# Chemical Fact File®

# Carbon dioxide — OSHA ID 172

*OSHA Method ID 172 is specific for carbon dioxide environments. Any compound having the same retention time as carbon dioxide may interfere with this method. Mass spectrometry can be used if additional verification is needed. The analytical working range of this method is 200 to 30,000 ppm.*

## 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** with Low Flow Holder Cat. No. 224-26-01
   - SKC **222 Sample Pump** Cat. No. 222-3
   - SKC **Grab Air Sample Pump** Cat. No. 222-2301
2. An **air flow calibrator,** such as:
   - Defender Primary Standard Calibrator Cat. No. 717 Series
3. SKC **Sample Bag*** Cat. No. 231-05, 232-05, or 245-03
4. SKC **PTFE Tubing** Cat. No. 231-9-21 or 231-9-23

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

## Optional Equipment:

1. SKC **Septum** Cat. No. 231-9-04 or 232-01-RS

## SKC Application Guides:

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

| | TWA | STEL |
|---|---|---|
| Flow Rate | 50 ml/min | 300 ml/min |
| Sample Time | 100 minutes | 15 minutes |
| Air Volume | 5 liters | 4.5 liters |
| OSHA PEL | 5000 ppm | None |
| *(per 29 CFR 1910.1000)* | | |

## Sampling and Analysis:

1. To set up a sample bag sampling train, attach a piece of PTFE tubing to the hose/valve fitting on the bag. Connect the other end of the tubing to the outlet fitting on the pump. The pump can be placed in a work area or mounted to a worker with a bag carrier. Open the valve on the bag. *Request SKC Application Guide #1167 for more information on preparing sample bag sampling trains.*

2. For calibrating the pump, connect the pump to the calibrator with a piece of flexible tubing. Calibrate the pump flow rate to the rate specified in the method. When calibration has been completed, disconnect the pump from the calibrator. *Request SKC Application Guide #1366 for more information on calibrating a pump.*

3. For sampling, set up a sampling train as described above. Turn on the pump.

4. Sample at an accurately known flow rate for the recommended period of time.

5. At the end of the sampling period, turn off the pump and note the ending time. Remove the sample bag and record any pertinent sampling information.

6. Calibrate the pump to verify that the flow has not changed by more than 5%.

7. Sample bags sent out for analysis should be packed loosely and padded to minimize the danger of being punctured during shipment. Do not ship the bags by air unless they are stored in a pressurized cabin.

## Storage:

For best results, analyze the sample within 24 hours of collection.

## Analyzing Method:

Gas chromatography - thermal conductivity detector (GC-TCD)





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