALYSIS

1. Ascertain that the sample can be obtained at a pressure not exceeding 10 psig and a flow of at least 1.0 liter per minute, and that these conditions can be maintained over the entire sampling period. Pressure- and flow-control devices may be required. The sampling pressure should be kept as low as possible at the specified flow rate. A total flow volume measurement device, such as a dry test meter, can be used to record the exact amounts of gas sampled for more accurate sampling.
Note: Any sampling lines or control devices should be constructed from materials that are inert and non-sorbing to mercury.
2. The distance from the sampling point to the sampler should be minimized because mercury is easily absorbed on tubing lines and sampling equipment. **The entire sampling system must be passivated with the sample gas prior to any sampling, especially if low levels of mercury are expected.** Stainless tubing must be used for connections upstream of the pressure regulator. High density Teflon or stainless steel tubing is preferred for connections downstream of the regulator. Flexible silicone tubing may be used to make short connections to sampling tubes. Any pumps, metering valves, etc. or other flow- and pressure-controlling devices should be located downstream of the sampler. The entire sampling line should be heated to prevent condensation, especially when a pressure reduction device is used to step down the pressure for sampling.
3. Attach a short piece of stainless steel tubing to the inlet of the rotameter and place a short piece of white silicone tubing on the bare end of the stainless tube. Configure the sampling point with a short piece of silicone tubing as well for attaching the sorbent tubes.
4. For each sampling, use two of the packed sorbent tubes in series. Join two tubes end-to-end with a short piece of silicone tubing. The dimples in the tube should be in the same orientation. The dimples should point towards the downstream rotameter (direction of flow).
5. Using a calibrated rotameter, determine an approximate flow control setting for a 1.0 liter per minute flow at the applied pressure. To do this use two of the extra sorbent tubes that were supplied. This will save time when setting up the first sampling sorbent tube, and will start to passivate the sampling system. Label these tubes as “Calibration 1” and “Calibration 2”.
6. Please mark all sorbent tubes with an arrow, front to back, on their sides in the direction of flow of the sample gas through the tubes.
7. When you are ready to sample, connect the end of one of the sorbent tubes to the silicone tubing on the inlet of the rotameter, then connect the other end of the tubes to the sampling point. Use fresh sorbent tubes. The rotameter should be downstream from the sampling tubes so that the sample gas passes through the tubes first. When all connections are secure, carefully open the sampling valve and quickly adjust the flow control (and pressure if necessary) to obtain the requested flowrate. **Record the time, temperature, and flow data (rotameter reading) at the start of sampling.**
8. Flow the sample through the sorbent tubes for a specified amount of time periodically verifying the flow rate and making adjustments if necessary.

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9. **At the end of the sampling period, record the time, temperature, and flow data**, disconnect both tubes, and place each tube in its individual packing assembly. Label each of the tubes used for each test, labeling the first tube as "A" and the second tube (connected to the rotameter) as "B". Securely attach a label to the tube, making sure the sample flow direction is clearly marked with an arrow. Also include the actual flow rate, sampling time and any other descriptive information on the label for later identification.
10. Package the tubes securely to guard against breakage in transit and return all tubes, supplied equipment, and sampling data to GTI for analysis.

NOTES: This sampling procedure is provided only as a guide to sampling gas from a sampling port. It assumes a representative sample flow of the source gas can be obtained. It is the sampler's responsibility to ensure a representative sample. Any historical information regarding the sample would aid us in better analyzing your sample. This would include previous results of laboratory or field screening analyses.

It is the sampler's responsibility to ensure sampling is performed in a safe manner. Neither GTI nor any person acting on behalf of GTI assumes any liability with respect to the use of, or for damages resulting from the use of, any information presented in this procedure.

An extra tube is included in the package. It will serve as a field blank and is included in the analysis price.

GTI recommends that duplicate samples be taken at each sample site. Two samplings with different duration can cover a larger mercury concentration range.

Natural gas sample recommended volumes: 60 liters and 100 liters

Landfill gas recommended volumes: 20 liters and 60 liters

Mercury sample set-up:

