



# Venting Filters for Food and Beverage Applications

Simplifying Progress

**SARTORIUS**

# Introduction to Venting Filters Applications

We understand your processes and work with you to identify the correct filter no matter your environment, scale, size, or temperature are.

It is worth to implement venting filters in your process

- to protect your products
- to avoid microbiological contamination
- to ventilate your tank during sterilization, filling and emptying

Our broad range of products deliver peace of mind and allow you to choose the right filter for all scales, from lab scale to industrial size, in single-use or conventional processes.

- Small-scale venting filters: Midisart®
- Medium-scale venting filters: Sartovent P, Sartovent DG, Midicaps®
- Large-scale venting filters: Aerosart, Sartofluor®, Jumbo Star Sartopure® GA

# Food and Beverage Industry Is Using Venting Filters

- Wineries
- Dairy
- Fruit Juice Industry
- Soft Drinks Industry
- Food Industry
- Breweries
- Mineral Water Bottlers

# Midisart®:

## Ready-to-Use Filter for Sterilizing Gases and Venting

- Material: PTFE membrane
- Retention rate: 0.2 µm absolute
- Filtration area: 20 cm<sup>2</sup>
- Working pression: max. 3 bar
- Sterilization: autoclave max. 60 cycles, 30 min, 134 °C (273.2°F)
- Integrity test: bubble point (IPA 60%)
- Connections: hose barbe 4 and 6 mm, ½" NPT, TriClamp 25



# Midisart®:

## Ready-to-Use Filter for Sterilizing Gases and Venting

- Air flowrate: up to 300 L/h
- Venting of small vessels (Nalgene type, small tank, RM bags)
- Venting of fermenters
- Gas filtration: CO<sub>2</sub>, N<sub>2</sub>, air
- Venting of small autoclave



# Sartovent P: The Ideal Safeguard for Sanitary Small Tank

The medium-scale venting filters: from 0.5 to 5 m<sup>3</sup>/h

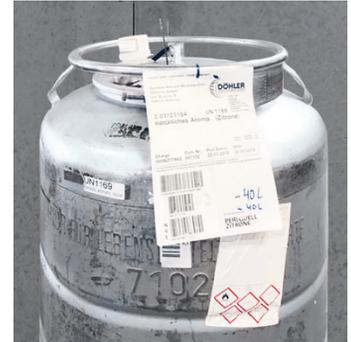
- Material: polypropylene fleece
- Retention rate: 0.2 µm nominal
- Filtration area: 0.05 m<sup>2</sup>
- Working pression: atmospheric
- Sterilization: autoclave max 25 cycles, 20 min, 121 °C (249,8°F)
- Integrity test: no
- Connections: DIN 11851 diameter 25, 32 or 40 mm
- Packaging: 5 per box



# Applications for Sartovent P Venting Filter

Venting of transport containers which contain:

- Liquid sugar
- Aroma components
- Basic ingredients, e.g. vinegar and oil
- Fruit juice
- Sweet reserve (unfermented grape juice)



Picture with courtesy of Germeta Heil-und Mineralquellen, Warburg | Germany

# Mini-Cartridges: Venting of Medium Size Containers

- Sterile venting of transport containers
- Sterile venting of small tanks
- Sterile air filtration during fermentation
- Sterile filtration of compressed air | gases that is required for filling and draining of tanks, containers, filling machines, autoclaves or lyophilizers
- Protection of tank against micro-organisms and bacteriophage on tank which contains ferments (dairy industry for instance)



# Mini-Cartridges: Different Connections



Code 12: 1/2" male thread with flat ring



Code 15: Bayonet adapter with one internal O-ring



Code 18: Plug adapter with double O-ring

# Applications for Mini-Cartridges Code 12

## Venting of medium size tank for food liquid:

- No housing required
- Material: polypropylene fleece
- Retention rate: 0.2  $\mu\text{m}$  nominal
- Filtration area: 0.2  $\text{m}^2$
- Working pressure: atmospheric
- Sterilization: autoclave max 25 cycles, 20 min, 121 °C (249,8°F)
- Integrity test: no
- Available adapter: code 12: ½" male thread
- Article code: 5591207P9----GAK
- Packaging: 50 per box



# Applications for Mini-Cartridges Code 15

## Venting of medium size tank for food liquid:

- Housing required
- Material: PTFE membrane
- Retention rate: 0.2  $\mu\text{m}$  absolute
- Filtration area: from 0.05 to 0.2  $\text{m}^2$
- Working pression: atmospheric up to 5 bar of differential pressure at 21 °C (69.8°F)
- Sterilization: autoclave or sterilized in-line min 25 cycles, 20 min, 134 °C (273.2°F)
- Integrity test: diffusion | bubble point test and WIT (size 8 & size 9 only)
- Available adapter: Mini-Bayonet adapter (code 15) with internal O-ring
- Article codes: 5181507T7----B; 5181507T8----B; 5181507T9----B
- Packaging: 5 per box



## 7M19LEN00738

Housing type  
Cartridge adapter  
Height

Vent Housing I-Type (pressureless)  
15  
9

## Nozzle description:

Inlet | Outlet  
Total height  
Venting

TC 50.5 mm – OD 1" (25.4 mm × 1.65 mm)  
201 mm  
To the atmosphere



# Applications for Mini-Cartridges Sartovent DG Code 18

The medium-scale venting filters: from 0.5 to 5 m<sup>3</sup>/h

- Housing required
- Material: PTFE membrane
- Retention rate: 0.2 µm absolute
- Filtration area: from 0.05 m<sup>2</sup>
- Working pressure: up to 5 bar of differential pressure at 21 °C (69.8°F)
- Sterilization: autoclave or sterilized in-line max 50 cycles, 20 min, 134 °C (273.2°F)
- Integrity test: depending on material , diffusion test with IPA for PTFE membranes
- Article Code: 5181807T6---D (10 per box) and K (50 per box)

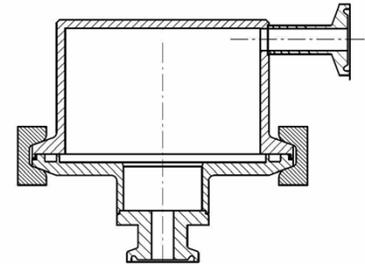


## 366016P18TT012LN

Housing type	SartoVent Housing
Cartridge adapter	18
Height	6

Nozzle description:

Inlet   Outlet	TC 25 mm – OD ½" (12.7 mm × 1.65 mm)
Total height	85 mm



See attached file

Sartovent-DG-Datasheet-en-B-2648562-Sartorius

# Sartovent DG: Sterile Venting of Transport Containers



The mini-cartridge is put inside the container and protected by a filter cap against liquid projections



# Sartofluor® Midicaps®: Sterile Aeration of Tanks

**The medium-scale aeration filters: up to 50 m<sup>3</sup>/h**

- Housing not required
- Material: PTFE membrane
- Retention rate: 0.2 µm absolute
- Filtration area: from 0.05 to 0.2 m<sup>2</sup>
- Working pressure: up to 5 bar of differential pressure at 20 °C (68°F)
- Sterilization: autoclave min 25 cycles, 30 min, 134 °C (273.2°F)
- Integrity test: diffusion test with IPA, WIT
- Connections: 1½" Tri-Clamp and ½" single stepped hose barb



# Midicaps®: Sterile Venting of Tanks

## Application dedicated to fruit juice industry:

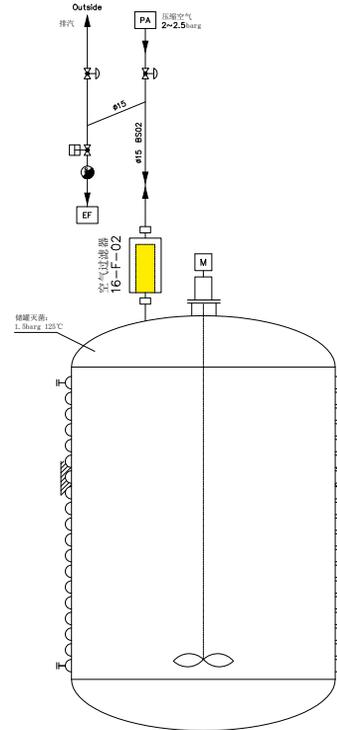
- Low pressurization of the tank with sterile gas (Air or Nitrogen)
- Protection of the tank against bio contamination, oxidation risks to preserve product quality
- Change the filters every 25 autoclave cycles
- Special connection: inlet | outlet R ½" male thread
- Article code: 5185307T8--ZZ-A
- Packaging: 4 per box



# Midisart® and Midicaps®: Mushroom Production

## Cultivation of edible mushrooms:

- Low pressurization of the tank with sterile gas (Air or Nitrogen)
- Protection of product in the tank against bio contamination and exposure to oxygen
- Use of Midisart® and Midicaps® with different connections



# Midisart® and Midicaps®: Mushroom Production



# How to Select the Right Medium-Scale Venting Filter?

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**Nominal****Retention rate 0.2 µm needed?**

Sartovent P  
with polypropylene fleece connections according DIN 11851

Sartopure® GA mini cartridge code 12  
with polypropylene fleece connection ½" Thread Connector

**Absolute****Retention rate 0.2 µm needed?**

Sartovent DG mini-cartridge code 18  
with PTFE membrane plug adapter with double O-ring

- Sartofluor® GA mini-cartridge code 12  
with PTFE membrane connection ½" Thread Connector
  - Sartofluor® GA mini-cartridge code 15  
with PTFE membrane Bayonet adapter with one internal o-ring
-

# Aerosart: Air filter Cartridge for Venting and Gas Filtration

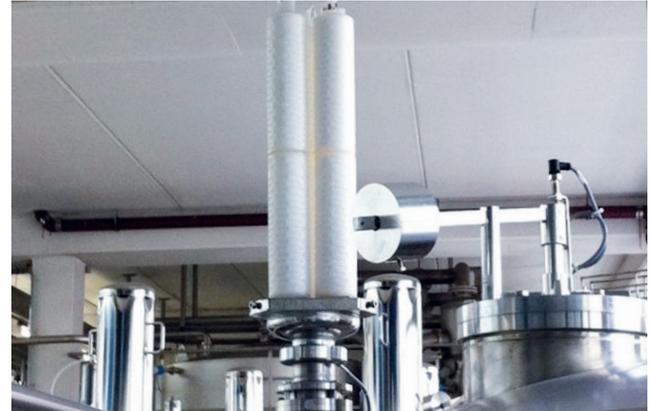
## The large-scale venting filters: more than 5 m<sup>3</sup>/h

- Retention rate: 0.2 µm
- Each membrane lot, liquid bacterial challenge test with the retention of  $\geq 10^7$  Brevundimonas diminuta/cm<sup>2</sup> according to current ASTM F-838 guidelines
- 100% integrity tested before release
- Material: PTFE membrane
- Filtration area: from 0.75 to 2.25 m<sup>2</sup>
- Working pressure: up to 5 bar of differential pressure at 20 °C (68°F)
- Sterilization: sterilized in-line max 150 cycles, 20 min, 134 °C (273.2°F)
- Integrity test: diffusion | bubble point test (Wetting agent: 60% IPA (Isopropyl Alcohol) | 40% water)
- Available adapters: Code 25, 28 and 27 in a housing
- Article code: 5152x07Tx---E-C
- Packaging: 6 per box



# Aerosart: Air filter Cartridge for Venting and Gas Filtration

- Bioreactors (Inlet | Outlet)
- Storage Tank Venting
- Filling Equipment Venting
- Autoclave Venting ...



# Sartofluor® GA: Sterile Venting for Food & Beverage and Pharma Applications

## The large-scale venting filters: more than 5 m<sup>3</sup>/h

- Material: PTFE membrane
- Retention rate: 0.2 µm absolute
- Filtration area: from 0.375 to 2.25 m<sup>2</sup>
- Working pression: up to 5 bar of differential pressure at 20 °C (68°F)
- Sterilization: autoclave 25 cycles or sterilized in-line max 150 cycles, 20 min, 134 °C (273.2°F)
- Integrity test: diffusion|bubble point test and WIT
- Available adapter: Code 25 or 28 in a housing
- Article code: 5182x07Tx—GA
- Packaging: 1 per box



# Sartofluor® GA: Sterile Venting for Food & Beverage and Pharma Applications

- Bioreactors (Inlet | Outlet)
- Storage Tank Venting
- Filling Equipment Venting
- Freeze Dryer
- Autoclave Venting ...

## 7S11LEN00414

Housing type  
Cartridge adapter  
Height

Vent Housing I-Type (pressureless)  
25 (code 7)  
10"

## Nozzle description:

Inlet | Outlet  
Total height  
Venting

TC 50.5 mm - OD 1.5" (38.1 mm × 1.65 mm)  
395 mm  
To the atmosphere



# Jumbo Star Sartopure® GA: The Giant-Sized Venting Cartridge

**The large-scale venting filters: more than 50 m<sup>3</sup>/h**

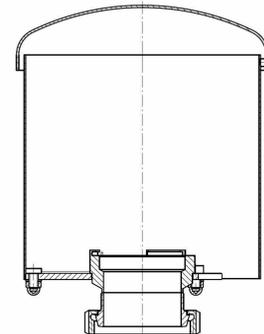
- Material: Glass fiber and Polypropylene
- Retention rate: 0.2 µm nominal
- Filtration area: from 15 to 30 m<sup>2</sup>
- Working pression: up to 4 bar of differential pressure at 20 °C (68°F)
- Sterilization: autoclave or sterilized in-line max 110 °C (230°F)
- Integrity test: no
- Available adapter: Code 40 with housing
- Article code: 5594007J1----GA; 5594007J2----GA
- Packaging: 1 per box

## 35501X\*V40-K100B

Housing type	Jumbo Vent Housing
Cartridge adapter	40
Height	*X: 1=10"   2=20"   3=30"

## Nozzle description:

Inlet   Outlet	DIN 11851 female DN100
Total height	416 mm   666 mm   916 mm
Venting	To the atmosphere



See attached file  
Jumbo-Star-Sartopure-Datasheet-en-B-2648572-Sartorius

# Jumbo Star Sartopure® GA: The Giant-Sized Venting Cartridge

## Applications

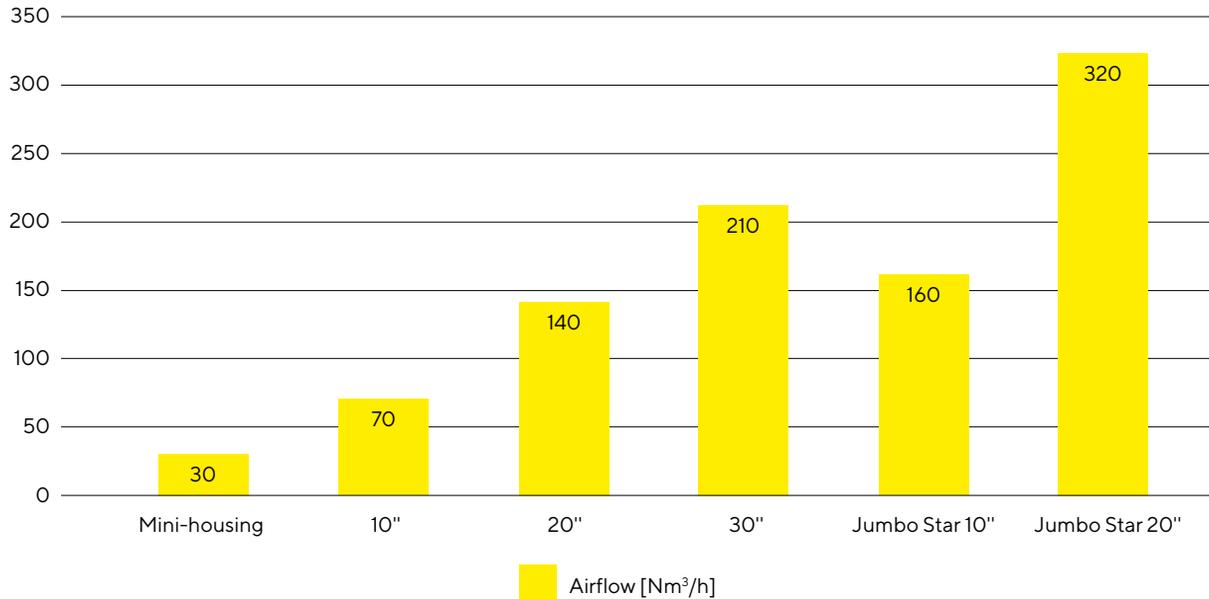
- Storage tanks for product
- Venting of water tanks



10" Jumbo Star venting filters with double jacket housing



# How to Select the Right Large-Scale Venting Filter



# How to Size a Venting Filter?

**Which parameters are the most critical? Check parameters of the tank**

1. The maximum differential pressure supported by the tank?  
What is the pressure and vacuum resistance of the tank?
2. The maximum liquid flowrate while emptying or filling the tank?
3. How is the tank cleaned and sterilized? Cold or hot chemical cleaning and disinfection?
4. Which connection is required for the air filter?

Sartorius provide a questionnaire to be filled by the venting filter project manager.

Sartorius technical specialist will design the correct air filter size.

# Important Points for Correct Sizing

- Air flowrate shown in datasheets are for new and dry air filters.
- When the air filter is wet, the flowrate is lower but PTFE membrane dry rapidly (highly hydrophobic PTFE membrane provides the fastest blow down times)
- Tanks which are located outdoor may need to be protected by a heating equipment to avoid condensation of water condensation in the filter material.
- In case of tank CIP at 80 °C, the air filter needs to compensate the vacuum created during the cooling phase (approx. 8 times the tank volume)
- If the tank is sterilized with steam, it is needed to have over pressure of 0.3 bar in the tank to avoid vacuum (by dosing compressed air via Sartofluor®)
- Security equipment is mandatory on top of the tank to avoid tank collapsing if vacuum appears (Bursting disc or underpressure valve).

All parameters used for dimensioning are written in the venting filter project quotation.

- Largest product portfolio for small to large scale venting applications (from Midisart® to Jumbo Star filter)
- Ready-to-use solutions
- Protection and prevention of microbiological contamination of the food and beverage product
- Key of success is the right sizing of the filter

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