Operating Instructions

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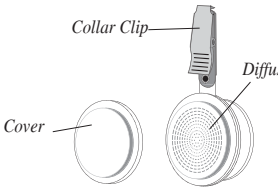
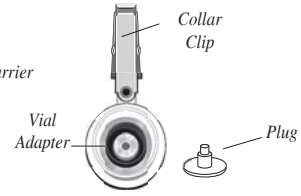
Hydrogen Cyanide Passive Sampler
Cat. No. 590-400

Introduction

The SKC Hydrogen Cyanide (HCN) Passive Sampler, specified in OSHA Method 1015, provides accurate sampling of hydrogen cyanide from 0.44 to 20 ppm for either 15-minute or 8-hour samples. The uptake rate for the HCN Passive Sampler is 28.4 ml/min. The sampler design allows the user to load 600 mg of soda lime sorbent (supplied in a vial) into the sampler housing **in the field** immediately before sampling and transfer the sorbent from sampler to vial **in the field** immediately after sampling as specified in the method. Samples are desorbed with water and analyzed by ion chromatography/electrochemical detector. The HCN Passive Sampler is designed for single use.



Front View of Housing



Back View of Housing


Vial containing soda lime sorbent *(sorbent is white in appearance)*

Performance Profile

Sorbent/Amount:	Soda Lime, 600 mg (supplied in glass vial)
Housing Material:	Nylon
Diameter:	1.4 in (3.5 cm)
Length (including clip):	2.5 in (6.3 cm)
Measuring Range:	0.44 to 20 ppm
Analysis:	Solvent extraction; ion chromatography (IC) with electrochemical detector (ELCM)
Sample Storage:	3 weeks at 68 F (20 C) in storage studies
	Note: *OSHA Method 1015 recommends that samples be sent to a laboratory as soon as possible. If delay is unavoidable, store samples in a refrigerator as a precaution.*
Sample Time:	Validated for 15 min and 8 hrs
Sampling Rate:	28.4 ml/min (4.40% RSD)

Sampling

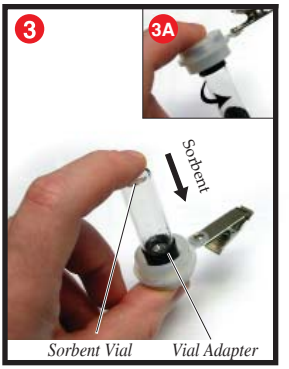
1. Remove sampler housing and vial of sorbent from resealable aluminized pouch.

2. Write pertinent information, including Sample ID#, on the lines provided on the pouch label and the sampler housing.

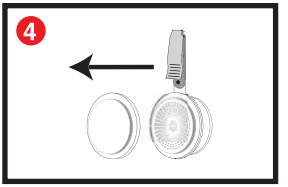
Note: *OSHA Method 1015 specifies that the sample site temperature and uncorrected atmospheric pressure be recorded.*

Soda lime sorbent is very caustic. Wear gloves when handling sampler and vial to avoid skin contact with sorbent.

3. **Perform this step immediately before sampling or on the day of use.** In a clean environment, free of hydrogen cyanide and hydrogen sulfide (interferent), remove plug from vial adapter on back of sampler housing (side without holes). Remove cap from sorbent vial. **Immediately** screw open end of vial counterclockwise into the vial adapter until secure (*see inset 3A*). Rotate entire assembly until sorbent is draining from vial to sampler (*Figure 3*). Tap vial lightly before unscrewing and removing it from the adapter. **Immediately** replace plug on vial adapter. Store sorbent vial and cap in aluminized pouch.



4. Record start time on the sampler label. Remove cover from face of sampler housing (side with holes) **immediately** before sampling. Store cover for reuse.

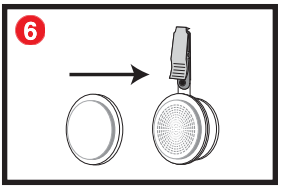


The sampler begins sampling immediately when cover is removed.

5. Clip sampler to a worker's collar near the breathing zone. The diffusion holes must face outward. The front of the sampler must **not** be covered by clothing or obstructed in any way during the sampling period.

Do not cover sampler with clothing.

6. After the desired sampling period, **immediately** unclip sampler from worker's clothing. Seal sampler with cover immediately.

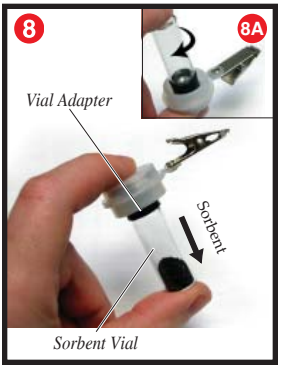


Seal sampler tightly with cover to stop sampling.

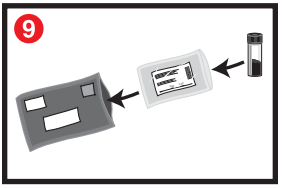
7 Write stop time on pouch and sampler label.

Soda lime sorbent is very caustic. Wear gloves when handling sampler and vial to avoid skin contact with sorbent.

8 **Perform this step immediately after sampling.** In a clean environment, free of hydrogen cyanide and hydrogen sulfide (interferent), carefully remove plug from vial adapter on back of sampler housing. **Immediately** screw open end of sorbent vial clockwise into adapter until secure (*see inset 8A*). Rotate entire assembly until sorbent is draining from sampler to vial. Tap sampler lightly. Ensure all sorbent is recovered in the vial. Unscrew vial from vial adapter on sampler housing and **immediately** screw cap onto vial.



9 Mark sample vial(s) as appropriate and seal in aluminized pouch. Ensure all required information is marked on pouch label. Package sample(s) and one blank sorbent vial in a padded envelope. Send to a laboratory for analysis.



Note: *Report sampling site temperature and uncorrected atmospheric pressure.*

Ensure sorbent vials are capped tightly.

HCN Passive Samplers are designed for single use only. Do NOT reuse HCN samplers.

Sample Storage

3 weeks at 68 F (20 C) in a clean environment in storage studies

Note: *OSHA Method 1015 recommends that samples be sent to a laboratory as soon as possible. If delay is unavoidable, store samples in a refrigerator as a precaution.*

Analysis

Preparing the Sample

1. Remove sorbent vial from aluminized pouch. Mark sample identification on vial as needed. Remove cap from vial.
2. Add 3.5 ml of 18.0 MΩ-cm deionized (DI) water to vial.
3. Place vial in a mechanical rotator and rotate at approximately 40 rpm for 60 minutes.
4. Remove vial from rotator and allow 15 minutes for settling.
5. Filter 2 ml of sample and transfer the filtrate to a 2-ml glass autosampler vial. Seal with PTFE cap.

Samples are analyzed using ion chromatography with electrochemical detector. Sampling hydrogen cyanide in the presence of hydrogen sulfide may also require analysis for thiocyanate. ***See http://www.osha.gov/dts/sltc/methods/validated/1015/1015.pdf for analytical conditions, interferences, and calculations.***

Validation

The SKC Hydrogen Cyanide Passive Sampler has been fully validated; see OSHA Method 1015.

Reference

Simmons, M., OSHA Method 1015, Hydrogen Cyanide, OSHA Salt Lake Technical Center, Nov. 2010, http://www.osha.gov/dts/sltc/methods/validated/1015/1015.pdf

Ordering

Description	Cat. No.
Hydrogen Cyanide Passive Samplers* include empty sampler housings and sealed glass vials of 600 mg soda lime sorbent, pk/5	**590-400**

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