

Fume Hood Airflow - Cubic Feet per Minute (CFM) Calculation Explained

The calculation for the **CFM** of a fume hood is obtained by multiplying the **FACE OPENING** (window of the fume hood) and the **FACE VELOCITY**.

The **FACE OPENING** value is the maximal open Width x Height for your fume hood while **FACE VELOCITY** references the capture distance i.e. depth of the fume hood. A typical **FACE VELOCITY** is 100 fpm as many fume hoods are similar in depth to a standard desk.

Note: For this sample calculation we are using Bel-Art – SP Scienceware fume hood catalog no. **H50000-0002** which is 22 inches wide by 12 inches high.

FACE OPENING Calculation:

22" x 12" = 264 square inches. Divide this by 144 to get Square Feet.

264 ÷ 144 = 1.83 square foot opening

You would now multiply this area measurement (1.83sq.ft.) by your desired **FACE VELOCITY**, in this case 100fpm and that will give you the CFM requirements you need.

1.8 square feet x 100 fpm = 180 CFM

So in this case, you would need your exhaust fan to be able to draw **180 CFM**. Our catalog listing for 50000-0002 lists that an even 200 CFM needed, rounding up from the 180 CFM calculated here.

Getting to here is the easy part. To determine how powerful a fan is needed, you still need to calculate the length of exhaust pipe (including turns) leading from the fume hood to the end exit point. The longer the distance and the more curves you have, the more powerful your in-line exhaust fan will need to be to attain the 180 CFM.

This final calculation should be determined by the person responsible for your building's HVAC.