MICROACTIVE ASAP® 2425

ACCELERATED SURFACE AREA AND POROSIMETRY SYSTEM

micromeritics®

This Operator Training Checklist was reviewed and approved by:

Director, Quality Assurance	Director, Marketing
Service Manager - Americas	Technical Director

OPERATOR TRAINING CHECKLIST

242-42875-03
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(Rev -)

CORPORATE PROFILE

Micromeritics Instrument Corporation is a leading global provider of solutions for material characterization with best-in-class instrumentation and application expertise in five core areas: density; surface area and porosity; particle size and shape; powder characterization; and catalyst characterization and process development.

Founded in 1962, the company is headquartered in Norcross, Georgia, USA and has more than 400 employees worldwide. With a fully integrated operation that extends from a world class scientific knowledge base through to in-house manufacture, Micromeritics delivers an extensive range of high-performance products for academic research and industrial problem-solving.

Under its premium brand Particulate Systems, Micromeritics discovers and commercializes unique and innovative material characterization technologies that are complementary to core product lines.

The company's holistic, customer-centric approach also extends to a cost-efficient contract testing laboratory – the Particle Testing Authority (PTA). The strategic acquisitions of Freeman Technology Ltd and Process Integral Development S.L. (PID Eng & Tech) reflect an ongoing commitment to optimized, integrated solutions in the industrially vital areas of powders and catalysis.

Freeman Technology (Tewkesbury, UK) brings market-leading powder characterization technology to Micromeritics' existing portfolio of particle characterization techniques. The result is a suite of products that directly supports efforts to understand and engineer particle properties to meet powder performance targets. With over 15 years of experience in powder testing, Freeman Technology specializes in systems for measuring the flow properties of powders. In combination with detailed application know-how these systems deliver unrivalled insight into powder behavior supporting development, formulation, scale-up, processing and manufacture across a wide range of industrial sectors.

PID Eng & Tech (Madrid, Spain) complements Micromeritics' renowned offering for catalyst characterization with technology for the measurement and optimization of catalytic activity, with a product range that extends to both standard and bespoke pilot scale equipment. Launched in 2003, PID Eng & Tech is a leading provider of automated, modular microreactor systems for the detailed investigation of reaction kinetics and yield. These products are supported by a highly skilled multidisciplinary team of engineers with in-depth expertise in the design, construction and operation of laboratory units and process scale-up.

The Particle Testing Authority (PTA) provides material characterization services for fine powders and solid materials using Micromeritics' instrumentation alongside complementary solutions from other vendors. With the certification and expertise to operate across a wide range of industries the PTA offering runs from single sample analysis to complex method development, method validation, new product assessment, and the analytical support required for large scale manufacturing projects. An experienced, highly trained team of scientists, engineers, and lab technicians works closely with every client to ensure that all analytical requirements are rapidly and responsively addressed.

Micromeritics has a strong global network with offices across the Americas, Asia, and Europe complemented by a dedicated team of distributors in additional locations. This ensures that local, knowledgeable support is available for every customer, in academia or industry. Micromeritics works across a truly diverse range of industries from oil processing, petrochemicals and catalysts, to food and pharmaceuticals, and at the forefront of characterization technology for next generation materials such as graphene, metal-organic-frameworks, nanocatalysts, and zeolites. Engineering solutions that work optimally for every user is a defining characteristic of the company.

DOCUMENT REVISION HISTORY

REV	ECN #	Description of Change	Checked By	Date
-	200001	Formal Release.		

1. OVERVIEW

This document contains a checklist to be used for training of MicroActive ASAP 2425 system operators. Place a check mark next to the items that were shown and discussed.

2. ORIENTATION

_____ 1. Table of Contents and appendices
_____ 2. Manual organization and conventions
_____ 3. Equipment description
_____ 4. Power up and power down sequence
_____ 5. Analyzer and cable connections
_____ 6. Purging of gas lines
_____ 7. Sample tube choice, cleaning, handling, and assembly
_____ 8. Trainee prepared sample tube
_____ 9. Degasser connection (if applicable)
_____ 10. Degas system
_____ 11. Loading samples onto degas system
_____ 12. Trainee allowed to load sample
_____ 13. Menu structure
_____ 14. Mouse and keyboard usage
_____ 15. Trainee allowed time to become familiar with software operation
_____ 16. Unit Configuration
_____ 17. *Help* menu
_____ 18. Libraries

3. METHODS CREATION

_____ 1. Methods creation
_____ 2. Methods used in sample information files

4. Sample File and Parameter File Creation

_____ 1. File menu and sample information file structure
_____ 2. Sample information file
_____ 3. Sample tube file
_____ 4. Degas conditions file
_____ 5. Analysis conditions file
_____ 6. Adsorptive properties file
_____ 7. Report options file
_____ 8. Available reports

5. Sample Analysis

_____ 1. Sample loaded onto degasser and degassing started
_____ 2. Degassed sample unloading
_____ 3. Sample tube installation
_____ 4. Starting and viewing analysis
_____ 5. Indicators, prompts, and valves
_____ 6. Effect of alternative analysis conditions
_____ 7. Adsorption dosing and equilibration
_____ 8. Screen reporting of analysis in progress

Krypton Option (if applicable)

_____ 1. Low surface area analysis at low pressures discussed
_____ 2. 10 mmHg transducer
_____ 3. High vacuum pump
_____ 4. Port 6 dosing
_____ 5. Starting and viewing krypton analysis

_____ 6. Krypton analysis reports

MICROPORE OPTION (IF APPLICABLE)

_____ 1. Micropore analysis discussed
_____ 2. 10 mmHg transducer
_____ 3. High vacuum pump
_____ 4. Degassing samples on analysis ports
_____ 5. Starting and viewing micropore analysis
_____ 6. Micropore analysis reports

6. *ANALYSIS REPORTS*

_____ 1. Interactive reports
_____ 2. Starting default reports
_____ 3. Changing sample file report options
_____ 4. Surface area and t-plot calculation adjustment
_____ 5. User-defined reports
_____ 6. Printed reports
_____ 7. Example reports
_____ 8. Calculations (internet location)

7. *DIAGNOSTICS*

_____ 1. Dashboard
_____ 2. Show all readings
_____ 3. Diagnostics tests

8. Options Menu

_____ 1. *Options* menu
_____ 2. Presentation display options
_____ 3. Default method
_____ 4. Manage libraries
_____ 5. Units of measurement selections
_____ 6. Graph options
_____ 7. Service mode

9. Troubleshooting and Maintenance

_____ 1. Error messages (internet location)
_____ 2. Preventive maintenance procedures
_____ 3. Analysis port filter replacement
_____ 4. Reference material analysis details and analysis frequency
_____ 5. Connecting gas cylinders
_____ 6. Instrument calibration

10. Returned Goods and Parts Ordering

_____ 1. Returned goods policy
_____ 2. Parts and accessories

11. Warranty Statement

_____ 1. Warranty policy

12. QUESTIONS

_____ All questions on operation resolved? (Enter **Yes** or **No**.)

If **No**, use the available space to document the question, then forward to the appropriate personnel at Micromeritics for resolution.

13. VERIFICATION

_____ All items on the Operator Training Checklist completed? (Enter **Yes** or **No**)

Name of trainer: _____

Date of training: _____

Company address: _____

_____

_____

_____

Analyzer name: _____

Analyzer serial number: _____

The following section is to be completed by the primary operator trained during this session. Please complete to acknowledge that installation training has been carried out to your satisfaction.

Operator verifying completion of training: _____

Date signed: _____

Operator's title: _____

Operator's phone number: _____