



# Chemical Fact File®

## Carbon dioxide — NIOSH 6603

The working range of NIOSH Method 6603 is 500 to 15,000 ppm in a non-complex atmosphere. Any compound having the same retention time as carbon dioxide may interfere with this method. NIOSH 6603 revises NIOSH S249.

### Required Equipment:

1. An **air sampling pump** capable of sampling at the recommended flow rate with the sampling medium in line, such as:
  - SKC **Universal Sampler**
  - SKC **222 Series Low Flow Sampler**
2. An **air flow calibrator**, such as:
  - Defender Primary Standard Calibrator Cat. No. 717-510L
3. SKC **Sampling Bag\*** Cat. No. 231-05 or 232-05
4. SKC **PTFE Tubing** Cat. No. 231-9-21 or 231-9-23

### Optional Equipment:

1. SKC **Septum** Cat. No. 231-9-04

### SKC Application Guides:

1. Sampling Train — Air Sample Bags, #1167
2. Calibrating a Pump Using an Electronic Calibrator, #1366

	TWA	STEL
Flow Rate	varies	varies
Sample Time	1.5 hours	15 minutes
Air Volume	5 liters	0.75 liter
NIOSH REL	5000 ppm	30,000 ppm

(NIOSH Manual of Analytical Methods [NMAM], Fourth Edition, 8/15/94)

### Sampling and Analysis:

1. Calibrate the pump to the desired flow rate. *Request SKC Application Guide #1366 for more information on calibrating a pump.*
2. For sampling, attach a piece of tubing to the hose/valve fitting of the bag. Connect the other end of the tubing to the outlet fitting of the pump. Place the pump in the work area to be monitored and open the valve on the bag. *Request SKC Application Guide #1167 for further information on setting up a sampling train using air sample bags.*

3. Sample at an accurately known flow rate for the recommended period of time.
4. At the end of the sampling period, turn off the pump, close the valve on the bag by turning it clockwise, and note the ending time. Remove the bag and record any pertinent sampling information.
5. Calibrate the pump with the representative sampling media in line to verify that the flow has not changed by more than 5%.
6. The sample can be either analyzed directly from the bag using a portable gas chromatograph or sent to a laboratory for analysis. Sample bags sent out for analysis should be packed loosely and padded to minimize the danger of being punctured during shipment. All pertinent sampling information should be included. Do not ship the bags by air unless they are stored in a pressurized cabin. Shipments of filled sample bags must comply with regulations concerning hazardous materials.

### Storage:

Analyze sample within 24 hours of collection.

### Analyzing Method:

Portable gas chromatography with thermal conductivity detector (P GC-TCD)

\* The method calls for a different bag type. Before proceeding, perform tests to determine whether possible permeation of sample through the Tedlar bag could significantly affect results over the sample holding time if longer than 24 hours.

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