

How to Choose the Right Buchner Funnel

Bel-Art – SP Scienceware offers 24 unique choices in a complete line of table-top Buchner Funnels. This includes four funnel sizes, each available in six different configurations to allow for the best results when filtering. To determine the best solution for your filtering needs, consideration should be given to:

- **Funnel Size**
- **Fixed or Removable Plate**
- **Porosity of the Plate**

Size & Volume Requirements vs. Space Restrictions

Bel-Art – SP Scienceware Buchner funnels are available in 10.25", 18", 24" and 36" diameters. Filtering times can be reduced and batch yields increased by choosing a larger table-top Buchner Funnel, but carefully consider your work space. It is important to select a funnel that fits well on the bench-top yet also leaves room for any needed equipment such as your vacuum pump, liquid "trap" collection bottle, Buchner funnel trowel ([F36820-0118](#)), and/or spatula.

Fixed Plate vs. Removable Plate

Is the final product you are filtering staying on top of the filter plate, or will it be suctioned through-and-beneath the filter plate?

- If your product remains on top, then any of our options with a **REMOVABLE** plate are for you. This allows for easier collection of your final product as well as easier cleaning of your Buchner funnel.
- If your product is actually the liquid below the filter plate (aka the 'filtrate'), then any of our options with a **FIXED** plate are for you. Fixed plates provide the best possible seal between the top and bottom of the Buchner funnel which enables optimal suction from your vacuum source. It also eliminates contamination seeping between the funnel's wall and plate, and into your filtrate.

Once you have determined if you need a fixed or a removable plate, the last decision is the porosity needed for your optimal results.

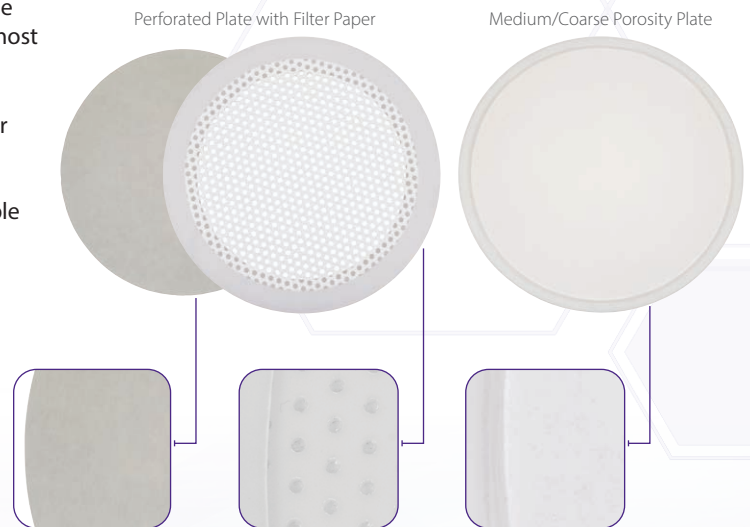
Perforated Plate vs. Medium or Coarse Porosity Plate

A Perforated Plate must be used in conjunction with filter paper and allows the finest porosity in filtering. Perforated plates have large holes to allow for the most suction to reach the filter paper and your product. This enables faster filtering and/or drying times.

Coarse Porosity and Medium Porosity Plates may be used with or without filter paper. The porous plastic allows for excellent initial pass through filtering and separation of larger debris with less clogging. Also, if your filtration needs are met by the porosity ranges these plates offer, then you may reap a considerable cost savings by eliminating the need for filter paper.

Porosity at a Glance

- **Bel-Art SP Scienceware Paper & Plates**
 - Filter Paper Discs for Buchner Table-Top Funnels: 3 micron
 - Medium Porosity Plastic Plate: 45 – 90 micron
 - Coarse Porosity Plastic Plate: 90 – 130 micron
 - Perforated Plate: Hole Diameter: 4,760 micron ($\frac{3}{8}$ ")
- Average Coffee Filter: 20 microns



How to Choose the Right Buchner Funnel: Case Studies



Case Study #1:

Brenda is an organic chemist who is synthesizing an aspirin-like (salicylic acid) compound for a topical cream formulation and is looking to scale up her production of the compound. Since her bench space is limited, Brenda chose a Bel-Art 18-inch size Buchner Funnel (catalog no. [H14627-1457](#)). The funnel can be placed next to a sink, so emptying the filtrate is easily performed by disconnecting the vacuum hose from the trap. This allows the liquid to flow from the bottom of the Buchner funnel directly into the sink.

Brenda chose the removable, perforated plate option for her Buchner funnel, and uses Bel-Art 3 μ m Filter Paper Discs (catalog no. [H14632-0018](#)). With the vacuum connected to the funnel, she allows the compound (aka 'the cake') to dry assisted by the vacuum suction below the plate. When the suction becomes compromised because of a "crack in the cake", Brenda uses the Bel-Art Buchner Funnel Trowel (catalog no. [F36820-0118](#)) to smooth the cake over, allowing the full vacuum force to continue drying her product. After the cake is sufficiently dry, and is carefully removed and stored, she takes the removable plate out of her funnel allowing for an easy clean-up job.



Filter Paper Disc

18-inch
Buchner
Funnel

Buchner Funnel Trowel

Case Study #2:

George is a pharmacologist working in a facility that is extracting cannabinoid oils from dried cannabis botanicals. Part of this process is filtering cold ethanol through the cannabis which extracts the oils.

He is looking to scale up his process and has plenty of space to fit his 36-inch Buchner Funnel (catalog no. [H14625-3536](#)). George chose the fixed plate because he needs a perfect seal between the filter plate and the wall of the funnel. He cannot risk any of the cannabis plant material seeping through gaps between the plate and wall of the funnel. This is because unlike Brenda, George wants to collect the liquid coming through the filter plate – that liquid (the filtrate) is his valuable product.

George collects the filtrate in a Bel-Art 1-gallon Vacuum Aspirator Bottle (catalog no. [F19917-0002](#)) which is in-line between his funnel and vacuum source. The bottle acts as both the vacuum 'trap' and 'collection bottle'. He will have to occasionally unscrew a full aspirator bottle and replace it with an empty one. Finally, since George does not need a minute-sized 3 μ m filter paper for his extraction, he chose the fixed plate with the medium porosity plastic. The 45-90 μ m plastic filter is perfect for his needs, and since the porous plastic is designed to last for the life of the entire funnel, he does not worry about using filter paper.

While he may not be able to remove his filter plate for cleaning, George knows that a few rinses of ethanol will suffice.

With this new Buchner funnel set-up, George is able to extract and filter far more quickly and efficiently, and he doesn't need to worry about contaminants from the raw cannabis plant affecting the purity of his final product.



36-inch Buchner Funnel

Vacuum Aspirator Bottle