

SMART VACPREP[™]

INTELLIGENT VACUUM SAMPLE PREPARATION SYSTEM



micromeritics[®]

***PRE-INSTALLATION INSTRUCTIONS AND
CHECKLIST***

067-42870-01
June 2022
(Rev A)

TRADEMARKS

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Microsoft and Windows are registered trademarks of Microsoft Corporation.

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Swagelok is a registered trademark of Crawford Fitting Company.

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CORPORATE PROFILE

Micromeritics Instrument Corporation is the world's leading supplier of high-performance systems to characterize particles, powders and porous materials with a focus on physical properties, chemical activity, and flow properties. Our technology portfolio includes: pycnometry, adsorption, dynamic chemisorption, particle size, intrusion porosimetry, powder rheology, and activity testing of catalysts. The company has R&D and manufacturing sites in the USA, UK, and Spain, and direct sales and service operations throughout the Americas, Europe, and Asia. Micromeritics systems are the instruments-of-choice in more than 10,000 laboratories of the world's most innovative companies and prestigious government and academic institutions. Our world-class scientists and responsive support teams enable customer success by applying Micromeritics technology to the most demanding applications. For more information, please visit www.Micromeritics.com.

CONTACT Us

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Micromeritics Application Support

Support@Micromeritics.com

GENERAL SAFETY



Do not modify this instrument without the authorization of a Micromeritics service personnel.



Use caution in the areas where this symbol is displayed on the instrument — such as near the heating stations. These surfaces may be hot and could cause serious burns. Use the gloves supplied in the accessories kit.

Any piece of laboratory equipment can become dangerous to personnel when improperly operated or poorly maintained. All employees operating and maintaining Micromeritics instruments should be familiar with its operation and should be thoroughly trained and instructed on safety.

- Read the operator manual for any special operational instructions for the instrument.
- Know how the instrument functions and understand the operating processes.



- Wear the appropriate personal protective equipment when operating this instrument — such as eye protection, lab coat, protective gloves, etc.
- When lifting or relocating the instrument, use proper lifting and transporting devices for heavy instruments. Ensure that sufficient personnel are available to assist in moving the instrument. The Smart VacPrep weighs approximately 32 kg (70 lb).
- Always pay attention to the safety instructions provided on each label affixed to the instrument and do not alter or remove the labels. When inspecting the instrument, ensure that the safety labels have not become worn or damaged.
- The Smart VacPrep has a safety shield. Ensure it is in place when operating the instrument.
- Proper maintenance is critical to personnel safety and smooth instrument operation and performance. Instruments require regular maintenance to help promote safety, provide an optimum end test result, and to prevent costly down time. Failure to practice proper maintenance procedures can lead to unsafe conditions and shorten the life of the instrument.
- Improper handling, disposing of, or transporting potentially hazardous materials can cause serious bodily harm or damage to the instrument. Always refer to the MSDS when handling hazardous materials. Safe operation and handling of the instrument, supplies, and accessories is the responsibility of the operator.

INTENDED USE

The Smart VacPrep degasser is an advanced six-port system that utilizes vacuum to prepare samples by heating and evacuation. Each of the ports may be operated independently. Samples may be added or removed from degas ports without disturbing the treatment of other samples undergoing preparation. Degassing automatically terminates when the samples have completed all programmed steps.



The instrument is intended to be operated by trained personnel familiar with the proper operation of the equipment recommended by the manufacturer and as well as relevant hazards involved and prevention methods. Other than what is described in this manual, all use is seen as unintended use and can cause a safety hazard.



The instrument is intended to be used as per applicable local and national regulations.

TRAINING

It is the customer's responsibility to ensure that all personnel operating or maintaining the equipment participate in training and instruction sessions. All personnel operating, inspecting, servicing, or cleaning this instrument must be properly trained in operation and machine safety before operating this instrument.

ENVIRONMENTALLY FRIENDLY USE PERIOD

Hazardous Substances Table

Part Name	Hazardous Substances					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr (VI))	Polybrominated biphenyls (PBB)	Polybrominated diphenyl ethers (PBDE)
Cover	o	o	o	o	o	o
Power Supplies	x	o	o	o	o	o
Printed Circuit Boards	x	o	o	o	o	o
Cables, Connectors & Transducers	x	o	o	o	o	o

- o Hazardous substance is below the specified limits as described in SJ/T11363-2006.
- x Hazardous substance is above the specified limits as described in SJ/T11363-2006.

The Environmentally Friendly Use Period (EFUP) for all enclosed products and their parts are per the symbol shown here unless otherwise marked. Certain parts may have a different EFUP (for example, battery modules) and are marked to reflect such. The Environmentally Friendly Use Period is valid only when the product is operated under the conditions defined in the product manual.



ABOUT THIS MANUAL

The following symbols or icons indicate safety precautions and/or supplemental information and may appear in this manual:



NOTE — Notes contain important information applicable to the topic.



CAUTION — Cautions contain information to help prevent actions that may damage the analyzer or components.



WARNING — Warnings contain information to help prevent actions that may cause personal injury.

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1 PRE-INSTALLATION DOCUMENT OVERVIEW



If a Micromeritics Service Technician performs this installation, additional charges apply. Please see [Contact Us on page ii](#) for information on how to contact Micromeritics.

MICROMERITICS INSTALLED INSTRUMENTS ONLY

APPLICATION RELATED ISSUES

To ensure a thorough installation, it will be helpful for Micromeritics to know which types of samples will be tested. If known, list them in [Application Related Issues Checklist on page 3 - 4](#).

Please advise Micromeritics if samples require any pretreatment. If required, do you have the proper equipment to pretreat your samples? Micromeritics offers application assistance through our materials analysis laboratory (Micromeritics Particle Testing Authority).

HAZARDS AND 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 procedures necessary for Micromeritics employees to enter and install the system at your facility.

PERSONNEL SECURITY CLEARANCE

If security clearances, insurance certificates, or any other special arrangements are required for Micromeritics employees to enter your facility, see [Personnel Security Clearance Checklist on page 3 - 4](#) to explain. Inform Micromeritics how much advance notice you require to obtain clearance.

PROJECTED INSTALLATION DATE

Read this entire document carefully. Complete all checklists in this document. Sign and return all checklists and the form in [Dates and Signatures on page 4 - 1](#) to Micromeritics. Micromeritics will contact you to confirm an installation date.

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2 PRE-INSTALLATION INSTRUCTIONS

UNPACKING AND INSPECTION

When the equipment is received, unpack and inspect the contents of the shipping container(s). Use the packing list to verify that all products, accessories, software (if applicable), and documentation are received intact and in the correct quantity. The shipping container(s) and contents should be inspected within a few days of receipt in the event damage or loss has occurred. Sort through all packing material before declaring missing equipment or parts.



Micromeritics recommends saving all shipping containers until installation of the equipment is complete. All shipping containers where equipment is to be declared as damaged or lost must be examined by the claims investigator prior to completion of the inspection report.

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 damage or loss of equipment is discovered during shipment, report the condition to the carrier immediately. Insurance claims **MUST** be made with the freight carrier, **NOT** Micromeritics.

- Keep all software, manuals, and accessories with the equipment.
- 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.
- Micromeritics will NOT file a claim for shipping damage.
- Do not discard shipping boxes and containers until installation is complete. If space is available, it is recommended that shipping containers be saved for future use in the event of return to factory for repair.

INSTRUMENT SPACE



Smart VacPrep

Height	67 cm (27 in.)
Width	53 cm (20.75 in.)
Depth	44 cm (17 in.)
Weight	32 kg (70 lbs.)

External Vacuum Pump

Height	17 cm (7 in.) Approx.
Width	15 cm (6 in.) Approx.
Depth	31 cm (12 in.) Approx.

Computer and Printer

Width	96.5 cm (38 in.) Approx.
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Gas Supply

1 square ft (0.1 square m) for each gas cylinder needed for installation. For standard installations, the cylinders must be within 6ft (2m) of the instrument.

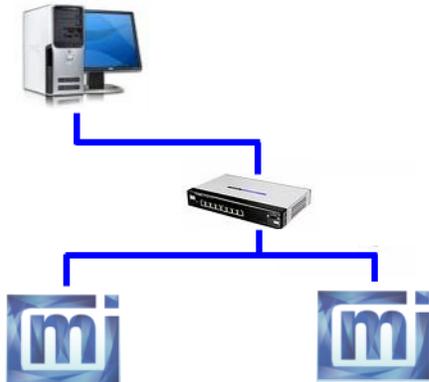
INSTALLATION CONFIGURATION

Standard installation requires the use of 1/8 in. copper or stainless steel gas supply lines, located in the instrument accessories kit. A nonstandard installation will be created if another gas supply line is used or if the gas cylinders cannot be placed within 6 ft (2 m) of the analyzer. There may be additional costs associated with a nonstandard installation. Please contact the Micromeritics Service Department at 1-770-662-3666 to discuss a nonstandard installation.

ETHERNET SWITCH



An Ethernet switch is required. The Smart VacPrep unit will be attached to the Ethernet switch. The Ethernet switch will then be connected to the computer using a shielded Ethernet cable.



SOFTWARE UPDATE

To run the Smart VacPrep, the analyzer software must include support for the degasser. Current versions of the application software can be found on the Micromeritics web page (www.Micromeritics.com).

ENVIRONMENTAL FACTORS

POWER

The Smart VacPrep is designed to operate with line voltage of 100/120/230/240VAC ± 10 , 50/60 Hz through a standard wall receptacle. Noise-free power of the correct voltage and frequency, with a safety earth ground, should be available through a standard wall receptacle. There should be a minimum 15A rated breaker @ 100/120 VAC and a minimum 7.5A @ 240 VAC.



The analyzer and peripheral devices **must** be installed on their own dedicated power line. Other devices — such as motors, generators, or ovens — **should not** be placed on the same power line.



Replacement power supply cords must be rated for the specifications stated above.

TEMPERATURE AND HUMIDITY

Temperature and humidity must be controlled to within:

- **Temperature:** 10 to 35 °C (50 to 95 °F) operating; 0 to 50 °C (32 to 122 °F) non-operating
- **Humidity:** 45 to 80% relative, non-condensing

Do Not:

- Allow room temperature or humidity to exceed limits.
- Install the analyzer where it is exposed to direct sunlight.
- Locate the analyzer near air conditioning or heating vents.

GAS SUPPLY

GAS CYLINDERS AND GAS SUPPLY LINES

- The customer is required to ensure the purity of gases.
- It is required that the 1/8 in. × 6 ft (2 m) single piece copper gas line in the analyzer accessories kit is used. Stainless steel gas lines are available from Micromeritics for use with gases that are not compatible with copper.



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



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

- **Do not** use gas cylinders with less than 500 psig (3549 kPag) pressure.
- **Do not** use any other gas lines to connect the gas supply to the analyzer except those supplied in the accessories kit.
- **Do not** use gas purifiers; they can cause operational problems. Oxygen traps are preferred.

GAS SUPPLY HARDWARE

Micromeritics recommends the gas regulators to be used with the analyzer be purchased from Micromeritics. The regulators Micromeritics provides have been carefully evaluated and tested to provide superior performance.



If purchased from a source other than Micromeritics, please keep in mind that many commercially available gas regulators lack key features which are required for gas adsorption measurements. These 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 analyzer 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 analyzer is idle for an extended period of time, such as 8 to 10 hours, this same stability of gas delivery pressures should be achieved.
- **Suitable sub-assemblies.** The regulator must have a shutoff or outlet isolation valve compatible with 1/8 in. or 1/4 in. Swagelok compression fittings.



To purchase regulators from Micromeritics, contact your local Micromeritics Sales Representative.

REGULATOR EXPANSION KITS

It is sometimes beneficial to attach more than one analyzer, and/or accessory device, or different inlet ports 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 attached to the gas supply regulator. Micromeritics recommends the use of a vacuum rated shutoff/isolation valve for this purpose.

This shutoff/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 the need to attach more than one inlet or one analyzer and/or accessory device is anticipated, one or more of the following regulator expansion kits must be acquired:

- **004-33601-00** – Regulator Expansion Kit (2 outlet, 1000 psi maximum). This kit contains one T fitting, two vacuum rated shutoff valves, and other necessary hardware. This expansion kit allows gas to be provided to two inlets.
- **004-33601-01** – Regulator Expansion Kit (3 outlet, 1000 psi maximum). This kit contains one cross fitting, three vacuum rated shutoff valves, and other necessary hardware. This expansion kit allows gas to be provided to three inlets.

GAS FOR ANALYZER TEST

To verify proper analyzer operation and to train users, Micromeritics representatives will analyze the reference material provided in the analyzer accessories kit.

The following gases 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 analyzer tests during installation and operator training.

- CGA 580) N₂ 99.999%

Any additional gases that may be used after the installation is complete can be connected by the Micromeritics representative.

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3 PRE-INSTALLATION CHECKLISTS

For each question, circle **Y** if the condition applies to your laboratory or **N** if it does not. When this *Pre-installation Checklist* has been completed, see [Dates and Signatures on page 4 - 1](#). Sign and date the form, then send it along with all completed checklists to Micromeritics.

UNPACKING AND INSPECTION CHECKLIST

Unpacking and Inspection			Initial / Date
Have the shipping cartons been unpacked and their contents inspected?	Y	N	
Was there any shipping damage?	Y	N	
<ul style="list-style-type: none"> ▪ If Yes, has a claim been filed with the freight carrier? 	Y	N	
Were all items on the packing list received?	Y	N	
<ul style="list-style-type: none"> ▪ If No, has has Micromeritics been notified? 	Y	N	
Was an Ethernet switch purchased with the analyzer or is there one available, if needed?	Y	N	

DEGASSER SPACE CHECKLIST

Analyzer Space			Initial / Date
Can the lab area where the analyzer and computer will be placed accommodate the combined dimensions of the analyzer, accessories, computer, and printer?	Y	N	
Will there be adequate space to easily access the gas lines, power supply lines, and sufficient clearance for maintenance and inspection?	Y	N	

ENVIRONMENTAL FACTORS CHECKLIST

Environmental Factors			Initial / Date
Is power available with the correct voltage and frequency, and a safety earth ground?	Y	N	
Are temperature and humidity controlled within specifications?	Y	N	
Are hazards present or precautions necessary in area of installation?	Y	N	
<ul style="list-style-type: none"> ▪ If Yes, please explain: 			
Are safety measures required?	Y	N	
<ul style="list-style-type: none"> ▪ If Yes, please explain: 			

GAS SUPPLY CHECKLIST

Gas and Gas Supply Lines			Initial / Date
Will gas supply cylinders be available within 6 ft of the instrument gas inlet ports (for standard installation)?	Y	N	
Will 1/8 in. copper gas supply lines (supplied with the analyzer for standard installation) be used? ?	Y	N	
Was the gas regulator purchased from Micromeritics?	Y	N	
<ul style="list-style-type: none"> ■ If No, does your gas regulator meet Micromeritics specifications? 	Y	N	
Have you considered purchasing a regulator expansion kit?	Y	N	
Nitrogen gas is required before installation is scheduled. Is it available?	Y	N	

LABORATORY EQUIPMENT AND SUPPLIES CHECKLIST

Laboratory Equipment and Supplies			Initial / Date
Are sufficient quantities of nitrogen available?	Y	N	

APPLICATION RELATED ISSUES CHECKLIST

Application Related Issues		Initial / Date	
What types of samples will be tested?			
Initial / Date:			
Will these samples require pretreatment?	Y	N	
Will any application assistance from Micromeritics Particle Testing Authority be required?	Y	N	

PERSONNEL SECURITY CLEARANCE CHECKLIST

Security Clearance		
Are there any special arrangements required concerning security clearance?	Y	N
<ul style="list-style-type: none"> ▪ If Yes, please explain: 		
Initial / Date:		

4 DATES AND SIGNATURES



All checklists and this completed form should be returned only if Micromeritics will be performing this installation.

PROJECTED INSTALLATION DATE

This is not a commitment for a specific installation date. After reading the site preparation requirements in this document, enter a date your site will be prepared and a preferred date for installation. After returning the checklist and signed form to Micromeritics, your Micromeritics representative will contact you to confirm an installation date.

When would installation be most convenient? Date: _____/_____/_____

COMMITMENT STATEMENT AND SIGNATURE FORM

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

Signature: _____ Date: _____
Name (Printed): _____
Title (Printed): _____
Company: _____
City / State / Zip: _____
Phone Number: _____ Fax Number: _____
E-mail: _____
Analyzer: _____ Model: _____ Serial No.: _____

Is the Customer Representative also the End User? **Yes** _____ **No** _____

RETURN THE COMPLETED CHECKLIST AND FORMS TO:

Micromeritics Instrument Corporation
ATTN: Service Operations Manager
4356 Communications Drive
Norcross, GA / USA / 30093-2901

Email: Service.Helpdesk@Micromeritics.com
Fax: 1-770-662-3604



EU DECLARATION OF CONFORMITY

This declaration of conformity is issued under the sole responsibility of the manufacturer:

Micromeritics Instrument Corporation
4356 Communications Drive
Norcross, GA 30093, USA

Hereby declares that the product:

Smart VacPrep Sample Preparation Device

is in conformity with the following **EU harmonization legislation**:

2014/35/EU - LVD Directive
2014/30/EU - EMC Directive
2011/65/EU - RoHS Directive

and that the equipment is in conformity with the following harmonized and other appropriate standards;

2014/35/EU (LVD)

IEC 61010-1:2010/A1:2016 - Safety requirements for electrical equipment for measurement, control, and laboratory use — Part 1: General requirements.

IEC 61010-2-010:2019 - Particular requirements for laboratory equipment for the heating of materials.

IEC 61010-2-081:2019 - Particular requirements for automatic and semi-automatic laboratory equipment for analysis and other purposes

2014/30/EU (EMC)

IEC 61326-1:2020 - Electrical equipment for measurement, control and laboratory use — EMC requirements — Part 1: General requirements

IEC 61000-3-2:2014 - Part 3-2: Limits — Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)

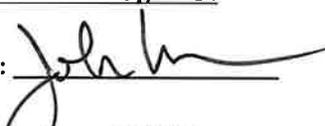
IEC N 61000-3-3:2013 - Part 3-3: Limits — Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection

2011/65/EU (RoHS)

EN 63000:2018 - Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Name: John McCaffrey, Ph.D.

Title: Vice President, R & D

Signature: 

Date of issue: 06/03/2022

Location: Norcross, GA USA