

SEDIGRAPH[®] III PLUS

PARTICLE SIZE ANALYZER



PRE-INSTALLATION INSTRUCTIONS AND CHECKLIST

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(Rev C)

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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.

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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.

GENERAL SAFETY



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

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 5125 SediGraph II Plus weighs approximately 43 kg (95 lb). The MasterTech weighs approximately 18 kg (40 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.
- 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 SediGraph III Plus determines particle size by using the highly accurate and reproducible sedimentation technique which measures the gravity-induced settling rates of different size particles in a liquid with known properties. This is a simple yet extremely effective technique for providing particle size information for a wide variety of materials.



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	x	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.



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Return the completed checklist and forms to: 4 - 1

SediGraph III Plus EU Declaration of Conformity _____ **DoC - 1**

1 PRE-INSTALLATION DOCUMENT OVERVIEW



SediGraph III Plus



MasterTech (optional)

This document describes how to prepare a site for installation of the SediGraph III Plus. If Micromeritics will be performing this installation, when the enclosed procedures have been completed, return the signed and dated form to Micromeritics as outlined in [Dates and Signatures on page 4 - 1](#). If unsure about any part of this document or the checklist, contact the Micromeritics Service Department for clarification.

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.

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.

ANALYZER SPACE

An unobstructed lab work space that will accommodate the following specifications is needed:



SediGraph III Plus

Height	52 cm (21 in.)
Width	51 cm (20 in.)
Depth	58 cm (23 in.)
Weight	43 kg (95 lbs)

Computer and Printer

Width	96.5 cm (38 in.) Approx.
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Additional space required for storage of accessories and parts.



MasterTech (optional)

Height	69 cm (27.25 in.) maximum at load position
Width	46 cm (18.25 in.)
Depth	54 cm (21.25 in.)
Weight	18 kg (40 lbs)

The SediGraph III Plus is designed to be installed on a lab cabinet or table top surface. A table or counter top capable of supporting 100 pounds (45.36 kg) is required for the SediGraph and its peripheral equipment. If using a MasterTech, the table must support an additional 40 lbs. Micromeritics considers a table top installation where the front and rear of the instrument are open and easily accessible, and where the supply and waste receptacles are placed beneath the instrument.

The lab table (or cabinet) must accommodate the instrument and computer's combined width of 55.5 in (140.97 cm), a depth of 22 in. (55.88 cm) and the width and depth of the peripheral equipment, such as an ultrasonic probe assembly or a MasterTech auto-sampler unit.

The height of the SediGraph III Plus is 20.5 in. (52.07 cm). In addition, 18 inches (45.7 cm) should be provided above the instrument for access to the top of the instrument, making it easier to do periodic maintenance and service. Inspect the area above the combined heights of the analyzer and table to ensure the absence of lab cabinets, air ducts, pipes, light fixtures etc.

The lab must accommodate 1 square foot (0.30 square meters) for each fluid container. There are two containers in use, Supply and Waste/Overflow. For a standard installation, the containers must be within 6 feet (1.83 m) of the instrument.

COMPUTER SYSTEM

We recommend purchasing the computer system from Micromeritics. Micromeritics thoroughly tests operating systems with the Micromeritics applications and offer technical support and maintenance for the computers we provide. For analyzers not installed by Micromeritics, please note:



- 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 LIMS.
- During installation, Administrator rights will be required to make changes to the Ethernet settings. If access cannot be granted to the Service Technician, an IT representative must be readily available to make these changes or additional charges may apply.

Computer Requirements

Operating System	Windows 7 Professional or higher operating system is recommended for the best user experience.
Desktop Installation Required	The application should not be installed on a network drive with shared access. Multiple users cannot operate the application at the same time.
10 Base T or 100 Base T Ethernet Port	If the computer is to be connected to a network, two Ethernet ports are required. If more than one Ethernet-based unit is connected to the same computer, an Ethernet switch will also be required.
Read/Write Permissions	All application users will need Read/Write permission to all directories and subdirectories where the application is installed.
Drives	USB port

Due to continuous improvements, specifications are subject to change without notice.

ENVIRONMENTAL FACTORS

POWER

The SediGraph is designed to operate with universal input power supply (100/120/220/240VAC, 47/63 Hz, 450VA). The power outlet should be able to supply 15 amps @ 100 or 115VAC $\pm 10\%$ or 7.5 amps @ 240VAC $\pm 10\%$. These requirements can be checked by using a circuit analyzer (available at most hardware or electronic supply houses) or a multimeter. There should also be sufficient outlets for the computer, monitor, printer, and any other peripheral devices. The power cord, IEC, 300V, 10A (available in the accessories kit) should be connected to noise-free power of the correct voltage and frequency, with a safety earth ground, through a standard wall receptacle.

The MasterTech 052 leaves the factory set for 120VAC and with the line fuse removed. The correct setting of the universal power entrance must be checked, and the appropriate fuse installed before the MasterTech can be operated. The MasterTech is designed to operate with either 100/120/220/240VAC at 50/ 60 Hz. Voltage selection and fusing are made at the power connector which is located on the rear panel of the unit.

The instrument should be connected to a switch which meets relevant requirements of IEC 60947-3 or a circuit breaker which meets the relevant requirements of IEC 60947-2.

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 @ 100/120VAC and a minimum 7.5A @ 240VAC.



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 40 °C (50 to 104 °F) operating; -10 to 55 °C (14 to 131 °F) non-operating

Humidity: Up to 90% relative (non-condensing) for the SediGraph
20 to 80% relative (non-condensing) for peripheral devices

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.

LABORATORY EQUIPMENT AND SUPPLIES

In order to obtain accurate results, the SediGraph III Plus requires:

- The dispersing fluid to contain the same concentration of dispersant for each run.
- The same weight of sample powder for each sample run.
- An ultrasonic probe is suggested for dispersion. Ensure use of the ultrasonic probe at the same output setting and dispersion time for each run of the same material.
- An analytical scale with the capacity of 100 grams of measurement and 1 mg readability.

DEIONIZED WATER

Ensure deionized water is available in sufficient quantities. There should be at minimum 10 liters of deionized water for the installation.

DISPERSANTS

A solution of sodium metaphosphate will be needed for the installation and verification of the instrument operation. The proper solution for Medium Particle Size Reference Material (MPSRM, garnet) can be made by adding 0.5 gram sodium metaphosphate to a liter of deionized water, (5 grams of sodium metaphosphate to 10 liters of deionized water).

If Fine Particle Size Reference Material (FPSRM, Calcium Carbonate) is required, a concentration of 0.2% sodium metaphosphate and deionized water must be used, 2 grams of sodium metaphosphate to 1000 mL of deionized water (20 grams of sodium metaphosphate to 10 liters of deionized water).

DO:

- Use only deionized or distilled water.
- Use chemical dispersants manufactured for the purpose of dispersion. See the appendix section of the *SediGraph III Plus Operator Manual* [512-42835-01] or further information.

DO NOT:

- Use Tap water for the dispersing fluid.
- Use dispersing products manufactured for use as a dish or clothes washing aid. See the appendix section of the *SediGraph III Plus Operator Manual* for further information.

AccuPyc 1340 OR OTHER DENSITY MEASURING DEVICE

If this instrument is going to be installed in an R&D type of environment where the sample density is not known, a Micromeritics AccuPyc, or some other density measuring device, will be needed. Sample density is a required parameter for samples analysis.

VISCOSITY MEASURING DEVICE

An instrument capable of measuring the viscosity of the dispersing sample fluid will be required if the fluid's viscosity numbers are not available from a known source. Viscosity numbers at three temperatures (high, medium, and low) are required for the SediGraph to interpolate the viscosity at any temperature.

WASTE COLLECTION/REMOVAL

There will be waste products generated in the operation of the SediGraph III Plus — usually water and dispersant with sample material. A way to dispose of this material — such as a sink — is needed.

If planning to use SediSpense or any type of oil-based fluid, waste will need to be disposed by an approved method for hazardous materials.

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	

ANALYZER 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	
Can the area accommodate the mass spectrometer?	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	
Will there be adequate space to easily access the power supply lines and sufficient clearance for maintenance and inspection?	Y	N	

INSTALLATION CONFIGURATION CHECKLIST

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: 			

COMPUTER SYSTEM CHECKLIST

			Initial / Date
Was the computer purchased from Micromeritics?	Y	N	
<ul style="list-style-type: none"> If No, does the computer meet Micromeritics' minimum requirements? 	Y	N	
Will the computer be connected to the local network?	Y	N	
<ul style="list-style-type: none"> If Yes, will two Ethernet ports be available during the installation? 	Y	N	
Will there be more than one Micromeritics Ethernet based analyzers connected to this computer?	Y	N	
<ul style="list-style-type: none"> If Yes, will an Ethernet switch be available during the installation? 	Y	N	
Will the Micromeritics Service Engineer have Administrator rights to the computer?	Y	N	
<ul style="list-style-type: none"> If No, will an IT representative be available? 	Y	N	
All application users are required to have read/write permission to all directories and subdirectories where the application is installed. Will these permissions be set prior to installation?	Y	N	

LABORATORY EQUIPMENT AND SUPPLIES CHECKLIST

Laboratory Equipment and Supplies			Initial / Date
Are sufficient quantities of deionized water available?	Y	N	
Are sufficient quantities of sodium metaphosphate available?	Y	N	
Is an analytical balance with the capacity of 100 grams measurement and 1 mg resolution available?	Y	N	
Is a device for measuring density available?	Y	N	
Are the fluid's viscosity numbers available?	Y	N	
<ul style="list-style-type: none"> If No, is a viscosity measuring device available? 	Y	N	
Is a method for waste collection and removal in place?	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

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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:

Sedigraph™ III Plus 5125 Particle Size Analysis System

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)

EN 61010-1:2010/A1:2019 - *Safety requirements for electrical equipment for measurement, control, and laboratory use — Part 1: General requirements.*

EN 61010-2-081:2020 - *Particular requirements for automatic and semi-automatic laboratory equipment for analysis and other purposes*

2014/30/EU (EMC)

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

EN 61000-3-2:2018 - *Part 3-2: Limits — Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)*

EN 61000-3-3:2013;+A1:2017 - *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: 

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