

SAMPLING INSTRUCTION SHEET # SIS.010.05

Pressurized Gas Sampling with Double-Ended Cylinders

Revision No. 5

Date: September 17, 2020

INTRODUCTION

Atlantic Analytical Laboratory (AAL) provides pre-cleaned and conditioned stainless steel and sulfur-inerted sampling cylinders as a convenience to our customers. Rental cylinders are available in a variety of sizes, including 75cc, 300cc, 500cc, and 1 liter. All cylinders are DOT rated for **1,800 psig** service, and are equipped with a burst-disc type relief valve set to approximately this pressure. All cylinders are dual ended, with **1/4" NPT** valve port fittings. **Cylinders are normally shipped with approximately 10 psig UHP grade helium backfill gas to prevent atmospheric contamination during shipment.** Cylinders can be shipped under vacuum upon request.

SAFETY

Before sampling, review all MSDS information related to the gases present. Always wear safety glasses, protective gloves, and other necessary safety equipment. Sampling cylinders are only to be used by personnel trained in handling pressurized gases. For safety, always assume any cylinder or gas line contains the maximum amount of pressure possible in the system. Whenever possible, ensure that the sampling cylinder outlet port is attached to an appropriate vent line to avoid a potentially hazardous buildup of the gas being sampled, especially for oxygen and flammable gases. **Refer to the back of this page for a diagram of a typical sampling setup.**

- **DO NOT** sample toxic, corrosive, pyrophoric, or extremely reactive gases with these cylinders.
- **DO NOT** sample cryogenic or liquefied gases using these instructions; instead, refer to separate instructions available from AAL for proper sampling techniques for these gases.
- **DO NOT EXCEED a MAXIMUM 800 PSIG fill pressure.** If the relief valve burst disc ruptures, the cylinder cannot be used for sampling - return to AAL immediately for repairs, cleaning, and recertification.

EQUIPMENT

Sampling cylinder, 1/4" NPT brass end cap, 1/4" NPT brass plug, ID tag.

SAMPLING PROCEDURE

- 1) Remove the brass cylinder end cap and plug and store them in a clean, secure location.
- 2) Loosely connect the inlet valve of the sampling cylinder to the gas source valve.
- 3) Carefully open the gas source valve and purge the connecting fittings of air - then tighten these fittings. Keep the gas source valve open until step 11.
- 4) Carefully open the cylinder inlet valve to allow the sample gas to fill the cylinder.
- 5) Close the cylinder inlet valve. Do not over tighten, as this may damage the valve seat and cause leakage.
- 6) Open the cylinder outlet valve, and allow a majority the cylinder gas to vent. **DO NOT** blow down completely to atmospheric pressure, as this may cause outside contaminants to diffuse into the cylinder.
- 7) Close the cylinder outlet valve.
- 8) Repeat steps 4 - 7 a minimum of 5 times to ensure the cylinder has been purged of all fill gas and conditioned with the sample gas.
- 9) Open the cylinder inlet valve and partially open the cylinder outlet valve to allow the sample gas to flow through the cylinder for at least 2 minutes.
- 10) Close the cylinder outlet valve and wait at least 30 seconds for the cylinder to fully pressurize.
- 11) Close both the cylinder inlet and gas source valves - then carefully disconnect the cylinder. Beware of excess gas pressure trapped between the two valves which may release suddenly when disconnecting the cylinder.
- 12) Apply new teflon tape to the NPT threads on the inlet valve of the cylinder and the brass outlet plug and securely cap both ends of the cylinder. **DO NOT** over tighten fittings or thread damage may result.
- 13) Record all sample data on the cylinder ID tag – **please do not affix labels to the cylinder body.**
- 14) Package the cylinder in a DOT/IATA approved shipping box or container and insert a completed AAL "Analytical Testing Request" form. Follow all applicable shipping regulations including affixing the proper sample UN designation, shipping name, hazard labels, and identification of the sample contents on all courier paperwork.
- 15) Ship the sample to AAL via an express air (if eligible) or qualified ground courier as soon as possible.

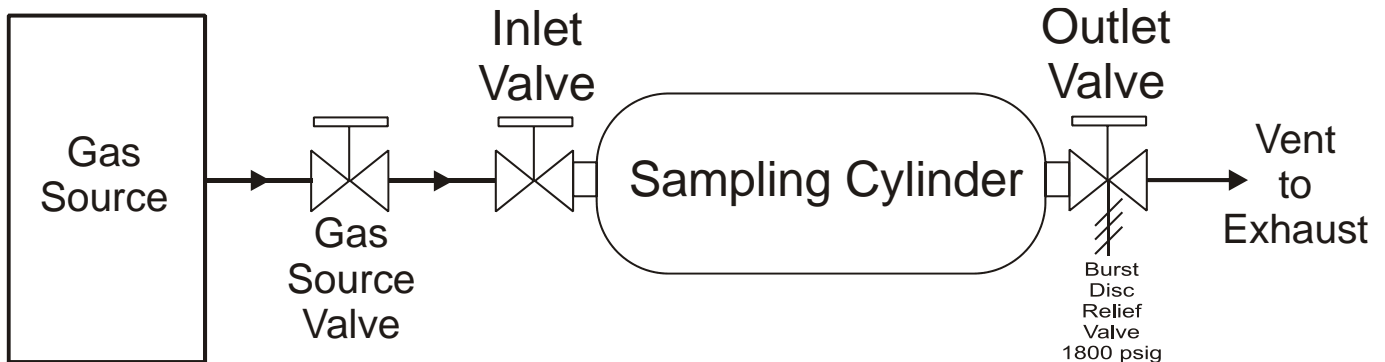
***Proper sampling technique is the most critical step in any gas analysis program.
Please feel free to contact us at any time if you have questions.***

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1L Sampling Cylinder



Sampling Diagram



<u>Gas Type</u>	<u>UN Number</u>	<u>DOT Shipping Name</u>	<u>Hazard Label</u>	<u>Hazard Class</u>
Air	UN 1002	Air, Compressed	Non-Flammable Gas	2.2
Helium	UN 1046	Helium, Compressed	Non-Flammable Gas	2.2
Hydrogen	UN 1049	Hydrogen, Compressed	Flammable Gas	2.1
Nitrogen	UN 1066	Nitrogen, Compressed	Non-Flammable Gas	2.2
Oxygen	UN 1072	Oxygen, Compressed	Non-Flammable Gas + Oxidizer	2.2
Natural Gas	UN 1971	Methane, Compressed	Flammable Gas	2.1

Place appropriate DOT shipping information and labels on the outside of all shipping boxes or containers. Larger shipping boxes or containers may require 2 sets of labels.

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