

HOW TO CALCULATE AN FM1 BREATHER BAG SIZE

Using the FM1 Breather Bag permeability calculator

The FM1 Breather Bag Permeability Calculator is designed as a simple aid for sizing FM1 Breather Bags for volumetric/low flow applications. Further engineering considerations should be taken for high-flow or large-venting requirements and the moisture content in product may also effect the breather bag size requirement (ie. powders that are particularly sticky or prone to clogging).

You may need to use more than one Breather Bag to achieve the required venting if your vent volume is large. **Always** size the Breather Bag **larger than your requirement** to account for clogging over time.

1. Calculate the volume of air required to be vented.

To know the size of the Breather Bag required, you first need to know what volume of air you need to vent is.

For example, if you are filling a 1m³ container in one hour you would enter 1 into the 'metres cubed per hour' field.

This will show the **Required Surface Area** of the bag in the field next to the box you filled in (in this case, it's 0.002 square metres).

2. Decide on diameter of the Breather Bag to use.

If you know the diameter of the Breather Bag already, select it using the dropdown next to the field (in either inches or mm).

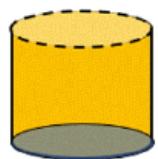
If you don't know the diameter of your Breather Bag, start with the smallest possible diameter & length, and increase either field until the 'Breather Bag Surface Area' reaches the required size.

(NOTE: This must be **larger than** the minimum 'Required Surface Area' calculated at Step 1).

FM1 Breather Bag Permeability Calculator

Calculate your required surface area:

My required venting rate:	Required Surface Area:
(centimetres cubed per second)	(square metres)
0	0.000
(cubic feet per minute)	(square feet)
0	0.000
(metres cubed per hour)	(square metres)
1	0.002
(cubic feet per hour)	(square feet)
0	0.000



Area
 $\pi r(r + 2h)$

!! IMPORTANT PLEASE READ !!

This tool is designed as a simple aid for sizing FM1 Breather Bags for volumetric / low flow applications. Further engineering considerations should be taken for high flow or large venting requirements and certain powder attributes (see notes below).


Remember you may need to use more than one breather bag to achieve the required venting if your vent volume is large. Always size the breather larger than your requirement to account for clogging over time.

Considerations need to be made for powders that are particularly sticky or prone to clogging. Moisture content in product may also effect the breather bag size requirement.

Please contact us at sales@bfmfitting.com if you need further guidance.

Calculate the bag size required:

Breather Bag Diameter:		Material Air Permeability:	Total Material Permeability based on size:
(millimetres)	(inches)		
200	4	(cm³/cm²/sec) @ 125Pa	cm³/sec
		17	26,703.54
Breather Bag Length:		(ft³/ft²/min) @ .5 inch WG	ft³/min
(millimetres)	(inches)	33	14.40
200	4	(m³/m²/hr) @ 125Pa	m³/hr
		612	96.13
Breather Bag Surface Area:		(ft³/ft²/hr) @ .5 inch WG	ft³/hr
(square metres)	(square feet)	1980	863.94
0.157	0.436		



The calculator can be used in metric or imperial measurements - just ensure you read the corresponding boxes for the resulting calculations! Please contact your local Distributor or BFM® at: sales@BFMfitting.com if you need further guidance.

3. Decide on length based on Required Surface Area.

Once you know the minimum **Required Surface Area**, use the drop-down next to the Length field to adjust the overall surface area of the Breather Bag.

You should size your bag **larger** than the Required Surface Area to account for material clogging of the Breather Bag over time. You may also need multiple bags for large volume breathing.

REMEMBER: Sticky or moist products need much larger breather bags whereas dryer products require bags that are a little larger. The larger the bag, the less often it will need to be cleaned.

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