

Thermo Scientific N6 Single Stage Andersen Cascade Impactor

Microbial, viable particle sizing sampler

The Thermo Scientific™ N6 Single Stage Andersen Cascade Impactor (ACI) is a microbial, viable particle sizing sampler. This impactor was developed in collaboration with the National Institute for Occupational Safety and Health (NIOSH) for the sampling and assessment of bioaerosols in the workplace.

- Developed in collaboration with NIOSH
- Referenced in EPA, OSHA and FDA particle sizing protocols
- Sharp cut point diameter
- High mass collection and verifiable flow rate
- Spring action retainer clamps for easy disassembly and cleaning

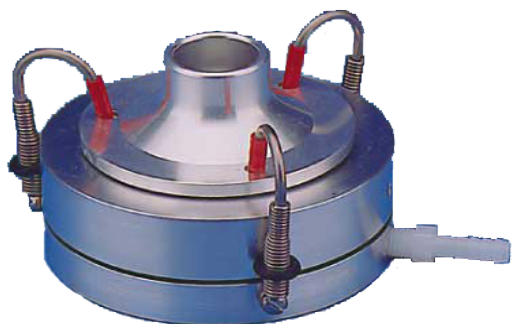


The N6 Impactor is also referenced in particle sizing protocols set forth by the Environmental Protection Agency (EPA), Occupational Safety and Health Association (OSHA), and the Food and Drug Administration (FDA).

This Single Stage Impactor consists of a single state with 400 precision machined jet orifices. When the air is drawn through the sampler, multiple jets of air direct any airborne particles onto the surface of the collection plate. The N6 Impactor requires an exact flow rate of 28.3 lpm to achieve the well-documented sharp cut point diameter of 0.65 microns. The N6 Impactor is comprised of an aluminum inlet cone, a jet stage and a base plate that is held together by three spring action retainer clamps and sealed with o-ring gaskets. The spring action retainer clamps allow for easy disassembly and cleaning. An optional carrying case is available and will accommodate the impactor and Petri dishes as well as the vacuum pump

Applications Include:

- Indoor air quality studies
- Pharmaceutical production
- Animal care laboratories
- Wastewater treatment plants
- Cosmetic manufacturing
- Filter & clean room efficiency studies
- Brewery fermentation
- Food processing area
- Hospital environments
- Grain processing and transportation
- Agricultural emissions



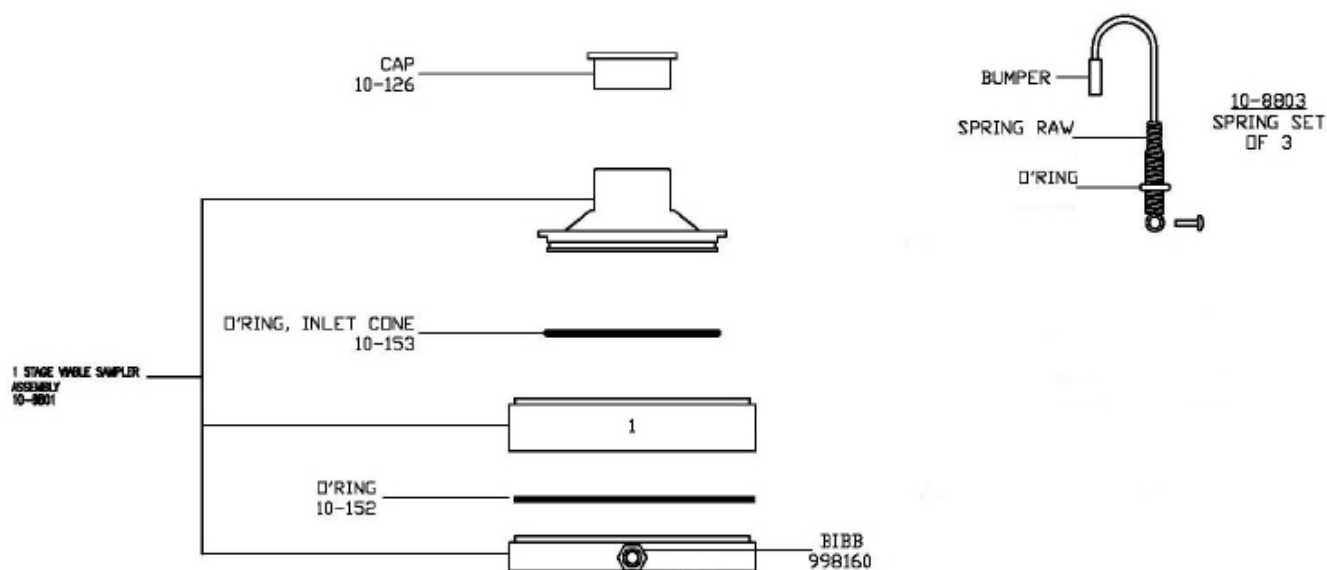
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Thermo Scientific N6 Single Stage Andersen Cascade Impactor

Flow Rate	28.3lpm
Sharp cut-off diameter	0.65 microns
Physical Dimensions	
Impactor	2.9" (7.4cm) Height x 4.13" (10.5cm) Diameter
Vacuum Pump	9.5" (24.1cm) W x 5.5" (14cm) H x 4.5" (11.4cm) D
Carrying Case	22" (55.9cm) W x 10" (22.4cm) H x 5" (12.7cm) D
Weight	
Impactor	1.25lbs (0.57kg)
Vacuum Pump	8.6lbs (3.9kg)
Carrying Case	8lbs (3.6kg)
Calibration	NIST traceable flow calibration (optional)

Assembly

N6 Single Stage Andersen Cascade Impactor Assembly



To maintain optimal product performance, you need immediate access to experts worldwide, as well as priority status when your air quality equipment needs repair or replacement. We offer comprehensive, flexible support solutions for all phases of the product life cycle. Through predictable, fixed-cost pricing, our services help protect the return on investment and total cost of ownership of your Thermo Scientific products.

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Thermo Scientific Two Stage Viable Andersen Cascade Impactor

Separates particles from intramural or ambient air for the collection of bioaerosols in both respirable and non-respirable fractions.

The Thermo Scientific™ Two Stage Viable, Andersen Cascade Impactor (ACI), is a multi-orifice impactor for use when size distribution is not required and only respirable and non-respirable segregation or total counts are needed.

- The Original Andersen Cascade Impactor (ACI) known as the World's reference bioaerosol sampler
- Microbial impactor with verifiable flow rate
- Based on the inertial impaction principle
- Ease of set up, calibration, operation, and sterilization
- Thumb-nuts allow for easy disassembly and cleaning



The Two Stage Viable Impactor consists of two sampling stages each containing 200 precision machines jet orifices. When air is drawn through the sampler, multiple jets of air direct any airborne particles on to the surface of the collection plate. The Two Stage Viable Impactor requires an exact flow rate of 28.3 lpm (1CFM).

The Two Stage Viable Impactor is comprised of an aluminum inlet cone, two sampling stages and a base plate that is held together by three thumb-nuts.

The thumb-nuts allow for easy disassembly and cleaning. An optional carrying case is available and will accommodate the impactor as well as the vacuum pump and Petri dishes.

Applications Include:

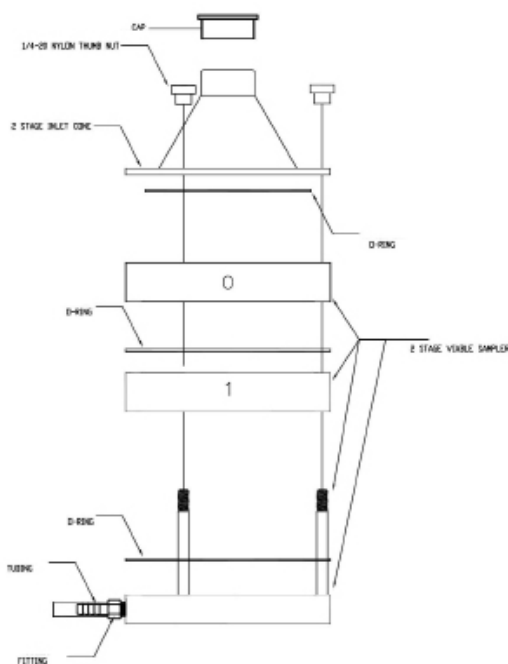
- Indoor air quality studies
- Pharmaceutical production
- Animal care laboratories
- Wastewater treatment plants
- Cosmetic manufacturing
- Filter & clean room efficiency studies
- Brewery fermentation
- Food processing area
- Hospital environments
- Grain processing and transportation
- Agricultural emissions



Thermo Scientific Two Stage Viable Andersen Cascade Impactor

Flow Rate	28.3 lpm (1CFM)
Sharp cut-off diameter	
Stage 1	8.0 μm and above
Stage 2	0.8 to 8.0 μm
Physical Dimensions	
Impactor	5" (12.7cm) H x 4.75" (12.1cm) D
Vacuum Pump & Case	9.5" (24.1cm) W x 5.5" (14cm) H x 4.85" (11.4cm) D
Carrying Case	22" (55.9cm) W x 10" (25.4cm) H x 5" (12.7 cm) D
Weight	
Impactor	2.8 lbs (1.27kg)
Vacuum Pump & Case	8.6 lbs (3.9kg)
Carrying Case	8 lbs (3.6kg)
Calibration	Primary standard calibration device

Assembly



To maintain optimal product performance, you need immediate access to experts worldwide, as well as priority status when your air quality equipment needs repair or replacement. We offer comprehensive, flexible support solutions for all phases of the product life cycle. Through predictable, fixed-cost pricing, our services help protect the return on investment and total cost of ownership of your Thermo Scientific products.

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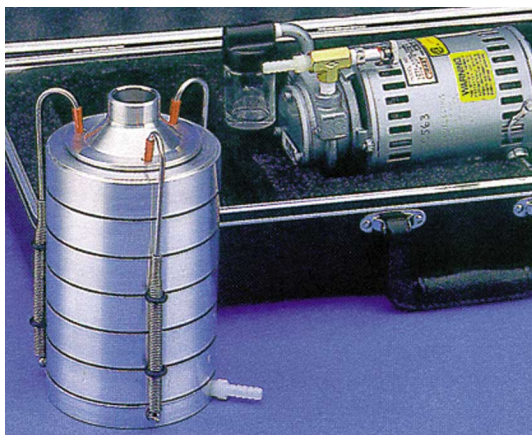
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Thermo Scientific Six Stage Viable Andersen Cascade Impactor

Bioaerosol and microbial particle sizing sampler

The Thermo Scientific™ Six Stage Viable Andersen Cascade Impactor (ACI) is a bioaerosol and microbial particle sizing sampler designed to measure the concentration and particle size distribution of aerobic bacteria and fungi in intramural or ambient air. All particles collected, regardless of size, shape or density are aerodynamically sized and can be directly related to human lung deposition.

- The Original Andersen Cascade Impactor (ACI) known as the world's reference bioaerosol sampler
- Microbial impactor with verifiable flow rate
- Based on the inertial impaction principle
- All particles can be directly related to human lung deposition
- Spring action retainer clamps for easy disassembly and cleaning



Each sampling stage has up to 400 precision machined jet orifices with diameters ranging from 1.81mm on the first stage to 0.25mm on the sixth stage. When air is drawn through the sampler, multiple jets of air in each stage direct airborne particles, of a given size, onto the surface of the collection plate. The Six Stage Viable ACI requires an exact flow rate of 28.3 lpm for maximum collection efficiency.

The Six Stage Viable ACI is comprised of an aluminum inlet cone, six jet stages, six glass Petri dishes and a base plate that is held together by three spring action retainer clamps and sealed with o-ring gaskets. The spring action retainer clamps allow for easy disassembly and cleaning. An optional carrying case is available and will accommodate the impactor and Petri dish as well as the vacuum pump.

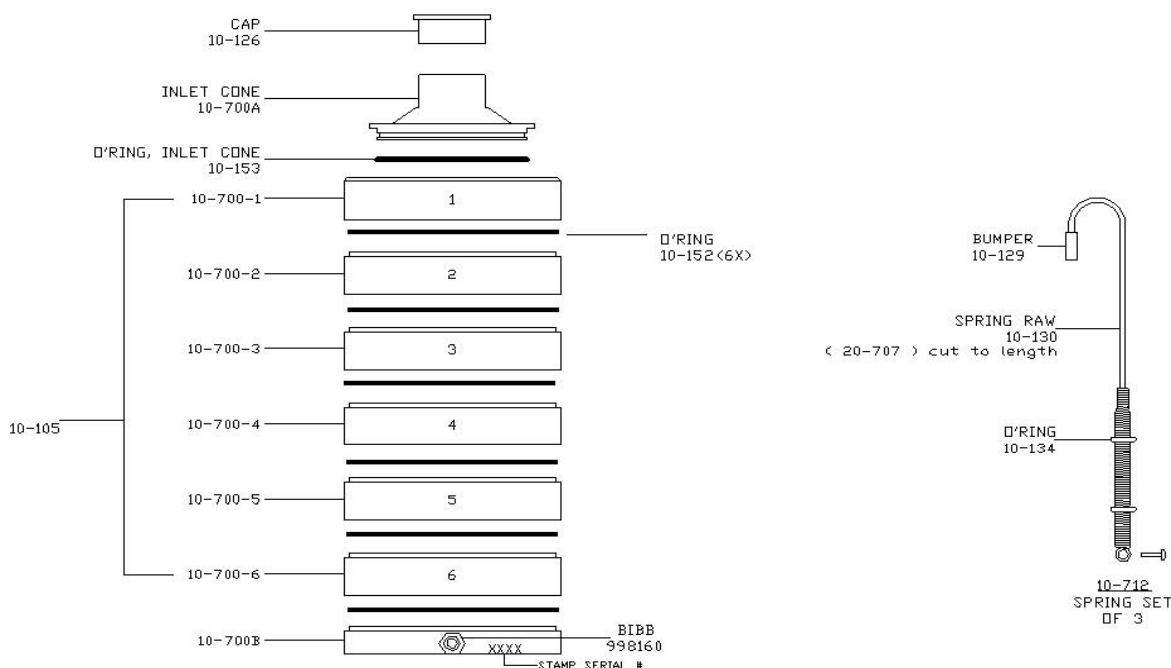
Applications Include:

- Indoor air quality studies
- Pharmaceutical production
- Animal care laboratories
- Wastewater treatment plants
- Cosmetic manufacturing
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- Hospital environments
- Grain processing and transportation
- Agricultural emissions

Thermo Scientific Six Stage Viable Andersen Cascade Impactor

Flow Rate	28.3lpm
Sharp Cut-off Diameter (D50)	0.65 - 7.0+ μm
Physical Dimensions	
Impactor	7.5" (19.7cm) Height x 4.13" (10.5cm) Diameter
Vacuum Pump & Case	22" (55.9cm) W x 10" (25.4cm) H x 4.5" (11.4cm) D
Weight	
Impactor	2.75lbs (1.25kg)
Vacuum Pump & Case	8.6lbs (3.9kg)
Carrying Case	8lbs (3.6kg)
Calibration	NIST traceable flow calibration (optional)

Assembly



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**Thermo Scientific
Andersen Non-Viable
Cascade Impactors**

Research results with an impact



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

Stage 0: 9.0-10 Microns and above

Stage 1: 9.0-5.8 Microns

Stage 2: 5.8-4.7 Microns

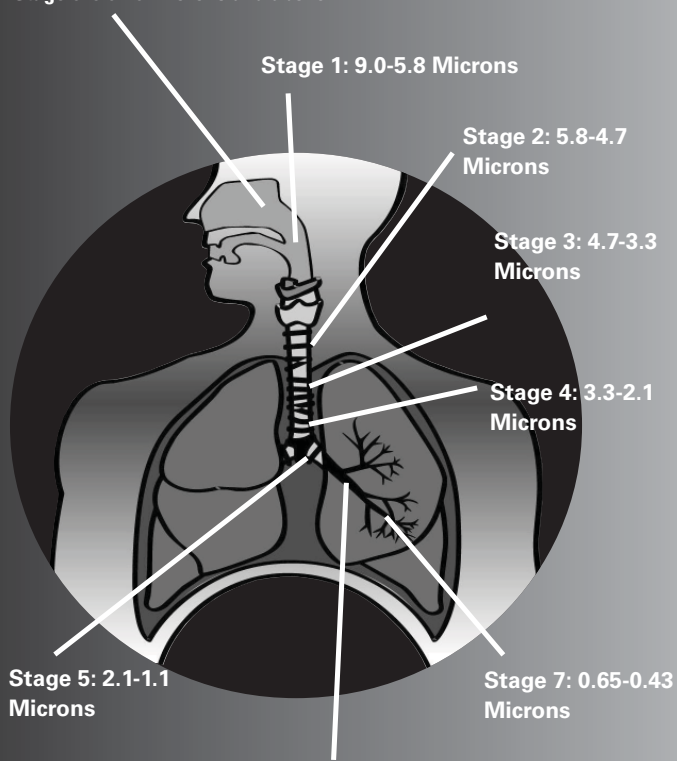
Stage 3: 4.7-3.3 Microns

Stage 4: 3.3-2.1 Microns

Stage 5: 2.1-1.1 Microns

Stage 7: 0.65-0.43 Microns

Stage 6: 1.1-0.65 Microns



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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

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