Sioutas Cascade Impactor

Separates Ultrafine, Fine, and > 2.5 µm Particles

- **Precise particle separation**
  - Particle size cut-points: 2.5 µm, 1.0 µm, 0.50 µm, and 0.25 µm
  - The only personal impactor that efficiently samples ultrafine, fine, and > 2.5 µm particles simultaneously
  - Maintains high collection efficiency even at high particle concentrations
- **Optimized at 9 L/min flow rate with low pressure drop for 24-hour sampling**
  - Improves analytical sensitivity
  - Minimizes non-detectable samples
- **Preserves unstable compounds**
  - Chemically inert collection substrate
  - No impaction grease to contaminate sample
- **Minimal particle bounce and internal wall losses**
- **Suitable for indoor and outdoor◊ sampling**
- **Size-fractionated samples can be analyzed gravimetrically, chemically, and microscopically**
- **Small and lightweight**
  - Suitable for personal or area sampling
  - 5.6 ounces (159 grams)

The patented† personal-size Sioutas Cascade Impactor* separates and collects airborne particles in five size ranges: > 2.5 µm, 1.0 to 2.5 µm, 0.50 to 1.0 µm, 0.25 to 0.50 µm, and < 0.25 µm. When used with PTFE filters, the Sioutas Impactor is highly efficient at collecting particles without the use of impaction grease or substrate coatings and at retaining unstable compounds for size-fractionated chemical analysis.

Sioutas Impactor and Leland Legacy Pump are Powerful Partners

Use the Sioutas Impactor and SKC Leland Legacy® Sample Pump at 9 L/min to ensure precise particle separation at the specified cut-points. Particles above each cut-point are on a 25-mm filter in the appropriate stage with particles below 0.25 µm collecting on the 37-mm after-filter. The small, lightweight Sioutas Impactor simply clips to a worker's collar or lapel for personal sampling and is also suitable for area sampling.

ETV Sioutas Impactor and Leland Legacy Receive ETV Verification

U.S. EPA Environmental Technology Verification (EPA-ETV) is a program that furthers environmental protection by accelerating acceptance and use of improved, cost-effective technologies through performance verification. EPA-ETV recently tested the SKC Leland Legacy Sample Pump with the Sioutas Impactor and released its report. For a verification report on the Leland Legacy and Sioutas performance, visit the AMS Center at www.epa.gov/nrmrl/std/etv/vt-ams.html#pcis.

* *Developed by Dr. Constantinos Sioutas of the University of Southern California in partnership with the Mickey Leland National Urban Air Toxics Research Center (NUATRC). See reference on reverse side.*

† *U.S. Patent No. 6,786,105*

◊ *Requires special provisions, see operating instructions*

SKC

SKC Inc. 724-941-9701 **SKC-West** 714-992-2780 **SKC Gulf Coast** 281-859-8050 **SKC South** 434-352-7149
www.skcinc.com

Publication 1690 Rev 1402

Sioutas Cascade Impactor

Separates Ultrafine, Fine, and > 2.5 µm Particles

The Sioutas Impactor Advantage!

Choose the personal-size Sioutas Impactor for the highly efficient collection of airborne particles in five size ranges:

- > 2.5 µm
- 1.0 to 2.5 µm
- 0.50 to 1.0 µm
- 0.25 to 0.50 µm
- < 0.25 µm

The advantage is the efficient collection of ultrafine and fine particles. Recent epidemiological studies show that fine and ultrafine particles may have greater pulmonary inflammatory potency than larger particles and associate increased morbidity and mortality with increased exposure to these particles. The Sioutas Impactor is the only personal impactor that precisely separates and collects ultrafine, fine, and > 2.5 µm particles simultaneously.

Applications

- Industrial hygiene studies
- Indoor Air Quality (IAQ) studies
- Air pollution studies
- Inhalation toxicology and epidemiological studies
- Aerosol research
- Pharmaceutical studies
- Outdoor ambient sampling◊

◊ *Requires special provisions, see operating instructions.*

References:

Misra, C., Singh, M., Shen, S., Sioutas, C., Hall, P., "Development and Evaluation of a Personal Cascade Impactor Sampler (PCIS)," Journal of Aerosol Science, 33, 2002, pp. 1027-1047

Ono-Ogasawara, M., Myojo, T. "A Proposal of Method for Evaluating Airborne MWCNT Concentration," Industrial Health, 49, 2011, pp. 726-734

Ono-Ogasawara, M., Myojo, T., "Characteristics of multi-walled carbon nanotubes and background aerosols by carbon analysis; particle size and oxidation temperature," Advanced Powder Technology, 2012, http://dx.doi.org/10.1016/j.apt.2012.06.013

Singh, M., Misra, C., Sioutas, C., "Field Evaluation of a Personal Cascade Impactor Sampler (PCIS)," Atmospheric Environment, 37, 2003, pp. 4781-4793

SKC Update of EPA Method IP-10A, 2004, www.skcinc.com

Sioutas, C., "Development of New Generation Personal Monitors for Fine Particulate Matter (PM) and its Metal Content," NUATRC Research Report No. 2, 2004

SKC Limited Warranty and Return Policy

SKC products are subject to the SKC Limited Warranty and Return Policy, which provides SKC's sole liability and the buyer's exclusive remedy. To view the complete SKC Limited Warranty and Return Policy, go to http://www.skcinc.com/warranty.asp.

Performance Profile

Flow Rate:	9 L/min 50% Cut-point of each stage at 9 L/min Stage A 2.5 µm Stage B 1.0 µm Stage C 0.50 µm Stage D 0.25 µm
Recommended After-filter Type:	37-mm, 2.0-µm PTFE filter with PMP support ring§ (Cat. No. 225-1709**)
Recommended Collection Filter for Stages:	25-mm, 0.5-µm PTFE with laminated PTFE support (Cat. No. 225-2708**)
Construction Material:	Stages are anodized aluminum; O-rings are Buna-N (Nitrile); filter retainers are acrylic
Wind Velocity:	< 5 mph
Operating Temperature:	Maximum operating temperature of PTFE filters with PMP support is 464 F (240 C)
Maximum Particle Load:	Varies by stage. See References, Sioutas, C.
Dimensions:	3.4 x 2.2 in (8.6 x 5.6 cm)
Weight:	5.6 oz (159 gm)
Tubing:	3/8-inch ID

Filters for the Sioutas Impactor

The Sioutas Impactor uses four 25-mm filters (*required*) and one 37-mm filter (*optional*) for sampling. The 25-mm PTFE filters act as collection substrate and the optional 37-mm PTFE filter is the final collection filter (after-filter). SKC recommends using PTFE** filters for use in the Sioutas Impactor to minimize particle bounce and preserve unstable compounds. Coated collection substrate may be used if desired, however, a coating is not necessary and can interfere with chemical analysis. *See below for filters.*

Ordering Information

Description	Cat. No.
Sioutas Personal Cascade Impactor	**225-370**

Sample Pump	Cat. No.
Leland Legacy Sample Pump,‡# 5 to 15 L/min, with Li-Ion battery pack, CE marked	**100-3002**

‡ *Use in non-explosive environments only. Not listed for intrinsic safety*
 # Contains Li-Ion batteries and is subject to special shipping regulations

Filters for Sioutas Impactor	Cat. No.
After-filter, PTFE,**§ 37 mm, 2.0-µm pore, pk/50, *optional*	**225-1709**
Collection Substrate (filter for 4 stages), PTFE,** 25 mm, 0.5-µm pore, pk/100, *required*	**225-2708**

** *Back pressure on PTFE filters can vary within the same lot.*
§ *Maximum operating temperature is 464 F (240 C).*

SKC Inc. 724-941-9701 **SKC-West** 714-992-2780 **SKC Gulf Coast** 281-859-8050 **SKC South** 434-352-7149
www.skcinc.com