

ACI 8 Stage

ANDERSEN CASCADE IMPACTOR

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ANDERSEN CASCADE IMPACTOR



Produced with
AISI 316

Applications

- Pharmaceutical Production
- Air Quality Studies
- Filter and Clean Rooms Efficiency
- Healthcare
- Food
- Cosmetics
- Defense & Military Sector

Inhalation and nasal drug products testing. MDIs and DPIs.

APSD (Aerodynamic Particle Size Distribution)

The design concept of the Andersen Cascade Impactor evolves from the following information:

The human respiratory system tract is an aerodynamic classifying system for airborne particles. A sampling device can be used as a substitute for the respiratory tract as a collector of airborne particles, and as such, it shall reproduce to a reasonable degree the lung penetration by these particles.



The 8 Stage ACI works at a standard constant flowrate of 28,3 L/min, with particle cut size in the range from 0,4 to 9,0 µm.

Dry Powder Inhaler (DPI) testing requires to achieve a high pressure drop through the sampler (4 kPa), so that a higher flowrate than 28,3 L/min is needed.

Conversion kits for 60 L/min and 90 L/min allow the standard 28.3 L/min impactor to be upgraded to the higher flowrates for DPI and MDI Applications.

ACI - Standard Configuration @ 28.3 L/min		ACI - Conversion Kit @ 60 L/min		ACI - Conversion Kit @ 90 L/min	
Stage #	Cut-Size (D ₅₀) µm	Stage #	Cut-Size (D ₅₀) µm	Stage #	Cut-Size (D ₅₀) µm
0	9,0	-1	8,6	-2	8,0
1	5,8	-0	6,5	-1	6,5
2	4,7	1	4,4	-0	5,2
3	3,3	2	3,2	1	3,5
4	2,1	3	1,9	2	2,6
5	1,1	4	1,2	3	1,7
6	0,7	5	0,55	4	1,0
7	0,4	6	0,26	5	0,22





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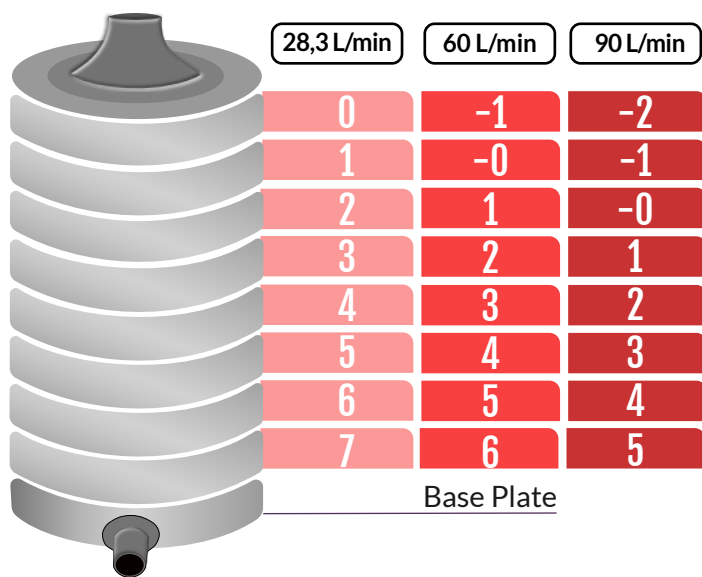
Impaction surfaces. Collection plates

Cascade impactors are multi-jet, multistage devices operating at constant flowrates that allow the characterization of an aerosol in terms of its particle size distribution.

Different impaction surfaces can be used to collect the airborne particles on the impaction stages, and the features of the impaction surfaces depend on the analytical needs. Glass dishes, stainless steel plates, glass-fiber/quartz filter and other membranes are mostly used. Glass dishes (used for optical analysis) and stainless steel plates are used in DPI and MDI applications to test inhalation suspensions and spray. Glass-fiber filters are commonly used for gravimetric analysis because they are lighter and less hygroscopic. Other types of filters (quartz, PTFE, polycarbonate membrane..) can be used for chemical speciation and physical characterization of the sampled particles.



Impactor Stages



Main Features:

- ⊙ Aerodynamic particle sizing;
- ⊙ Sampling flow: 28,3 L/min;
- ⊙ Conversion Kit: 60 L/min; 90 L/min;
- ⊙ Material: AISI / Aluminium (on request);
- ⊙ Height: 256mm;
- ⊙ Diameter: 105mm;
- ⊙ Weight: 3,5 Kg (Aisi) - 1,55Kg (Aluminium);
- ⊙ Carrying case;
- ⊙ Dimensional Inspection Certificate.

Structure of the ACI 8 Stages

When the air is drawn through the sampler, multiple jets of air direct any airborne particles onto the surface of the collection plate.

Impactor is comprised of an 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 collection plates.





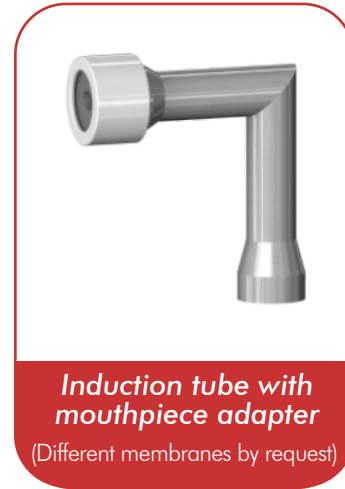
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8 Stage Impactor for Testing of MDIs and DPIs

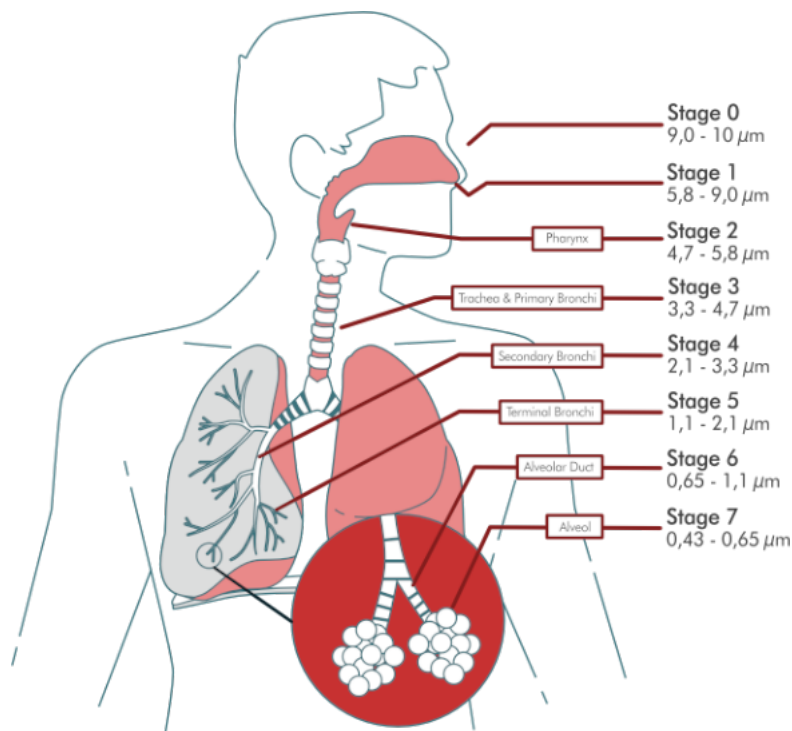
The results of characterizations using cascade impaction techniques are additionally used for the determination of fine particle fraction or fine particle dose which may be correlated to the dose or fraction of the drug that penetrates to the lung during inhalation by a patient.

8-stage impactors are specifically designed to meet the highest criteria laid down in the various Pharmacopoeia (European Pharmacopoeia Chapter 29.9.18 for characterizing aerosol clouds emitted by inhalers).



Induction tube with mouthpiece adapter

(Different membranes by request)



Cut-size of the Basic Configuration 28,3 L/min

By analyzing the drug deposited on the individual stages and the final filter, the Fine Particle Fraction, the Fine Particle Dose, the Mass Median Aerodynamic Diameter (MMAD) can all be calculated.

The standard device with the inclusion of the Induction Port, a mouth-piece adaptor, a compatible membrane and a suitable pump calibrated to the required flowrate with the impactor in place and shown to be leak tight can be used without modification to characterize the inhaler output.





Accessories



Kit of Mirror Sheet AISI Discs:
 for 28,3 L/min - AC99-120-0087SP
 for 60 L/min - AC99-120-0088SP
 for 90 L/min - AC99-120-0089SP

*Avaliable PTFE / Glass for Chemical Analysis on request.

BRAVO X H BIO

Bravo X H BIO Sampler

Bravo X H Bio has Hepa Filter in order to protect the environment and for security of the operator.

It is a standard sampling pump, with an automatic flow control and touch screen 3.5".

Data is saved and can be downloaded using usb flash drive.

Bravo Bio has a wide range of flow regulation from few L/min till 120 L/min (no external connection).



Bravo X H BIO
AA99-000-0745SP

Product Codes

Product	Code
8 Stage Cascade Impactor (IMP-8)	AC99-120-0119SP
Conversion KIT 28.3 L/min to 60 L/min	AC99-120-0027SP
Conversion KIT 28.3 L/min to 90 L/min	AC99-120-0029SP
Conversion KIT 60 L/min to 90 L/min	AC99-120-0028SP
BRAVO X H BIO Sampler	AA99-000-0745SP
Carrying case for Impactor	AC99-120-0083SP
Induction tube for Inhalation test (different membranes for mouthpiece adapter are available)	AC99-120-0023SP
2x Laboratory tweezers with rubber tip for collection plates	AC99-120-0120SP
Quartz fiber filters 25 pcs x 10	AD99-007-0125CR

