PF 1
Powder Flow Tester

Standardized powder flow characterization
USP <1174> and EP 2.9.36
Flow through an Orifice
Angle of Repose

PF 1

The PF 1 powder flow tester has been specifically designed for standardized testing in full compliance with Pharmacopeia requirements as laid down in USP <1174> and EP 2.9.36. Its optimized design allows for different, yet easily repeatable test conditions and methods for powder flow characterization. Change-over between configurations is simple with quick-change components that do not require any additional tools.

Adjustable height
Robust stand with two easily height-adjustable arms (quick-lock without any tools).

Easy-to-clean
Optimized for fast and trouble-free cleaning.

Integrated timer
The timer starts & stops automatically when opening / closing the shutter.

Analytical balance
Simplified "Mass per Time" measuring with (optional) laboratory balance.

Multi-purpose pivot arm
Allows to flexibly use either a stirrer or a filling funnel without having to remove any components.

Quick-change
Cylinder with multiple discs or funnel with different nozzles for "Flow through an Orifice" type tests.

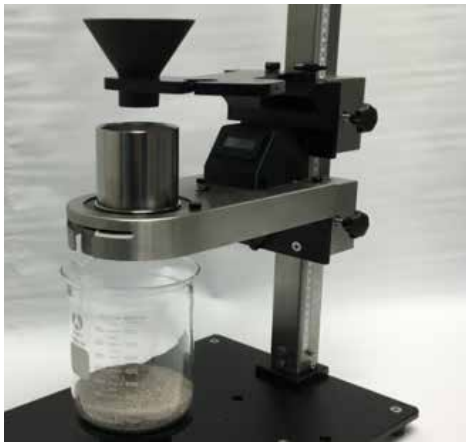
Angle of Repose
The base readily accepts an additional platform for standardized measuring of cone height.

→ Discrete or continuous flow rate measuring

Flexible Configurations

The PF 1 can be configured to perform different types of powder flow tests – and allows to vary test conditions for each test type in a repeatable way. When equipped with an analytical balance, the flow rate can be measured continuously to detect momentary flow rate variations.

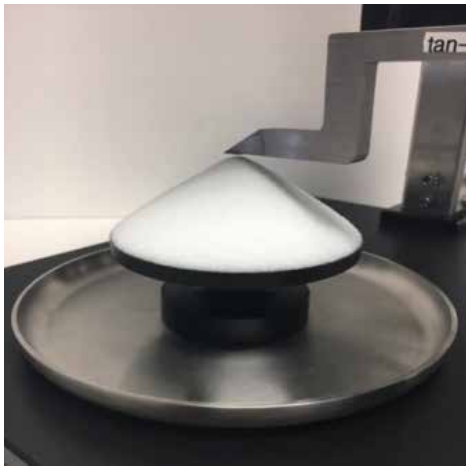
- "Flow through an Orifice" with Cylinder or Funnel
- "Mass per Time" or "Volume per Time"
- Angle of Repose



→ "Flow through an Orifice" with Cylinder setup

Flow through an Orifice

Using the Cylinder setup is ideal to determine the flow rate of "powder moving over powder". This method eliminates the effect of the container material on test results. Discs with different orifices allow for variation of the flow-through opening diameter as described in USP. To simulate the flow of powder moving along the wall of a container or hopper in a production situation, a Funnel in the form of a truncated cone (with 3 different nozzles) is also readily available for the PF 1.



→ Measuring the cone height

Angle of Repose

The "Angle of Repose" test allows evaluation of the flow properties of solids based on the shape of the cone. By measuring the cone height on a standardized platform, the angle of repose (in degrees) can be easily calculated to classify the powder (e.g. based on the range classification according to Carr).
To form a symmetrical cone on the platform, the height of the orifice through which the powder passes can be fixed – or varied as the pile forms.

Technical Specifications

		PF 1
Pharmacopeia		USP <1174>, EP 2.9.36
Test methods	Flow through an Orifice	Yes (Cylinder and/or Funnel)
	Angle of Repose	Yes
Dimensions	Width	267 mm
	Depth	356 mm
	Height	608 mm
Weight		20 kg

		Flow through an Orifice		Angle of Repose
		with Cylinder	with Funnel	
PF1 configuration	Stand, with base plate	●	●	●
	Multi-purpose pivot arm (height-adjustable)	●	●	●
	Filling funnel, for multi-purpose arm	●	●	●
	Flow-through arm (height-adjustable)	●	●	●
	Timer	●	●	●
	Stirrer, for multi-purpose arm	—	○	—
	Funnel, incl. 3 different nozzles	—	○	either Funnel or Cylinder required
	Cylinder, incl. set of 20 discs	○	—	
	Analytical balance	○	○	—
	Glass beaker, 1'000 ml	○	○	—
	Platform, incl. collector tray	—	—	○
	Digital height gauge	—	—	○

● included ○ optional — not required

Technical specifications are subject to change without prior notice. Products illustrated in this brochure may include options or modifications not fitted as standard. No liability for errors and omissions.

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Solutions for Pharmaceutical Testing

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