Thermo Scientific Andersen Non-Viable Cascade Impactors

Research results with an impact

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Thermo Scientific Andersen Non-Viable Cascade Impactors

First in its class, the Thermo Scientific Andersen Series of Non-Viable Cascade Impactor is the original design cited as the world's reference for airborne particle sizing.

The Andersen Cascade Impactors (ACI) are uniquely defined as a primary standard classification device thanks to performance verification through well established fundamental physical principles. With over 40 years of published performance, our multi-stage Andersen Cascade Impactor is the best instrument for determining medical and research aerosol particle size distribution, indoor air quality applications including sterile and aseptic processing environments, and quiescent outdoor areas. Our complete line of Andersen Cascade Impactors are the simplest, low cost and adaptable way to sample airborne particulates and inhalation delivery platforms.

The Thermo Scientific Andersen Non-Viable Cascade Impactor allows aerosols to be classified by size distribution through extensive experimental proofs and empirical verification. Once certain properties of the examined aerosol are known, the Andersen Cascade Impactors enable comprehensive aerosol definition. Inertial Impactors provide extremely sharp "cut-points", enabling multiple size classifications and additional analysis of the collected sample. It additionally, allows the sampled mass to be weighed directly without artificial processing and without dependence upon statistically manipulated data.

Every jet on every stage of every Thermo Scientific Andersen Cascade Impactor is individually inspected by our exclusive advanced digital video optical comparator. This permanent record verifies the placement and Heywood diameter of each jet to verify initial instrument performance and is a future reference to recertify Impactor performance.

The impactor operates by drawing the aerosol through a series of aluminum stages containing upward of 400 precision drilled jets, each stage having jets of a progressively smaller diameter. An impaction surface is located directly below the jets at right angles to the aerosol flow. As a known and constant volume of air travels through the jet, the Venturi effect imparts inertial energy to entrained particles within the airstream. The larger the aerodynamic diameter of the particle, the greater the imparted inertial energy. Larger particles, with higher inertia, will deposit upon the immediate impaction surface. Smaller particles with less inertial energy will remain entrained in the airstream, flow around the impaction surface and proceed through subsequent stages with smaller jets. Eventually, all entrained particles will be deposited upon impaction surfaces within the series, or "cascade" of jet stages and impaction surfaces.

The Andersen Cascade Impactor Visual Inspection System, or ACIVIS, is a highly accurate, digital video scanning system for the examination of each jet hole of our Thermo Scientific Andersen Non-Viable Cascade Impactor. The robotic system documents all the essential hole/jet parameters for determining acceptability to engineering design and performance specifications. The thorough examination can provide details not achievable by measuring "pins" or microscopic devices. The ACIVIS is recalibrated daily or more often as jet hole diameter indicates the next appropriate standard. Calibration standard plates are maintained to calibrate the system and are certified NIST traceable. The ACIVIS compares the actual jet with seven desired design parameters to ensure the "tightest" tolerances of any impactor in the world.

Annual recertification occurs as required by our ISO 9001 procedures. Written documentation is provided post-inspection to detail the results. An "Impactor Stage Summary Report" and "Completion Report" will indicate the unit identification, date of review, number of jet holes measured and "passes" and "failures".

All new Impactor Systems undergo an ACIVIS inspection before shipping and are flow calibrated with a factory supplied vacuum pump where applicable. A unique serial number is given to each stage in the multistage system to further track system history and allow data retrieval. The serial number is imprinted on each stage adjacent to the stage number.

Eight Stage Non-Viable Cascade Impactor

The Thermo Scientific Andersen Eight Stage Non-Viable Cascade Impactor is a multi-stage, multi-orifice sampler designed to measure the size distribution and mass concentration levels of solid particulates and liquid aerosols. The Andersen Eight Stage Non-Viable Cascade Impactor is specifically cited within the US Pharmacopeia Chapter 601 as the primary standard characterizing device for aerosols within metered-dose and dry-powder inhalers.

A variety of available non-viable sampler inlets and preseparators are especially relevant during research, quality assurance and equivalency testing.

Empirically proven with over 40 years of data, only the flow-rate of the Thermo Scientific Andersen Cascade Impactor needs to be verified to provide "calibrated performance".

The combination of a constant flow rate and successively smaller diameter orifices increase the velocity of sample air as it cascades through the sampler, resulting in the impaction of progressively smaller particles in the succeeding stages. Operating at 28.3 liters per minute (LPM) the particle fractionation ranges from >10.0 to 0.4 micrometers diameter. Particles too small to be impacted on the last collection plate are collected in the backup filter. Optional accessories allow for additional research operations at 60 and 90 LPM.

Applications:
Pharmaceutical Research Applications
As well as:

- Studying ventilation
- Indoor or outdoor air quality
- Hazardous waste sites
- Emergency response situations

Features:

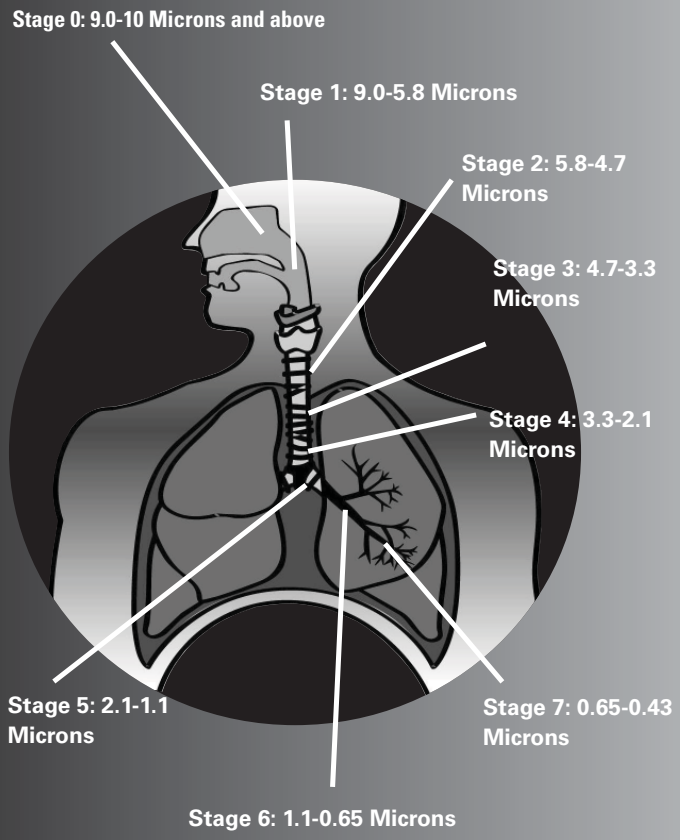
- Samples wet or dry aerosols
- Gravimetric analysis allows reference method precision
- Ease of operation and calibration
- Particle bounce and wall losses virtually eliminated
- High-mass collection and high-flow rate
- Gravimetric or chemical sample analysis
- A large variety of substrates and filters are available
- Ease of set-up calibration and operation

Why monitor particles?

- Particle size distribution of Dry Powdered/Metered Dose Inhalers (DPI/MDI)
- Ambient air monitoring for pollution
- Hazardous materials in workplace air
- Verify pollution control equipment performance in exhaust stacks and lines
- Particulate contamination in clean rooms
- Manufacturing or industrial processes
- Product integrity

Why is particle size important?

- Analysis of drug delivery to the lungs
- Determine potential health effects, ex: inhalation exposures and tissue doses
- Pollution control equipment efficiency
- Determination/modeling of atmospheric transport, deposition and re-suspension of particles
- Identification of emission sources



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EXPANDED TECHNICAL SUPPORT COVERAGE

Our highly trained and experienced technical support team is ready to provide application expertise and work with you to determine the product and configuration that best meets your needs. The team is also there to troubleshoot instruments.

CUSTOMER SERVICE

Our customer service team processes orders, provides status of current orders as well as pricing and availability of product. Our international customer service team is export-compliant trained and extremely experienced in shipping to all regions of the world.

CALL US

Our team can be reached between 8:00 AM and 8:00 PM, Monday through Friday, Eastern Standard Time by calling 866-282-0430 or 1-508-520-0430. Or fax us at 508-520-2800.

For more information about the Thermo Scientific Industrial Hygiene and Safety Instruments, or any of our other monitoring solutions, please visit www.thermo.com/ih

For ordering information, please contact your local dealer or Thermo Fisher Scientific representative.

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