



Determining CFM Requirements*

(Based on BTU's and Other Factors)

For Trade-Wind® Professional & Standard Series Liners and Hoods

Calculating CFM Requirements

There is no "industry standard" criteria for determining how many CFM's are required for the many different types of stoves and ranges. Every installation has many variables including the basics: distance between hood and cooking surface, island or wall installation, air currents in the kitchen, length and shape of the duct run, e.g., number of bends (elbows), type of damper, type of roof cap and "make-up air" considerations.

Other variables include the user's preference for amount and types of foods cooked, e.g., fish vs. steamed vegetables. Cooking with strong smelling seasonings such as curry can actually cause an entire house to smell of curry, which can negatively affect the resale value of the house. And given that indoor grill cooking generates large amounts of smoke, cooks that grill indoors should install hoods or liners with very high CFM performance.

Given that most cooks will seldom have all burners and the oven set on "high", installing range hoods with less CFM capacity than indicated by the following BTU-CFM calculation is a common practice. Remember, the overall objective is to get the **HOGGSS** out of the kitchen (**H**eat-**O** odors-**G**asses-**G**rease-**S**team-**S**moke), so the CFM needs for a specific installation are also a function of the cooking practices of the homeowner.

To determine the amount of CFM needed to exhaust an electric, gas or dual fuel range, a generally accepted "rule-of-thumb" is to divide the total BTUs by 100.

Example: KitchenAid's Architect® Series, Dual Fuel 36" Range

6 Surface Burners (Gas)	72,000 BTU's
Broiler Element (Electric) 3,000 Watts x 3.5 = 10,500 BTU's (BTU Equivalent; see details below)	10,500 BTU's
Total BTU's	82,500
Rule-of Thumb CFM Requirements	82,500 divided by 100 = 825 CFM

So...What is a Watt? What is a BTU? How do you Convert a Watt to a BTU?

When determining the performance requirements of a particular range hood installation, it is good to know some comparisons of heating terms between electric and other fuels. Most fuels besides electricity are measured in BTUs. Gas ranges, fuel oil furnaces and kerosene heaters all are rated with BTUs. Electric ranges however, are measured in watts.

BTU is the acronym for British Thermal-Unit, a unit of measure of the energy in various fuels. One BTU is the amount of heat needed to raise the temperature of 1lb of water 1 degree Fahrenheit. To convert watts to BTUs, the formula is to multiply the total number of watts by 3.5 to get the "equivalent amount" of BTUs that will be created by an electric range.

For example, a range with...

- 2, eight-inch 2,000-watt elements and (4,000)
- 2, six-inch 1,500-watt elements and (3,000)
- 1, broiler element rated at 10,000 watts (10,000)

...has the equivalent of 59,500 BTU's (17,000 watts x 3.5 = 59,500 BTU's). In this example, using the rule-of-thumb, the 59,500 BTUs would indicate the need for a range hood with at least 595 CFM (59,500 / 100).



Calculating the BTU's of Gas Ranges with Gas Ovens

1. Add the BTU's of each of the surface burners, grills and / or griddles.
2. Add the BTU's of oven burner(s) with the highest BTU rating. If only one burner can be used at a time, use the highest number only. If two ovens operate simultaneously, total the highest rated burner in each oven.
3. Add the total BTU's of the surface burners to the BTU's of the oven burner(s).

Calculating the BTU's of Gas Ranges with Electric Ovens (Dual Fuel Ranges)

1. Add the BTU's of the surface burners, grills or griddles.
2. Calculate the "BTU Equivalent" of the oven element with the highest wattage rating. Consider the three possible elements (bake element, broil or convection). To calculate the BTU Equivalent, multiply the element with the highest wattage by 3.5 then add this number to the surface burner total BTU's. Typically, only one of these three oven elements would be operating at a given time.
3. Add the total BTU's of the surface burners to the BTU Equivalent of the oven burner(s)

It is increasingly popular for homeowners to have modular "cooking centers". These areas frequently combine electric cooking products with gas cooking products. Combined cooking product configurations might include a gas range or cooktop, a separate electric grill and / or steamer and a gas wok. In these instances, the total BTUs of each of the cooking devices (gas BTUs plus equivalent BTUs from the electric elements) needs to be calculated in order to determine the total BTU's and CFM requirements.

***For more information, see the Installation Instructions included with each individual range hood. All range hoods should be installed by a qualified installer consistent with local building codes.**



For more information, please contact your Trade-Wind[®] Representative

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