micromeritics®

ASAP 2050

Xtended Pressure Sorption Analyzer

Preinstallation Instructions and Checklist

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Overview

This document describes how to prepare your site for installation of the ASAP 2050 system. The *Preinstallation Instructions* contain information that will help you analyze your site and answer the questions in the checklist.

The *Preinstallation Checklist* contains questions about instrument location and your laboratory environment, equipment, and supplies. For each question, check **Yes** if the condition applies to your laboratory or **No** if it does not. When you have completed the checklist, return it to Micromeritics as described on page 12.

Conventions

This document uses the symbols shown below to identify notes of importance and cautions.

Notes contain a tip or important information pertinent to the subject matter.

Cautions contain information to help you prevent actions which could damage the instrument.

Warnings contain information to help you prevent actions which could cause personal injury.

Part 1. ASAP 2050 Preinstallation Instructions

Unpacking and Inspection

When the instrument is received, unpack and inspect the contents of the shipping carton(s). Use the packing list to verify that all products, accessories, software, and documentation are received intact and in the correct quantity. The shipping carton(s) and contents should be inspected within a couple of days in the event damage or loss has occurred (see **Shipping Damage**).

Shipping Damage

If equipment is damaged or lost in transit, you are required to make note of the damage or loss on the freight bill. The freight carrier, not Micromeritics, is responsible for all damage or loss occurring during shipment. If you discover damage or loss of equipment during shipment, report the condition to the carrier immediately. Insurance claims **MUST** be made with the freight carrier, **NOT** Micromeritics.

DO:
- Keep all software, manuals, and accessories with the instrument.
- Keep all boxes and shipping cartons until the installation is complete.
- Report any shipping damage immediately to the carrier and follow their directions.
- Report missing or wrong parts to Micromeritics, in addition to any shipping damage, only after filing a claim with the Carrier.

DO NOT:
- Ask Micromeritics to file a claim for shipping damage.
- Discard shipping boxes and containers until installation is complete.

Instrument Space

An unobstructed lab work space that will accommodate the specifications below is needed for the ASAP 2050.

ASAP 2050
Height: 99cm (39 in.)
Width: 85 cm (33.5 in.)
Depth: 61 cm (24 in.)
Weight: 115 kg (250 lb)

Computer and Printer:
Width: Approx. 96.5 cm (38 in.)

Gas Supply
1 square foot (0.30 square meters) for each gas bottle needed for installation For standard installation, the bottles must be within 6 feet (1.83 m) of the instrument.

Instrument Placement

The instrument must be unpacked and moved to a table or cabinet top prior to installation. The ASAP 2050 analyzer weighs up to 250 lbs (115 kg) and requires three to four people to lift it from its shipping carton. Two persons should not attempt to lift the analyzer.

The customer, not Micromeritics, is responsible for unpacking and moving the analyzer to its location in the lab.

Two persons should not attempt to move the analyzer. Use proper lifting techniques to avoid injury.

Installation Configuration

Standard installation, included in the purchase of the instrument, requires the use of 1/8-in. (0.3175-cm) copper gas supply lines, which are in the instrument accessories.

A nonstandard installation will be created if another gas supply line is used or if the gas bottles cannot be placed within 6 feet (1.83 m) of the analyzer. There are additional costs associated with a nonstandard installation. Please contact the Service Manager to discuss a nonstandard installation.

Environmental Factors

Power

The ASAP 2050 is designed to operate with 100, 115, or 230 VAC ± 10% at 50 or 60 Hz. Noise-free power of the correct voltage and frequency, with a safety earth ground, should be available through a standard wall receptacle. These requirements can be checked by using a Circuit Analyzer (available at most hardware or electronic supply houses) or a multimeter.

DO:
- Install the instrument and peripheral devices on their own, dedicated power line.

DO NOT:
- Place other devices on the same power line; for example, motors, generators, or ovens**.**

Temperature and Humidity

Temperature and humidity must be controlled to within the following:

Temperature: + 10 ºC to 35 ºC operating
- 10 ºC to 55 ºC non-operating

Humidity: Up to 90% (non-condensing) for instrument

DO NOT:
- Allow room temperature or humidity to exceed limits.
- Install the instrument where it is exposed to direct sunlight.
- Locate the instrument near air conditioning or heating vents.

Hazards & Precautions

Inform Micromeritics of any on-site conditions that may present hazards to Micromeritics' employees or equipment. Advise Micromeritics of any precautions that need to be taken.

Safety Measures

Inform Micromeritics of any safety equipment, requirements, or safety measures necessary for Micromeritics' employees to enter and install the ASAP 2050 at your facility.

Computer System

We recommend that you purchase the computer to be used with the ASAP 2050 Analyzer from Micromeritics. We thoroughly test Microsoft Windows® operating systems with our application and offer technical support and maintenance for the computers we provide. For instruments not installed by Micromeritics, please observe the following notes.

The labor and expense costs associated with delays traceable to a computer system not purchased from Micromeritics are not part of a standard installation.

Micromeritics is not responsible for providing assistance for the connection to a company network or LIMMS.

If you are supplying your own computer, it must meet the following *minimum* requirements:

- Pentium CPU (or equivalent)
- One CD ROM drive
- 128 megabytes of main memory
- 1-gigabyte hard disk space
- Monitor supporting 800 x 600 resolution
- Windows 2000 or Windows XP Professional
- RS232 port
- UPS (Uninterruptible Power Supply) for computer (optional)*

* A UPS with line conditioner is useful for saving data during a power outage. It is also useful for keeping power line noise from entering the ASAP 2050 and computer.

Gas Supply

Gas Bottles and Gas Supply Lines

See “Gases for Instrument Test” on page 11 for the analytical gases needed during installation.

Gas bottles must be placed within 6 feet (1.83 m) of the instrument’s rear or right side.

DO:

- Ensure purity of gases.
- Use the 1/8-in. (0.3175-cm) x 6-ft (1.83-m) copper gas lines supplied in the instrument accessories kit. Stainless steel gas lines are available from Micromeritics for use with gases that are not compatible with copper.

DO NOT:

- Use gas bottles with less than 200 psig (1378.9 kPag) pressure.
- Use any type of gas line, other than those stated above, to connect the gas supply to the instrument.
- Use gas purifiers; they can cause operational problems.

Gas lines not supplied by Micromeritics will not be installed by Micromeritics Service Personnel.

Gas supply lines that are made of materials other than copper or stainless steel may cause operational problems.

In order to use oxygen with the ASAP 2050, your 2050 analyzer must be equipped with an oxygen-compatible vacuum pump that uses Fomblin® (or a suitable equivalent) pump fluid. Failure to use the proper vacuum system could result in hazardous conditions including fire and personal injury.

Gas Supply Hardware

Dual-stage regulators must be used for all gas supplies.

Micromeritics specifies only dual-stage regulators for use with its products. Most Micromeritics instruments consume a small quantity of gas during each analysis cycle, after which gas flow through the regulator stops. In this static condition, the outlet pressure of the gas regulator is expected to remain stable until the instrument requires more gas.Micromeritics instruments operate best when the inlet gas pressure is maintained constant by a dual-stage regulator; otherwise, overpressure conditions may cause leaks, overshooting of target pressures, long analysis times, or wasted gas.

Most available single-stage regulators are only designed to deliver a steady output pressure while delivering a constant, flowing stream of gas. It is very difficult for single-stage regulators to hold a steady output pressure with little or no gas flowing through them.

Under the same operating conditions, dual-stage regulators are better able to maintain a pressure setting, thus providing precise control of the pressure during analysis while the gas in the bottle is being consumed.

We recommend that you purchase the gas regulators to be used with the ASAP 2050 Analyzer from Micromeritics. The dual-stage regulators Micromeritics provides have been carefully evaluated and tested to provide superior performance.

The following table lists the regulators recommended by Micromeritics.

Gas Regulators Available from Micromeritics

Part Number	Item and Description
004-25549-00	Reducer, 1/8-in. tube x 1/4-in. tube, accepts 1/8-in. tube, connects to 1/4-in. swage fittings
004-62230-35	Gas pressure regulator, CGA 350 fitting (CO, H_2), 30 psig
004-62230-54	Gas pressure regulator, CGA 540 fitting (O_2), 30 psig
004-62230-58	Gas pressure regulator, CGA 580 fitting (He, N_2, Ar), 30 psig
004-62230-32	Gas pressure regulator, CGA 320 fitting (CO_2), 30 psig
004-62250-320	Gas pressure regulator, CGA 320 fitting (CO_2), 250 psig
004-62250-350	Gas pressure regulator, CGA 350 fitting (CO, H_2), 250 psig
004-62250-540	Gas pressure regulator, CGA 540 fitting (O_2), 250 psig
004-62250-580	Gas pressure regulator, CGA 580 fitting (He, N_2, Ar), 250 psig
004-33601-00	Expansion Kit; adds an additional outlet to the gas regulator, includes fittings and instructions
004-33602-00	Pressure Relief Kit, 35 psig, prevents excessive gas pressure in the event of regulator failure (not to be used with noxious gases or with 150 psig gas lines)

If you choose to use regulators from a source other than Micromeritics, please keep in mind that many commercially available gas regulators lack key features, which are required for precise surface area and pore volume instruments. These four vital criteria must be met:

- **Cleanliness**. Clean regulators designed specifically for high-vacuum service are required. Other regulators often contain elastomeric material or oils, which can contaminate the gas.
- **High Stability**. Excess pressure at the gas inlet ports to the instrument can interfere with accurate gas dosing and flow rates. The combined change in the outlet pressure from the gas regulator, as the gas cylinder pressure decreases or as the flow rate stops, should not change more than 5 psig (34.4 kPag) from the selected setting. When the instrument is idle for an extended period of time, such as 8 to 10 hours, this same stability of gas delivery pressures should be achieved.
- **Range of Pressure**. For extended pressure experiments: the regulator output must operate from 0 to 150 psig (1034 kPag).
- **Suitable Subassemblies**. The regulator must have a shut-off or outlet isolation valve compatible with 1/8-in. (0.3175-cm) or 1/4-in. (0.6-cm) Swagelock compression fittings.

If you did not purchase regulators from Micromeritics for your instrument but wish to do so now, contact your local Micromeritics Sales Representative.

Improperly selected regulators will cause costly delays during the installation process.

Regulator Expansion Kits

It is sometimes beneficial to attach more than one instrument, and/or accessory device, to a single gas supply. Any time this is done, it is critically important that there be a means of isolating, or shutting-off, each device that is attached to the gas supply regulator. Micromeritics recommends the use of a vacuum rated shut-off/isolation valve for this purpose.

This shut-off/isolation valve is required in order to prevent problems when changing gas cylinders or servicing any of the devices attached to the gas supply.

If you anticipate the need to attach more than one instrument and/or accessory device to the gas supply, you must acquire one or more of the following regulator expansion kits.

004/33601/00 – Regulator Expansion Kit (2-outlet) – This kit contains one “T fitting”, two vacuum rated shut-off valves, and other necessary hardware.

For example, this expansion kit allows you to provide gas to two instruments or one instrument and one accessory device.

004/33601/01 - Regulator Expansion Kit (3-outlet) - This kit contains one “Cross fitting”, three vacuum rated shut-off valves, and other necessary hardware.

For example, this expansion kit allows you to provide gas to three instruments or two instruments and one accessory device.

Laboratory Equipment and Supplies

Liquid Nitrogen

Ensure liquid nitrogen is available in sufficient quantities. At least 10 liters must be available for operational testing during installation.

DO:

- Ensure an adequate supply of liquid nitrogen (at least 3 liters per analysis Dewar).

DO NOT:

- Use liquid nitrogen which is bluish (a sign of Oxygen contamination) or not clear.

Analysis Equipment and Supplies

Since the analysis results are expressed in units of surface area per gram of sample, the true weight of the sample must be known. This requires an analytical balance with the capacity of 100 grams measurement and 1 mg readability.

In order to obtain accurate analysis results, the sample tube must be clean. The following items are suggested for cleaning sample tubes:

- Sink
- Alconox or similar laboratory detergent
- Drying oven
- Ultrasonic bath
- Acetone or Isopropyl Alcohol
- Fume hood
- Clean, dry compressed air or dry nitrogen.

Application Related Issues

In order to ensure a thorough installation, it will be helpful for Micromeritics to know which types of samples you will be testing. If possible, please list those types on page 15.

Please advise us if your samples require any pretreatment.

Micromeritics offers application assistance through our materials analysis laboratory (Micromeritics Analytical Services).

Gases for Instrument Test

In order to verify proper instrument operation and train your instrument users, Micromeritics representatives will analyze one or more of the reference materials provided in the instrument accessories.

The gases listed in the following table are required in order to analyze the reference materials. If these gases are not available, Micromeritics representatives will only be able to perform a limited number of instrument tests during installation and operator training.

Please indicate on page 15 of the Checklist which gases you intend to provide during installation.

Analysis Type	Required Gases	Regulator Fitting	Required Purity
Nitrogen Surface Area	N_2	(CGA 580)	99.999%
	He	(CGA 580)	99.999%

Personnel Security Clearance

If security clearances, insurance certificates, or any other special arrangements are required for Micromeritics employees to enter your facility, please explain on page 16. Please inform Micromeritics how much advance notice you require to obtain clearance.

Projected Installation Date

After reading the site preparation requirements in this document, select a date by which your site will be prepared, and on which you would like to schedule installation. Enter the date on page 16 of the Checklist. After you return the Checklist to Micromeritics, your Micromeritics representative will contact you to confirm an installation date.

Commitment Statement/Signature

Read this document carefully and complete the checklist. If you are unsure about any part of this document or the checklist, please contact the Micromeritics Service Department for clarification. When you have completed the Preinstallation Checklist, date it, and send it to Micromeritics as described below.

Within the United States:

FAX Checklist to: Service Operations Manager
(770) 662-3604

OR

Mail Checklist to: Micromeritics Corporation
4356 Communications Drive
Norcross, Georgia 30093
Attn: Service Operations Manager

Outside the United States: Contact your local Micromeritics representative.

Part 2. ASAP 2050 Preinstallation Checklist

Unpacking and Inspection

Unpacking and Inspection	Yes	No
Have the shipping cartons been unpacked and their contents inspected?	___	___
Was there any shipping damage?	___	___
If **Yes**, has a claim been filed with the freight carrier?	___	___
Were all items listed on the packing list received?	___	___
If **No**, has Micromeritics been notified?	___	___

Instrument Space

Instrument Location	Yes	No
Can the lab area where the instrument and computer will be placed accommodate the combined dimensions of the instrument, accessories, computer and printer?	___	___

Instrument Placement

Instrument Location	Yes	No
Will the instrument be placed in the proper location prior to installation?	___	___

Installation Configuration

Gas Supply	Yes	No
Will 1/8-in. (0.375-cm) copper gas supply lines (standard installation; supplied with the instrument) be used?	___	___
Will gas supply bottles be available within 6 feet (1.83 m) of the right side of the instrument (standard installation)?	___	___

Environmental Factors

Environmental Factor	Yes	No
Is power available with the correct voltage and frequency, and a safety earth ground?	___	___
Are temperature and humidity controlled within specifications?	___	___
Are hazards present or precautions necessary in area of installation? If **Yes**, please explain_____ _____	___	___
Are safety measures required? If **Yes**, please explain_____ _____	___	___

Computer System

Instrument and Accessories	Yes	No
Was the computer purchased from Micromeritics? If **NO**, does the computer meet Micromeritics' minimum requirements?	___ ___	___ ___

Gas Supply

Item	Yes	No
Are gas cylinders located within 6 feet (1.83 m) of the area where the instrument will be installed?	___	___
If you plan to use oxygen, was an oxygen-compatible vacuum system ordered with your ASAP 2050?	___	___
Were dual-stage gas regulators purchased from Micromeritics? If **NO**, do your dual-stage gas regulators meet Micromeritics' specifications?	___ ___	___ ___
Are gas regulators that operate from 0 to 150 psig (1034 kPag) available for high pressure experiments?	___	___
Have you considered purchasing one or more Regulator Expansion Kits?	___	___

Laboratory Equipment and Supplies

Item	Yes	No
Are sufficient quantities of liquid nitrogen available?	___	___
Are the other supplies needed to perform analyses available?	___	___

Application Related Issues

Application Issue	Yes	No
What types of samples will you be testing? _____ _____ _____		
Will these samples require pretreatment?	___	___
Will you require any application assistance from Micromeritics Analytical Services?	___	___

Gases for Instrument Test

Gas	Yes	No
Will these gases be available?		
(CGA 580) N_2 99.999%	___	___
(CGA 580) He 99.999%	___	___
The installation will not be scheduled until these gases are available:		

Personnel Security Clearance

Security Clearance	Yes	No
Are there any special arrangements required concerning security clearance? If **Yes**, please explain in detail _____ _____ _____	___	___

Projected Installation Date

When would installation be most convenient? Date: ____/____/__
(This is not a commitment for a specific installation date.)

Commitment Statement/Signature

I have read this document and understand my responsibilities regarding preparations for the installation of our instrument. I believe this site is ready for the ASAP 2050 Analyzer to be installed.

SIGNATURE: _____

NAME (Printed): _____

TITLE (Printed): _____

COMPANY: _____

CITY, STATE and ZIP: _____

PHONE NUMBER: _____

FAX NUMBER: _____

E-MAIL: _____

DATE: _____

INSTRUMENT MODEL: _____ SERIAL NUMBER_____