AIR FLOW RATE EQUATIONS

Our air flow chart (#TAF-1) is based on "air" at ambient (68°F) temperature. If your application is for compressed air at a different temperature, or for a gas with a different specific gravity please use this formula page to convert your requirements to "air" so that the standard air chart can be used to choose the appropriate filter element and filter housing. The required size of a filter is affected not only by flow, but also by operating pressure and operating temperature, it is necessary to convert the actual conditions to "standardized" conditions (100 PSIG and 68°F).

Note: Take the square root of your specific gravity. If this is for a compressed air application, skip this step because the specific gravity of air equals one, and the air flow chart (#TAF-1) is based on air. Please see chart to the right for specific gravities.

All flows should be considered estimates since all conditions vary slightly.

Gas	Specific Gravity
Air	1
Ammonia	0.58
Argon	1.37
Carbon Dioxide	1.52
Carbon Monoxide	0.96
Chlorine	2.48
Ethane	1.04
Ethylene	0.97
Helium	0.13
Hexane	2.73
Hydrogen	0.06
Methane	0.55
Natural Gas	0.66
Neon	0.69
Nitrogen	0.96
Oxygen	1.18
Pentane	2.47
Propane	1.56

Refer to this chart if you do not know the specific gravity of the gas you are filtering.

Equation:

Flow Rate:		Pressure:		Temperature:		Specific Gravity:		Adjusted Flow Rate:
Actual System Flow Rate (SCFM)	**X**	**(100 PSIG + 14.7 PSIG) / (Pressure (PSIG) + 14.7 PSIG)**	**X**	**(System Temp. °F + 460°F) / 68°F + 460°F**	**X**	**$\sqrt{}$**	**=**	**_____SCFM @ 100 PSIG, 68°F**

Example: Methane

Information Given:
Flow Rate = 400 SCFM
Pressure = 150 PSIG
Actual Temp. = 100°F

400 SCFM X (100 PSIG + 14.7 PSIG) / (150 PSIG + 14.7 PSIG) X (100°F + 460°F) / 68°F + 460°F X $\sqrt{0.55}$ = 215 SCFM Adjusted Flow Rate @ 100 PSIG, 68°F

This converts, 400 SCFM of methane gas is "corrected" to 215 SCFM in "air" conditions. Refer to the chart to size filter.

*Flows are estimates since all conditions vary slightly

United Filtration Systems, Inc. ▪ 6558 Diplomat Drive ▪ Sterling Heights, MI 48314
T (586) 802-5561 ▪ F (586) 802-5562 ▪ sales@unitedfiltration.com ▪ www.unitedfiltration.com
1-800-311-5561