Technical Data Sheet

Laboratory-Scale Depth Filtration
BECO MiniCap™ ACF

Disposable Filter Unit with BECO CARBON™ Activated Carbon Depth Filter Sheets

BECO MiniCap ACF disposable filter units with BECO CARBON activated carbon depth filter sheets are ready-to-use for the filtration of small volumes for laboratory applications, scale-up trials, and sample preparation.

The depth filter sheets of BECO MiniCap ACF disposable filters have a high adsorptive capacity due to the use of immobilized activated carbon and are used for decolorization as well as for the removal of undesired by-products or for taste and odor correction.

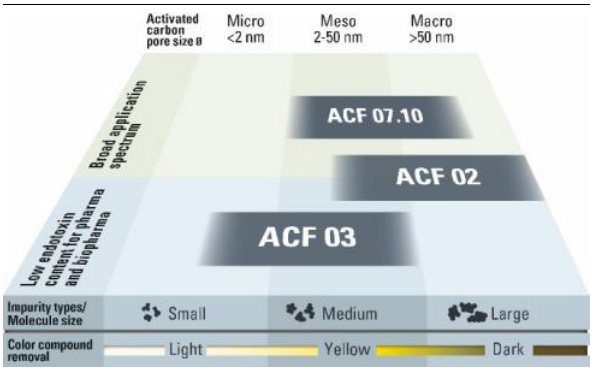
The specific advantages of the BECO MiniCap ACF range:

- The disposable filter unit is autoclavable and there is no cleaning effort required.
- Due to the dust-free handling, the application is simple and clean.
- BECO MiniCap ACF disposable filter units with activated carbon types of different porosity meet the requirements of a broad range of applications.
- Filtration-active and adsorptive properties are ideally combined in the BECO MiniCap ACF 07.10.
- The adsorption performance in the BECO MiniCap ACF 02 and ACF 03 is maximized through a carbon content of up to 1000 g/m² and the low endotoxin content ensures high product safety. A Validation Guide for the activated carbon depth filter sheet of BECO MiniCap ACF 03 is available on request.

Application Examples

- Decolorization and removal of organic impurities from active pharmaceutical ingredients (API) solutions:
  - Decolorization of antibiotic solutions
  - Protein and endotoxin removal
  - Purification of blood plasma products
  - Treatment of contrast media
- Decolorization of natural extracts and cosmetics
- Removal of unwanted by-products from food or dietary supplements, e.g., decolorization of glucose, enzyme and vitamin solutions
- Correction of taste and color of beverages (Spirits, fruit juices, hard seltzer etc.)
- Decolorization and removal of organic impurities from chemicals, organic solvents and synthetic oils, e.g., removal of „off-flavor“ and unwanted by-products from silicone oils

Selection Guide for BECO MiniCap ACF Disposable Filter Units with BECO CARBON Activated Carbon Depth Filter Sheets



The activated carbon of the BECO MiniCap ACF filter is a microporous, inert material with a very large inner surface of up to 2000 m²/g of activated carbon. The activated carbon used can be divided into different porosity ranges:

Macroporous (∅ >50 nm)
Decolorization of dark discolorations (brown to yellow) and for the separation of large molecules (e.g., protein separation).

Mesoporous (∅ 2-50 nm)
Decolorization of medium discoloration (yellow to yellowish) and impurities, as well as for correcting the taste of food.

Microporous (∅ <2 nm)
Decolorization of light discolorations (yellowish to whitish-gray), for odor correction and for the separation of smaller molecules (e.g., endotoxins).

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Physical Data

This information is intended as a guideline for the selection of BECO MiniCap disposable filter units. The water throughput is a laboratory value characterizing the different BECO CARBON activated carbon depth filter sheets. It is not the recommended flow rate.

Type	Article no. of BECO CARBON depth filter sheet	Ash content	Bursting strength wet		Water throughput at		Endotoxin content**	Activated carbon content
		%	psi	(kPa*)	Δ p = 14.5 psi gpm/ft²	(Δ p = 100 kPa* l/m²/min)	EU/ml	(g/m²)
ACF 07.10	19607	15	> 11.6	(80)	34.7	(1415)	-	420
ACF 02	19602	2.5	> 11.6	(80)	6.75	(275)	< 0.125	1000
ACF 03	19603	5	> 11.6	(80)	7.4	(300)	< 0.125	1000

* 100 kPa = 1 bar

** Endotoxin content analysis after rinsing with 1.23 gal/ft² (50 l/m²) of WFI (Water for Injection)

Technical Data

Effective filter area	3.3 in² (21.2 cm²)
Diameter of the filtration unit	2.9 in (74 mm)
Housing	Polypropylene according to FDA CFR § 177.1520
Connections (filtrate inlet and outlet)	Hose connections 0.24–0.47 in (6–12 mm) in diameter
Max. inlet and differential pressure	44 psi (300 kPa/3 bar) at 77°F (25°C)
Filling volume	0.44 fl oz (13 ml)
Dead volume after purging with compressed air 4.4 psi (30 kPa/300 mbar)	0.17 fl oz (5 ml)
Reference values for the flow capacity	0.08–0.14 gal/h (85–145 gfd) 5–8 ml/min (150–250 l/m²/h)
Reference values for filtration volumes	0.05–2.6 gal (0.2–10 l)

Ordering Information

Order number	Article description
F071C300	BECO MiniCap ACF 07.10 kit*
F002C300	BECO MiniCap ACF 02 kit*
F003C300	BECO MiniCap ACF 03 kit*

* One package contains three individually packed BECO MiniCap disposable filter units. The carton label shows the following information: article description, article, and lot numbers.

Compliance Notice

BECO CARBON activated carbon depth filter sheets meet the requirements of the Regulation (European Commission) 1935/2004 and the LFGB standard (German Food, Commodity and Feed Act) as well as the test criteria of FDA (U.S. Food and Drug Administration) Directive 21 CFR § 177.2260.

The polypropylene components comply with regulation (EU) 10/2011 and meet the requirements of FDA, 21 CFR § 177.1520.

BECO CARBON ACF 03 and the polypropylene components of the BECO MiniCap ACF 03 disposable filter unit also meet the requirements of the USP Class VI tests.

For further details on individual components and materials see the declaration of conformity.

Components

BECO CARBON activated carbon depth filter sheets are made from particularly pure materials. Finely fibrillated cellulose fibers and cationic charge carriers are used. The materials for each filter type in particular are as follows:

- BECO CARBON ACF 07.10(S):
  acid-washed, steam-activated carbon and high-quality diatomaceous earth
- BECO CARBON ACF 02:
  chemically activated carbon
- BECO CARBON ACF 03:
  acid-washed, steam-activated carbon

Instruction for Correct

Depending on the filtered liquids, the operating temperature should not exceed 176°F (80°C). Please contact Eaton regarding filtration applications at higher temperatures.

Sterilization (optional)

The wetted BECO MiniCap ACF disposable filter units can be sterilized **one time** in an autoclave as follows:

Preparation:	Rinsing with minimum of 1.7 fl oz (50 ml) for optimum wetting
Temperature:	**Max. 250 °F (121 °C)**
Duration:	Approx. 30 minutes
Rinsing:	After sterilizing with 3.4 fl oz (100 ml)/ 1.23 gal/ft² (50 l/m²) at 1.25 times the flow rate

Filter Preparation and Filtration

Unless already completed after sterilization, Eaton recommends pre-rinsing the closed filter with 3.4 fl oz (100 ml)/1.23 gal/ft² (50 l/m²) of water or in exceptional cases with product appropriate solution at 1.25 times the flow rate prior to the first filtration. Depending on the application, this usually equals a rinsing time of 10 to 20 minutes.

Only in exceptional cases which, for example do not allow rinsing with water, product or product appropriate solution should be circulated for 10 to 20 minutes and disposed after rinsing.

Test the entire filter for leakage at maximum operating pressure.

Filtration Speed
Adsorption processes are decisively affected by the contact time between the product and the adsorbing substance. The adsorption performance can thus be controlled by the speed of filtration. Slow filtration speeds 0.08 – 0.14 gal/h (85 – 145 gfd)/5 – 8 ml/min (150 – 250 l/m²/h) respectively extended periods of contact result in optimum utilization of the adsorption capacity.

Inlet and Differential Pressure
Terminate the filtration process once the limit of adsorption capacity or the maximum permitted inlet or differential pressure of 43.5 psi (300 kPa, 3 bar) is reached. A higher inlet and differential pressure could damage the depth filter sheet material.

Safety

When used and handled correctly, there are no known unfavorable effects associated with this product.

Further safety information can be found in the relevant Material Safety Data Sheet, which can be downloaded from our website.

Waste Disposal

Due to their composition, BECO MiniCap ACF disposable filter units can be disposed of as harmless waste. Comply with relevant current regulations, depending on the filtered product.

Storage

BECO MiniCap ACF disposable filter units must be stored in a dry, odor-free, and well-ventilated place, ideally in their original packaging.

Do not expose the BECO MiniCap ACF disposable filter units to direct sunlight.

BECO MiniCap ACF disposable filter units are intended for immediate use and should be used within 36 months after production date.

Quality Assurance According to DIN EN ISO 9001

The Quality Management System of Eaton Technologies GmbH has been certified according to DIN EN ISO 9001.

This certification verifies that a fully functioning comprehensive Quality Assurance System covering product development, contract controls, choice of suppliers, receiving inspections, production, final inspection, inventory management, and shipment has been implemented.

Extensive quality assurance measures incorporate adherence to technical function criteria and chemical purity and quality recognized as safe under the German legislation governing the production of foods and beverages.

All information is given to the best of our knowledge. However, the validity of the information cannot be guaranteed for every application, working practice and operating condition. Misuse of the product will result in all warrantees being voided.

Subject to change in the interest of technical progress.

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